



THE UNITED REPUBLIC OF TANZANIA



## NATIONAL AUDIT OFFICE

### PERFORMANCE AUDIT REPORT ON FLOODS CONTROL MEASURES IN TANZANIA

AS COORDINATED BY

THE PRIME MINISTER'S OFFICE



REPORT OF THE CONTROLLER  
AND AUDITOR GENERAL OF THE  
UNITED REPUBLIC OF TANZANIA

MARCH, 2021





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## LIST OF ABBREVIATIONS

DIDMAC	District Disaster Management Committee
DMD	Disaster Management Department
DRR	Disaster Risk Reduction
PMO-DMD	Prime Minister's Office - Disaster Management Department
PO-RALG	President's Office - Regional Administration and Local Government
REDMAC	Regional Disaster Management Committee
TADMAC	Tanzania Disaster Management Council
TARURA	Tanzania Rural and Urban Roads Agency
TMA	Tanzania Meteorological Authority
VIDMAC	Village Disaster Management Committee
WADMAC	Ward Disaster Management Committee

## PREFACE



The Public Audit Act No. 11 of 2008, Section 28 confer powers to the Controller and Auditor General to carry out Performance Audit (Value-for-Money Audit) for the purposes of establishing 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 on public operations and programs.

I have the honour to submit to Her Excellency, the President of the United Republic of Tanzania, Hon. Samia Suluhu Hassan and through her to the Parliament, the Performance Audit Report on Floods Control Measures in Tanzania.

The report contains findings of the audit, conclusions, and recommendations that have focused mainly on the assessment of the adequacy of Floods Control Measures as coordinated by the Prime Minister's Office.

The Management of the Prime Minister's Office (PMO) had the opportunity to scrutinize the contents of the report and come-up with comments on it. I wish to acknowledge the audited entity, PMO, for the very useful and constructive discussions we had about the audit.

My Office intends to carry out a follow-up audit at an appropriate time regarding to action(s) taken by the PMO in relation to the recommendations of this report. In completion of the audit assignment, the Office subjected the report to the critical quality reviews of Prof. Robert Benjamin Kiunsi from Ardhi University, and Prof. Pius Zebhe Yanda from the University of Dar es Salaam who came up with useful inputs on improving the output of this report.

This report has been prepared by Mr. Jeje D. William - Team Leader, Ms. Janeth Rutagengwa - Team Member, and Mr. Odilo M. Mdimi - Team Member under the supervision and guidance of Ms. Esnath H. Nicodem - Chief External Auditor, Mr. George C. Haule - Assistant Auditor General and Mr. Jasper N. Mero - Deputy Auditor General.

I would like to thank my staff for their effort in the preparation of this report. My thanks should also be extended to the Prime Minister's Office for their fruitful interaction with my Office.

A handwritten signature in green ink, appearing to read 'Charles E. Kichere', with a long, sweeping horizontal stroke extending to the right.

Charles E. Kichere,  
**Controller and Auditor General**  
**Dodoma, United Republic of Tanzania**  
**March, 2021**

## EXECUTIVE SUMMARY

In recent years, Tanzania has experienced severe flooding events which resulted into loss of people's lives and properties as well as destruction of infrastructures, particularly in urban centers and cities. Flooding is estimated to be the costliest hazard at the national level, causing about 62% of losses from natural disasters from 1990 to 2014.<sup>1</sup>

The availability of infrastructure and effective measures to control the impact of natural disasters is very important for the welfare of the society or community at large. Society needs to have a reliable assurance on the availability of effective means to overcome them and prevent significant damage to the life of people and their properties when natural disasters come underway.<sup>2</sup>

Despite the availability of some measures to control impacts from floods, in recent years there have been a series of reported events due to floods. This raises questions on the effectiveness of coordination in the adopted flood control measures in the country. It is against this background that the National Audit Office developed an intention to conduct a performance audit in this area.

The main objective of the audit was to determine whether the Prime Minister's Office has effectively coordinated measures for flood control to minimize risks and impacts brought about by floods in the country. In particular, the audit assessed the execution, co-ordination, and monitoring of the available flood control measures. The audit covered a period of five financial years (July 2015/16 to June 2019/20).

The audit adopted Methodology for data collection included interviews, observations, and document reviews, in the visited Regions, Local Government Authorities and Sector Ministries.

### **Main Audit Findings**

#### ***Increased Number of Reported Cases of Deaths due to Floods***

The Audit revealed that for the year 2016 to 2020 there has been an increase in the number of reported deaths due to floods ranging between 17 in the year 2017 and

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<sup>1</sup> World Bank Group, Global Facility of Disaster Reduction and Recovery; August 2019

<sup>2</sup> Flood is the accumulation of water over land that is normally dry. Similarly, storm water is water that gets collected in the city or urban areas after heavy rains due to blocking or under capacity of storm water drains<sup>2</sup>. The changing intensity of rainfall caused by climate change contributes to storm water runoff that exceeds the capacity of the available drainage system and leads to flooding(White *et al.*, 2016).



122 deaths in 2020. On the other hand, it was found that the proportion of the number of reported deaths due to floods compared to the cases reported from all other disasters was high in the year 2017 (77%) and for the year 2020, (91%).

In addition, within the same period, we noted an increasing trend in the number of reported destructive events such as complete or partial house demolitions, in various households, ranging between 182 and 22,680 in the year 2016 and 2020 respectively, due to floods. However, there was a decline in the reported number of floods related destructive events to road infrastructures such as bridge destruction and partial wash away of road sections, ranging between 96 and 74 in the year 2018 and 2020 respectively<sup>3</sup>.

### ***Insufficient Supervision of Measures for Floods Control in Urban Planning Schemes***

Despite being considered in Urban Planning Schemes, this Audit noted weaknesses in the supervision during implementation of the prepared plans for measures to control flood impacts by the respective Planning Authorities. It was further noted that even for the well-thought-out planned areas, plot allocations took place before setting up of common utility services such as construction of storm water drainage systems.

Moreover, the Audit has revealed that allocation and development of plots in flood-prone areas were more observed in urban LGAs particularly, Mwanza CC, Tabora MC, Kinondoni MC, and Ilala MC.

It was further noted that the frequently reported floods in flood-prone areas in Kinondoni and Ilala Municipal Councils were attributed to weaknesses over development control<sup>4</sup>.

Additionally, it was noted that despite being considered in early stages of Urban Planning Schemes, recommendations derived from reconnaissance<sup>5</sup> survey reports were insufficiently implemented.

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<sup>3</sup> The observed differences might have been attributed to the differences in rainfall characteristics between these two periods being refereed to.

<sup>4</sup> According to the Urban Planning Act (2007), Development control in this context entails measures that aim at controlling carrying out of any building operation, engineering operation or mining operation over any land.

<sup>5</sup> Reconnaissance survey refers to an extensive study of the area. The main purpose is for taking survey in a particular area about its weather conditions and terrain.

### ***Inadequate Number of Roads with Road-Side Drainages***

Despite considering and providing measures for flood control during the planning phase of road network designs, the Audit noted that currently there are no guidelines<sup>6</sup> for disaster preparedness for road and bridge structures.

Likewise, it was further noted that although priority is given for the constructed roads to be provided with road side-drainages, this has been a challenge especially for roads in the urban areas. The Audit revealed out that in all visited LGAs there was less than 500 Kms of the road network that were provided with the side-drainages with the percentage ranging between 0.5 to 15.0 of the available total road network that ranges between 297 to 1,664 Km.

It was also noted that the observed weakness in the road-side drainage systems was mainly due to lack of long-term plans that aim for preparedness to mitigate the impacts that could be brought about by flood-related disasters.

### ***Inadequate implementation of Floods Control Measures Prepared in Urban Planning Schemes***

The Audit noted that despite being mentioned in the preparation of General Urban Planning Schemes, there is inadequate consideration of the opinions regarding provisions for public utilities' infrastructure such as Storm Water Drainage Systems, during the actual implementation of the prepared detailed Town Planning Schemes.

### ***Lack of an Integrated Communication System between Sector Ministries***

The Audit noted that currently, there is no guideline to provide for communication between the Prime Minister's Office, Sector Ministries and Local Government Authorities regarding the management of floods control measures. Lack of communication guidelines contributed much to the delays in the exchange of disaster early warning information. It was further noted that in other circumstances the issued early warning information and/or directives were received by responsible disaster personnel and/or end-user after the period of warning has expired.

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<sup>6</sup> In principle the Ministry of Works, Transport and Communication has the role to formulate guidelines in this part (refer Appendix 5 of this report "*Roles of Key Sector Ministries as Linked to Floods Control Measures*")

### ***Insufficient Mechanisms to Ensure Integration of Measures for Flood Control***

The Audit noted that there is no formal means from which PMO use to ensure the implementation of the available measures for flood control are taking place as per standard requirements of each sector.

It was further noted that despite sector agreements that are made through the Tanzania Disaster Management Committee (TADMAC), in practice, the procedures used to ensure actual implementation of the issued recommendations from this Committee remain uncertain.

Generally, it was noted that the existing format for the production of government quarterly reports for each year prioritizes other operational activities while disregarding activities for disaster management, which, if prioritized, would encourage the inclusion of disaster management activities in respective sector plans.

### **General Audit Conclusion**

Despite being available, measures for alleviating floods risk are not adequately implemented and coordinated. Generally, this Audit noted that the Prime Minister's Office (PMO) has not sufficiently guaranteed that the government institutions have measures in place to mitigate flood-related impacts in their jurisdictional areas. Moreover, the PMO has got no mechanism in place to ensure effectiveness in the implementation of such measures at all levels of government operations.

The Audit Office is of the view that the much of the observed inefficiencies in the operation of floods control activities are attributed to the lack of a guiding National Disaster and Risk Management Framework along with the established strategy for actual implementation. Generally, the Audit observed the following gaps in floods control system under the PMO:

1. Low awareness of Measures for mitigating the effects arising from floods due to inadequate capacity of the PMO to coordinate and ensure effective institutional arrangement for mainstreaming disaster management issues into development plans and programs at all levels of the government operations;
2. Insufficient mechanism for ensuring there is effectiveness of the available floods control measures contributed by inadequate use and involvement of the nominated disaster focal personnel in respective sector ministries,

regional, and district levels to coordinate flooding disaster issues before their occurrence;

3. Lack of coordination during the implementation of measures targeting to control flooding impacts caused by lack of adherence to the directives as given in the National Operational Guidelines for Disaster Management; and
4. Lack of monitoring for activities focused to mitigate impacts from floods caused by lack of the National Disaster Risk Reduction Management Framework that would help to raise understanding and awareness on the goals to mitigate impacts from the existing floods disaster risks.

### **Recommendations**

*To ensure that the Government Entities Responsible for the Control of Floods have Measures in Place. The Prime Minister's Office should in addition:*

1. Promote awareness on measures to mitigate effects from floods in sectors and other levels of the government operations; and
2. Invest in efforts to coordinate and ensure mainstreaming of disaster management issues in respective sectors and other levels of the government operations.

*To ensure there is effectiveness in the Coordination for the implementation of floods control measures in respective levels of the government operations the Prime Minister's Office should:*

1. Develop a mechanism to ensure there is effectiveness in the coordination of the available measures for flood control across sectors and other levels of the government operations;
2. Develop mechanism(s) that will ensure effective use of the available disaster focal personnel to coordinate measures for floods control; and
3. Ensure there is effective coordination on the efforts to realize potential benefits in Disaster Risk Reduction investment through the construction of multipurpose strategic dams.

*To ensure Effective Coordination in the Implementation of Measures to Control Impacts from Floods the Prime Minister's Office should:*

1. Develop a mechanism that will ensure effective coordination in the implementation of measures to control impacts from floods.

*To improve on the Monitoring and Evaluation of the implementation of Floods Control Measures the Prime Minister's Office should:*

1. Roll-out and make use of the National Disaster Risk Management Framework along with the strategy that will provide for the basis to monitor the effectiveness of the available measures; and
2. Develop a mechanism that will ensure effective coordination in the monitoring of the activities focused on mitigating impacts from floods.



## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of the Audit

Recently Tanzania has experienced severe flooding events which resulted into loss of people's lives and properties, as well as destruction of infrastructures particularly in urban areas and cities. Flooding is estimated to be the costliest hazard at the national level, causing about 62% of losses from natural disasters from 1990 to 2014.<sup>7</sup>

Floods<sup>8</sup> can result from both the natural and human factors. Natural factors include high rainfall intensity and high sea tide which reduce the speed of inland water flowing into the ocean thus raising the water levels along the coastal areas. Developmental factors include inadequate storm-water drainage channels in human settlements, blockage of natural and constructed drainage channels, increase in paved areas especially in urban areas, poor development control which leads to house constructions in flood-prone areas and finally climate change.

The changing intensity of rainfall caused by climate change can contribute to increase of storm-water runoff that can exceed the capacity of the available drainage system and thus leading to flooding(White *et al.*, 2016).

The availability of infrastructure and effective measures for disaster risk reduction is very important to the welfare of the society or community at large. Society needs to have a reliable assurance on the availability of effective means to overcome natural disasters and prevent significant damage to people's lives and their properties when such disasters come underway.

Tanzania is among countries that are exposed to several hazards including floods, drought, cyclones, volcanic eruptions, and earthquakes which can disrupt the functioning of the community socially and economically (URT, 2012). The Tanzania Disaster Risk Profile on Flood and Drought (2019) indicated that the most affected sectors in terms of direct economic losses are agricultural and service provision, followed by the transportation sector. The profile further indicated that the annual average financial loss due to floods which was just under 28 million USD in the year 2019 is projected to be over 40 million USD in the future.<sup>9</sup>

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<sup>7</sup> World Bank Group, Global Facility of Disaster Reduction and Recovery; August 2019

<sup>8</sup> Flood is the overflow of water that submerges land that is usually dry. Storm water is rainwater that does not percolate into the soil that gets collected in storm drains and ditches.

<sup>9</sup> Disaster Risk Profile on Flood and Drought in Tanzania (2019)

According to the data generated by Prevention Website<sup>10</sup> which is a knowledge platform for Disaster Risk Reduction, between 1990 and 2014 floods accounted for 62 per cent of all reported losses resulting from disasters in Tanzania. The profile further indicates that flood was ranked high in disaster-based mortality rates carrying 95 per cent of these deaths.

To counter the effects of frequent floods and other natural disasters, there are commonly inherited infrastructures. These include natural water streams, seasonal rivers, and other drainage infrastructures installed within settlements and in urban and sub-urban areas.

Apart from relying on these infrastructures, the Government of Tanzania in recognition of the impact of extreme floods and other disasters formed a Disaster Management Department (DMD) within the Prime Minister's Office vested with a responsibility of providing guidance on dealing with natural and manmade disasters before, during and after the disaster event.

## **1.2 The Motivation for the Audit**

The audit was motivated by the following factors:

### ***(i) Loss of Lives and Properties***

In January 2020, more than 14 people reported dead in Lindi Region due to floods caused by rainfall. The floods were reported to take place in more than 10 villages including Kilanjelanje, Nanjilinji A, Nanjilinji B, Ruatwe, Njinjo and Nakiu in Kilwa District. In all 10 villages, more than 15,096 people equivalent to a total of 3,774 households were victims of this tragedy.<sup>11</sup>

Likewise, on 28<sup>th</sup> of October 2019 more than 10 people were reported dead in Tanga region due to floods caused by rainfalls. Some of these deaths were caused by destroyed road infrastructures<sup>12</sup> leading to road crashes.

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<sup>10</sup> A collaborative knowledge sharing platform on disaster risk reduction (DRR), managed by the UN Office for Disaster Risk Reduction (UNDRR)

<sup>11</sup> <https://www.dw.com/sw/mafuriko-lindi-idadi-ya-vifo-yaongezeka-hadi-19/a-52217269> Accessed on 27<sup>th</sup> April 2020

<sup>12</sup> Destroyed road: Handeni-Korogwe; Area: Sindeni



Furthermore, ParsToday<sup>13</sup> on February 06, 2020 reported that 40 deaths resulted due to floods caused by heavy rains in four regions of Lindi, Mwanza, Morogoro, and Manyara. Whereby 21 people died in Lindi Region, 7 in Mvomero and Malinyi Districts in Morogoro Region, 9 in Mwanza Region and 3 children died in Babati District in Manyara Region. According to the same report, the floods damaged at least 1,750 houses and left more than 15,000 people without homes.

### ***(ii) Destroyed Infrastructures Caused by Seasonal Rainfalls***

Dar es Salaam Region has experienced a series of flood events from the year 2009 through 2018 which resulted in the displacement of more than 1,200 households, and destruction of roads, and bridges. It is estimated that at least 39% of the population in Dar es Salaam has been impacted either directly or indirectly by floods.<sup>14</sup>

Likewise, it was reported that the government spends more to rehabilitate transport infrastructure and on food relief due to impacts from floods. It was further stated that there was an increase of 46% on imported food and foodstuffs to USD 84 Million for the financial year 1997/98. The report asserts further that the increase in food imports was largely contributed by fear of food shortages due to floods in major food-growing regions.<sup>15</sup>

### ***(iii) Loss of Crops and Damage to Farms***

Uncontrolled floods in Tanzania are reported<sup>16</sup> to have caused severe damage to crops and farms in areas that were hit by seasonal and unexpected rainfall. For instance, during April and May 2018 severe rainfalls destroyed farms and swept away more than 700 acres of tomatoes and maize crops in the Kilimanjaro Region.

Furthermore, a report<sup>17</sup> by FAO published in 2016 on “Rapid Agriculture Needs Assessment” indicated that flood was the most devastating disaster. The report further indicated that heavy rains coupled with incidences of storms led to various effects including; water-lodging of large agricultural and pasture areas, spread of

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<sup>13</sup> <https://parstoday.com/en>

<sup>14</sup> <https://www.worldbank.org/en/news/feature/2019/10/01/wading-out-the-storm---flood-risk-and-poverty-in-dar-es-salaam#> Accessed on 27<sup>th</sup> April 2020

<sup>15</sup> [https://www.bot.go.tz/publications/EconomicAndOperationsAnnualReports/June\\_2001/EOR\\_1997-98\(I\).htm](https://www.bot.go.tz/publications/EconomicAndOperationsAnnualReports/June_2001/EOR_1997-98(I).htm)

<sup>16</sup> [http://www.xinhuanet.com/english/2018-05/08/c\\_137162276.htm](http://www.xinhuanet.com/english/2018-05/08/c_137162276.htm)

<sup>17</sup> Rapid Agriculture Needs Assessment in response to the El Nino effects in the United Republic of Tanzania

animal diseases, accumulation of debris on agricultural land (mainly silt, and stones), and the collapse of animal shelters and storage facilities.

#### ***(iv) Impacts of Floods on the Economy***

According to the Ministry of Finance and Planning (2020), the preliminary government assessment on macroeconomics impacts of various factors including floods due to heavy rains shows that the real GDP growth rate for the year 2020 will decline from the initial projection of 6.9 to 5.5 percent.<sup>18</sup>

#### ***(v) Escalation of Poverty and Healthcare Cost***

The same World Bank Report stated further that in the incidence of flooding the poorer people were the ones who lost the most in relation to their income.

Floods also cause health risks to families. Having floodwater in the house increases the risk of cholera and skin infections. In addition to the increased healthcare costs, being exposed to floods is associated with enormous stress and discomfort, outcomes which are difficult to capture during the impact assessment of disasters.

Additionally, disasters are not isolated events; recurring floods in Dar es Salaam place some people in a constant state of recovery, with a cumulative negative effect on poverty and prospects for the future. The report further described that poverty is associated with low capacity to recover from effects due to floods<sup>19</sup>

#### ***(vi) Supporting the Achievement of Sustainable Development Goals***

Water-related Disaster Management (SDG 11.5) has a target to significantly reduce the number of deaths and people affected by floods and substantially decrease the direct economic losses relative to Global Gross Domestic Product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations by 2030.

The Report of December 2011 by UN Global Impacts described the importance of joint efforts by the public authorities and other interested parties to plan for and mitigate flooding, support infrastructure projects that improve the capacity to store

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<sup>18</sup> Ministry of Finance and Planning (2020); The Estimates of Government Revenue and Expenditure for 2020/21: Accessed at <https://mof.go.tz/docs/THE%20UNITED%20REPUBLIC%20OF%20TANZANIA-copy%206.11.2020.pdf>

<sup>19</sup> <https://www.worldbank.org/en/news/opinion/2019/10/01/draining-dars-economy---the-impact-of-floods-on-tanzanias-commercial-capital> cited on 9<sup>th</sup> May, 2020

and move water, promote flood insurance and other schemes to protect communities from damage, protect natural areas that serve as buffers/filters and help with flood reduction, and improve the capacity of water resources managers and government entities to issue warnings and respond quickly.

The Report further narrated that, climate change and climate variation may impact the frequency and severity of storms and floods, which are already difficult to predict. Storms and subsequent flooding can cause sewer overflow and erosion thus leading to decrease in the water quality and causing damage to communities and habitats. Additionally, improved management of storm water and floods has implications for public health, food security, the economy, and the environment.

Based on the underlying challenges in the management of measures to address impacts resulting from floods in the country, the National Audit Office decided to carry-out performance audit on the management of floods control measures. The audit aimed at establishing performance challenges and come-up with suggestions or possible recommendations that would ensure effective and efficient use of the available public resources in the management of floods control measures in the country.

### **1.3 Design of the Audit**

#### **1.3.1 Audit Objective**

The main objective of the audit was to determine whether or not the Prime Minister's Office has effectively discharged a coordination function that will ensure measures for floods control are appropriately managed by relevant authorities/institutions in order to minimize risks and impacts brought about by floods in the country.

The specific objectives were to determine whether:

- (a) The Prime Minister's Office (PMO) has ensured that government institutions responsible for flood management have put in place measures for managing floods;
- (b) PMO has ensured that measures for managing floods are sufficiently executed at all levels of the government operations;
- (c) There is effective coordination among different actors in the implementation of measures for managing floods; and

- (d) PMO monitored, evaluated and reported on the effectiveness of measures to manage floods.

In order to clearly respond to the above audit objectives, more specific audit questions and sub-questions have been prepared (see **Appendix 1** of this report for more details).

### **1.3.2 Assessment Criteria**

The assessment criteria were drawn from different sources such as Policies, Legislations (Acts and Regulations), Guidelines, Standards, Good Practices and Strategic Plans.

#### **(a) Government Preparedness on Flood Control and Mitigation Measures**

Section 1.2 of the National Disaster Management Policy (2004) provides for the requirements for all stakeholders to ensure that activities for disaster prevention and mitigation are integrated in respective sector plans.

Similarly, Section 5(2b) of the Disaster Management Act (2015) proclaim that Disaster Management Department was established as a central planning, coordination and monitoring institution for prevention, mitigation, preparedness, response and recovery phases when considering risks for the disaster. In addition, Disaster Risk Assessment has been accredited as one of the key strategies aiming at disaster risk reduction.<sup>20</sup>

Also, Clause 1217 of the Standard Specification for Road Works (2000) provides that protection of works should be a priority and a requirement to be met before the construction of works and provision of drainage as a significant factor for consideration in all stages of road development projects.

Equally, Section 10 of the Environmental Code of Practice for Road Works (2009) provides that constructed roads should be located in a manner that does not obstruct the natural drainage system; and that to the extent possible, roads should not be located on flood-plains.

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<sup>20</sup> Development Program (UNDP, 2010)

## **(b) Enforcement and Execution of Flood Control Measures**

Section 1.1 of the National Environmental Management Policy (1997) provides for the importance of involving other sectors in the management of environment and natural resources.

With regard to funding, Section 2.1.6(b) of the National Disaster Management Policy (2004) requires the government to set appropriate systems and adequate resources for handling disasters and disaster emergencies. The Policy also emphasizes having enough resources to prevent, prepare, mitigate and respond to disasters.

Furthermore, the Water Resources Regulations (2018) requires the Department of Water Resources Management to promote the construction of Dams, Levees<sup>21</sup> and Reservoirs as floods control structures.

## **(c) Coordination in the Implementation of Flood Control Activities**

The National Operational Guidelines for Disaster Management (2<sup>nd</sup> Edition-2014) emphasizes that communication is a key guiding principle for effective and efficient disaster management. Likewise, Section 5(2c) of the National Disaster Management Act (2015) provides for the importance of coordination among inter-ministerial, multi-sector entities, and Technical Committees responsible for disaster management at all levels.

Furthermore, Section 2.3(i) of the National Operational Guidelines for Disaster Management insists that the establishment and implementation of effective guiding principles are essential for effective planning, co-ordination, collaboration, cooperation, and communication among the stakeholders in disaster management.

In addition, United Nations Development Program (UNDP) acknowledged Disaster Risk Management as being a multi-sector and multi-stakeholders concern that engages relevant Ministries, Departments, Agencies, and Local Government Authorities.<sup>22</sup>

Moreover, Section 5(2e) of the Disaster Management Act (2015) requires the Prime Minister's Office - Disaster Management Department (PMO-DMD) to establish an early

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<sup>21</sup>Levee is an elongated naturally occurring ridge or artificially constructed fill or wall that regulates water levels. It is usually earthen and often parallel to the course of a river in its floodplain or along low-lying coastlines

<sup>22</sup> UNDP, Tanzania Country Office – Disaster Management Project (2011)

warning system covering all stakeholders and maintain a close link with different institutions which provide early warning services.

#### **(d) Monitoring and Evaluation of the Effectiveness of Floods Control Measures**

Section 5(2b) of the National Disaster Management Act No. 7 (2015) stipulates that the PMO-DMD should act as the central monitoring unit for the prevention, mitigation, preparedness, response, and post-disaster recovery taking into account all potential disaster risks.

The National Operational Guidelines for Disaster Management instructs the PMO-DMD to monitor and ensure that Regional Disaster Management Committee (REDMAC) and the District Disaster Management Committee (DIDMAC) include Disaster Risk Reduction issues in their respective Early Warning Systems, Resources Mobilization, and Evacuation Plans.

Likewise, Section 3.4 of the National Disaster Management Policy (2004) asserts that at the national level, the overall responsibility for monitoring and evaluation of the disaster management and control measures lies within the Disaster Management Department. The Policy further asserts that monitoring and evaluation at Regional and Local Authorities will be the responsibility at these levels based on their capacities.

#### **1.3.3 Scope of the Audit**

The main audited entity was the Prime Minister's Office. The Office is 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.

The audit focused mainly on assessing the available government measures in managing floods-related risks and impacts as well as effectiveness of actions taken in the implementation of those measures. Particularly the audit focused on assessing adequacy in the execution of the flood control measures, effectiveness in coordination during implementation, as well as monitoring and evaluation.

In addition to the PMO-DMD, the audit covered other government institutions concerned with the management of flood-related disasters. These institutions include President's Office - Regional Administration and Local Government (PO-RALG), Ministry of Water, Ministry of Agriculture, Ministry of Lands, Housing and

Human Settlements Development (MLHSD), Ministry of Works and Transport, Tanzania Meteorological Authority (TMA), and the National Irrigation Commission.

The audit covered a period of five financial years from July 2015/16 to June 2019/20. This period was covered to establish performance trend in the management of floods control measures countrywide.

#### **1.3.4 Sampling, Data Collection and Analysis Methods**

##### **(i) Sampling Method**

Purposive sampling method was used to select regions and clustered them into six geographical zones namely Northern, Southern, Central, Western, Eastern, and Lake Zone. Selection of regions was based on meeting a combination of criteria including geographical location, and the presence of features that may influence occurrence of floods in identified locations. These features include aspects related to Urban Planning, Water Management, and Infrastructure Development.

In addition, selection of each zone was based on the reported frequency of occurrence of floods within the past five years.<sup>23</sup> The selected regions were Manyara, Tabora, Dar es Salaam, Tanga, Morogoro, Mwanza, and Lindi. See **Appendix 2** for further details.

##### **(ii) Methods of Data Collection**

###### **Documents reviews**

Various documents from PMO between 2015/16 and 2019/20 financial years were reviewed to assess the overall performance of the PMO in the context of flood management in Tanzania. The reviewed documents include the reports or plans categorized into four main groups' namely preparatory, execution, coordination, and monitoring and evaluation measures.

The reviews of documents were done to clarify the information collected from interviews and observations during the site visits. **Appendix 3** shows a list of reviewed documents and reasons for their review.

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<sup>23</sup> PMO-DMD: Situation Reports (SITREP) on Floods (2018-2020)

## **Interviews**

Interviews were conducted with responsible officials from PMO and other officials in respective Departments and Sections from the Ministry of Water, Ministry of Lands, Housing and Human Settlements Development, Ministry of Works and Transport, and TMA to gain insights and clarifications on the documentary information regarding the management of flood control measures in the country. Interviews were also held with Officials from the visited Regional Secretariats and LGAs.

The interviewed officials were from both management and operational levels to obtain relevant information. **Appendix 4** shows the list of interviewed officials and the reasons for interviewing them.

## **Field visits**

The Audit Team conducted field visits to the selected 9 LGAs to observe, take photographic records and field notes to verify the facts collected from interviews and documents on flood management in the country. Specifically, the team visited and observed residential settlements located in flood-prone areas, structural infrastructure for flood control especially in locations where bridges and storm water drainage systems are constructed, along roads, rivers and other areas.

### **(iii) Methods of Data Analysis**

Collected data were analyzed using both qualitative and quantitative methods. Quantitative data was compiled, organized and summarized using excel spreadsheet and described in frequency tables and simple bar-charts.

Likewise, content analysis techniques were used to analyze qualitative data collected through interviews and document reviews. Collected qualitative information was categorized based on the emerged themes under each audit question and presented as summarized texts.

## **1.4 Data Validation Process**

The Prime Minister's Office, the audited entity, was given an opportunity to go through the draft report and comment on the information presented therein. The Prime Minister's Office confirmed the accuracy of the figures used and information presented in the report.



## **1.5 Standards Used for the Audit**

The audit was conducted in accordance with the International Standards of Supreme Audit Institutions (ISSAIs) on Performance Auditing issued by the International Organization of Supreme Audit Institutions (INTOSAI). These standards require that the audit is planned and performed in order to obtain sufficient and appropriate evidence to provide a reasonable basis for findings and conclusions based on audit objectives. Generally, the evidences obtained provided a reasonable basis for the findings and conclusions reached on the objectives that guided the audit.

## **1.6 Structure of the audit report**

The subsequent chapters of this report cover the following:

**Chapter Two** presents the system, process, and relationship among the key actors involved in the management of floods control measures in the country.

**Chapter Three** presents the findings based on the four specific audit objectives.

**Chapter Four** provides audit conclusions.

**Chapter Five** outlines recommendations, which can be implemented towards improving the observed weaknesses in the management of floods control in the country.

## **CHAPTER TWO**

### **FLOOD CONTROL MANAGEMENT SYSTEMS IN TANZANIA**

#### **2.1 Introduction**

This chapter describes non-structural and structural flood control management systems in Tanzania. The non-structural/institutional system includes policy, legal and institutional framework for management of floods in the country. The institutional arrangement among other things specifies roles and responsibilities of key actors involved.

The structural system control measures include physical structures used in controlling floods such as storm water drainage systems, water retention dams, reservoirs, levees, and natural drainage systems buffer zones, land-use zoning, flood early warning systems and their respective planning, design and execution guidelines.

#### **2.2 Policy and Legal Framework**

The following are the Policies, Laws and Regulations, which govern flood control measures in Tanzania.

##### **2.2.1 Disaster Management Policy**

The rationale of the Disaster Management Policy (2004) was to ensure a safe livelihood with minimal disaster interruptions to social and economic development programmes. Among the policy objectives are:

- a) To develop a higher level of preparedness, response, and mitigation capacity for all types of disasters;
- b) Promote public knowledge and awareness of disaster and enhance the involvement of the community in disaster management;
- c) Establish and maintain an effective institutional arrangement for the coordination, cooperation, collaboration, and financial arrangements;
- d) Mainstream disaster management issues into development plans and other sector policies and programs at all levels; and
- e) Establish and strengthen information systems appropriate for specific hazards at all levels.

## **2.2.2 Legislations**

### **Disaster Management Act No. 7 of 2015**

The Disaster Management Act No. 7 of 2015 established the Tanzania Disaster Management Agency<sup>24</sup> which is a focal point for coordination of disaster risk reduction and management. The Act provides for responsibilities of the Agency which include:

- a) Formulation of policies and plans on all activities related to disaster management;
- b) Acting as the central planning, coordinating and monitoring institution for the prevention, mitigation, preparedness, response, and post-disaster recovery by taking into account all potential disaster risks;
- c) Coordination and monitoring of inter-ministerial, multi-sector entities and technical committees responsible for disaster management at all levels;
- d) Establishment of an Early Warning System covering all sectors and maintaining close links with different institutions that provide early warning services; and
- e) Resources mobilization for disaster management activities.

### **Land Use Planning Act (2007)**

The Land Use Planning Act of 2007 provides for procedures for the preparation, administration and enforcement of land use plans and related matters. Among the objectives of the Act are to:

- a) Facilitate efficient and orderly management of land use;
- b) Promote sustainable land use practices; and
- c) Provide for inter-sector coordination at all levels.

Section 28(1) (c) of the Land Use Planning Act requires the Planning Authorities to include matters related to preservation of the quality and flow of water in dams, lake or river. The Section also provides for the Planning Authorities to consider creating buffer zones for the protection of water catchment areas, rivers, dams, and river banks.

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<sup>24</sup> Despite the requirement of the Act to establish Disaster Management Agency, according to notice of assignment of ministerial function of 7<sup>th</sup> April 2018 by the President of the United Republic of Tanzania mandated the Prime Minister's Office to coordinate disaster management activities.

## **The Environmental Management Act (2004)**

Section 129 (1) and (2) of the Environmental Management Act<sup>25</sup> No. 20 of 2004 provide for Local Government Authorities (LGAs) within their jurisdictions to build or prepare storm water drains. The Act further provides for LGAs to ensure that the prepared storm water drains remain clean for the purposes for which they have been made.

Also, Section 229 (1) (d) of the Environmental Management Act No. 20 of 2004 provides for the Minister responsible for environmental issues to prepare guidelines for possible environmental emergencies like climate change which may result in disasters such as floods.

## **Water Resources Management (Control and Management of Storm Water) Regulations (2018)**

The Water Resources Management (Control and Management of Storm Water) Regulations (2018) provides for the control and management of storm water within the Council/LGA areas to minimize flood risks, damage, and water pollution. Specifically, the Regulations aim to:

- a) Prohibit and restrict human activities which may lead to blockage of watercourses<sup>26</sup> and flooding;
- b) Promote the construction of flood control structures in LGA areas;
- c) Demolish any structure or works with a higher risk of causing floods; and
- d) Identify, map, demarcate, and protect flood-prone areas.

### **2.2.3 National Guidelines, Plans and Strategies for Disaster Preparedness and Climate Change Adaptation**

#### **National Operational Guidelines for Disaster Management**

The main goal of the National Operational Guideline for Disaster Management is to reduce disaster impacts due to natural and man-made hazards including climate changes and ensure safer, resilient, and sustainable society through effective and efficient coordination mechanisms in preparing, preventing, mitigating, responding and managing emergencies and disasters.

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<sup>25</sup> The enactment of Environmental Management Act No. 20 of 2004 (EMA, 2004) by Parliament in October 2004, repealed the National Environmental Management Act No.19 of 1983 and re-established NEMC.

<sup>26</sup> Artificially constructed water channel

## **Tanzania Emergency Preparedness and Response Plan**

The Tanzania Emergency Preparedness and Response Plan (TEPRP) is a multi-hazard functional plan that calls for appropriate actions to be taken in response to an emergency or major disaster. The plan follows from the Disaster Relief Coordination Act, No. 9 of 1990 and the National Operational Guidelines for Disaster Management (NOG).

The plan also describes the disastrous situations and planning assumptions, the concept of operations, response and recovery actions, and the organizational and specific assignments of responsibilities to the Departments and Government Agencies tasked with local response efforts.

## **National Adaptation Plan of Action (NAPA)**

The National Adaptation Plan of Action (NAPA) was initiated and prepared due to impacts of climate change that affect sectors such as agriculture, water, health, and energy. Among the main objectives of NAPA are to identify and develop immediate and urgent activities to adapt to climate change and climate variability, and to increase public awareness of the impacts of climate change and adaptation activities in communities, civil society and government.<sup>27</sup>

## **National Climate Change Strategy**

The National Climate Change Strategy was developed in response to the growing concern of the negative impacts of climate change and climate variability on the social, economic and physical environment. The rationale of the National Climate Change Strategy is to provide an enabling mechanism that would allow for the effective address of the climate change impacts and provision of support for the national adaptation as well as mitigation initiatives.

## **Tanzania Disaster Communication Strategy (TDCS)**

The Tanzania Disaster Communication Strategy (TDCS) was formulated specifically to support the Tanzania Emergency and Preparedness and Response Plan (TEPRP). The Strategy outlines the organization, operation, responsibilities, and procedures required to accomplish the requirements of emergency communications.

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<sup>27</sup> National Adaptation Plan of Action (2007)

## **2.3 Roles and Responsibilities of Key Actors**

### **(a) Prime Minister's Office**

The Prime Minister's Office is a focal point for all matters relating to the prevention, mitigation, preparedness, response and recovery of all types of disasters.<sup>28</sup> The Department has the responsibility of identifying and anticipating hazards and to the greatest extent possible prepares plans to effectively respond to disasters so as to save lives and properties.<sup>29</sup> In non-emergency situations, the Department has the following functions<sup>30</sup>:

- a) To prepare national emergency plans and other similar plans;
- b) To monitor, evaluate and update National Disaster Plans and Procedures;
- c) Collect, analyze and disseminate information relating to disaster prevention, preparedness, mitigation, response and recovery;
- d) Conduct mapping of hazards, vulnerability analysis and risk assessment in the country;
- e) To ensure establishment of Regional, District, Ward and Village Disaster Management Committees; and
- f) To mobilize financial and material resources for the purpose of disaster management.

### ***Operation and Coordination Section***

The Operation and Coordination Section has the role to prepare, coordinate and implement disaster preparedness and response plans for and monitor their implementation. In addition, the Section coordinates MDAs, and other stakeholders on disaster preparedness and response operations, and developing strategies for resource mobilization.

### ***Disaster Research Section***

The Disaster Research Section has the roles to carry out research in areas that are prone to disasters, develop and implement strategies for mitigating disasters in prone areas, carry out damage and needs assessments and advise accordingly, collect and maintain data related to disasters for forecasting and early warnings and provide feedback to relevant authorities, provide mapping on hazards and

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<sup>28</sup> The National Operational Guidelines for Disaster Management Department (2<sup>nd</sup> Edition - 2014)

<sup>29</sup> Tanzania Emergency Preparedness and Response Plan (TEPRP, 2012)

<sup>30</sup> The National Operational Guidelines for Disaster Management Department (2<sup>nd</sup> Edition - 2014)

vulnerabilities for risk management and provide feedback to relevant authorities, and plan and conduct public awareness activities on disasters.

### ***The Emergency Operation and Communication Centre (EOCC)***

The Emergency Operation and Communication Centre is a multi-institutional and multi-sectoral coordination facility established to coordinate national and international efforts for rapid efficient and effective response to any disaster or threat. The Centre is established under Disaster Management Act No. 7 of 2015. The Centre is the place to receive, search, analyze and decide what specific information and directives should go to the public as well as ensuring coordination of an emergency operation when a disaster event occurs. The Centre serves as the master coordination and control point for all counter disasters.

### **Tanzania Disaster Management Council (TADMAC)**

The Tanzania Disaster Management Council (TADMAC)<sup>31</sup> was established under the Disaster Management Act No. 7 of 2015. The Act provides for responsibilities of the Council to include; ensuring disaster risk reduction interventions are integrated into relevant governmental institutions, development policies, strategies and programs at National, Regional and Local levels, and provision of support for the mobilization of resources for effective disaster risk reduction and management. Generally, the TADMAC is responsible for overseeing and coordinating activities of the Disaster Management Department.

### **National Environment Management Council (NEMC)**

The National Environment Management Council was established with a broad mandate in response to oversee environmental management issues in the country. The Environmental Management Act (2004) gives NEMC mandates to undertake enforcement, compliance, review, and monitoring of impacts assessments, research, facilitate public awareness and collect and disseminate environmental information.

### **(b) Sector Ministries**

Sector Ministries form part of the members in both the TADMAC and Multi-sectorial National Disaster Management Platform. From each ministry, a designated focal

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<sup>31</sup> Members of the Council include all Permanent Secretaries (PS) from the Ministries and the Director-General of Tanzania Meteorological Agency. Its members include PS from PMO-DMD (Chairman), Defence and National

point is responsible for the implementation of activities that are primarily the responsibility of the Disaster Management Department (DMD). Such activities include planning, monitoring, and coordination of disaster management-related issues.

**(i) Ministry of Lands, Housing and Human Settlements Development**

The mandate of the Ministry of Lands to administer land and human settlements is derived from the Land Act No. 4 of 1999. The Ministry provides advice to the Government and the general public on matters pertaining to human settlements development. Among other functions, the Ministry of Lands is responsible for preparation of land use plans, and supervision of rural and urban planning.

***National Land Use Planning Commission***

The National Land Use Planning Commission was established by the Land Use Planning Act of 2007. The Commission consists of members from different sectors including land, agriculture, environment, and water resources. Among the key roles of the Commission are:

- a) To provide assistance to all land use planning authorities in the preparation of land use plans, monitor their implementation, and from time to time evaluate the prepared land use plans;
- b) To design and disseminate programs that would effectively protect and enhance the quality of land and better land-use planning; and
- c) In consultation with any sector ministries, examines existing laws and advises the Government on legislative and other measures for the land use planning and recommend their implementation.

**(ii) Ministry of Water**

Management of floods in the water sector has been described as one of the objectives in the National Water Policy (2002). This objective aims to have plans to mitigate impacts resulting from floods and it includes establishment of flood monitoring stations, early warning systems, strengthening the existing hydrological stations, and identifying and mapping flood-prone areas susceptible to landslides and mudflows.<sup>32</sup>

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<sup>32</sup> National Water Policy of July 2002 – *Internet version*



### **(iii) Ministry of Works, Transport and Communications**

The roles of the Ministry of Works, Transport and Communication in disaster management and control include; formulation of policies, plans and strategies that would ensure proper management of the construction sector; setting standards and monitoring of quality compliance in construction, rehabilitation, and maintenance of roads and bridges; and monitoring, supervision and coordination of various activities of agencies under the Ministry of Works.

#### ***Tanzania Meteorological Authority***

The Tanzania Meteorological Authority (TMA)<sup>33</sup> was established under the Tanzania Meteorological Authority Act No. 2 of 2019 to make better provisions for the management, control, provision, coordination, and regulation of meteorological services, and to provide for related matters.

In addition, the Act provides for among other functions of TMA to include the issuance of severe weather-related warnings, and observe, collect, process, archive and disseminate meteorological data and related information.

#### ***Tanzania National Roads Agency (TANROADS)***

The Tanzania National Roads Agency (TANROADS) is the executive agency under the Ministry of Works, Transport and Communications. The Agency was established under Section 3(1) of the Executive Agencies Act (Cap 245). The Agency is responsible for the maintenance and development of the trunk and regional road network in Tanzania Mainland.

### **(iv) Ministry of Agriculture**

The Ministry of Agriculture through the Agricultural Land Use Planning and Management Division has a role to advice on planning and management of agricultural land use as well as on soil and water conservations. Moreover, the Ministry, in collaboration with the private sector, Local Government Authorities and other service providers has a role to provide services in irrigation, land use, agricultural inputs, and information relating to disasters and their management.

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<sup>33</sup> TMA as an Agency was established by the Executive Agencies Act No. 30 of 1977

**(v) President's Office - Regional Administration and Local Government (PO-RALG)**

The President's Office - Regional Administration and Local Government (PO-RALG) through the Urban Development Planning and Land Management Section has a role to coordinate land use planning in LGAs, facilitate and coordinate the preparation and implementation of General Plan Schemes, and support the LGAs in establishment and implementation of Disaster Management and Preparedness Plans.

***Tanzania Rural and Urban Roads Agency (TARURA)***

The Tanzania Rural and Urban Roads Agency (TARURA) launched in 2017 following announcement in the National Gazette with GN 211 of 12<sup>th</sup> May 2017.<sup>34</sup> The main functions of this agency include:

- a) Developing and maintaining rural and urban roads networks;
- b) Improving road safety and managing environmental impact in the road networks; and
- c) Demarcating and protecting road reserves.

In addition, the Agency has a role to advise the Ministry responsible for Regional Administration and Local Government on matters relating to rural and urban roads.<sup>35</sup>

**Regional Secretariats**

Regional Secretariats (RS) under the supervision of PO-RALG have a responsibility to:

- a) Coordinate land use planning; and
- b) Facilitate and coordinate the preparation of Disaster Management Plans through the established Disaster Management Committees at District, Ward and Village levels.

In addition, it is the responsibility of RSs to ensure that resources are mobilized for disaster management, and plans prepared to prevent and mitigate disaster impacts through various strategies including training and simulation exercises within the regions.

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<sup>34</sup> <https://www.tarura.go.tz/historia> Accessed on 27th October 2020; 2100hrs

<sup>35</sup> <https://www.tarura.go.tz/mission-and-vision> Accessed on 27th October; 2100hrs

## **Disaster Management Committees**

The Disaster Management Committees at Regional, District, Ward, and Village levels were established under the Disaster Management Act No. 7 of 2015 and they form a functional linkage between PMO, Regions and LGAs. These Committees are the:

- Regional Disaster Management Committee (REDMAC);
- District Disaster Management Committee (DIDMAC);
- Ward Disaster Management Committee (WADMAC); and
- Village Disaster Management Committee (VIDMAC).

The REDMAC and DIDMAC in their respective regional and district levels take on the following key responsibilities:

- a) Facilitating the implementation of disaster management programs prepared by the DMD for ensuring the highest level of preparedness;
- b) Ensuring that disaster management including Disaster Risk Reduction Strategies are integrated in their respective regional and district development plans;
- c) Preparing plans for the prevention and mitigation of any disaster in the Regions and Districts respectively;
- d) Collecting, analyzing and disseminating the disaster management information, including early warning information; and
- e) Coordinating the regional and district plans on disaster prevention and mitigation.

## **Local Government Authorities (LGAs)**

Among the responsibilities of the Local Government Authorities are to:

- a) Prepare capacity building programmes regarding disaster management,
- b) Take deliberate and appropriate initiatives in developing disaster risk management plan; and
- c) Oversee and coordinate disaster risk management and emergency operations at the district level and mobilize resources in respect of disaster management.

## **Roles and Responsibilities of other Stakeholders**

### ***Civil Society Organizations (CSOs)***

Civil Society Organizations plays an important role in disaster management through the development and implementation of the community-based disaster response and recovery programs which are usually implemented by combining and linking more than two phases in disaster management, for instance, response, recovery, and mitigation with the ultimate goal to strengthen community disaster resilience.

### ***Tanzania Red-Cross Society (TRCS)***

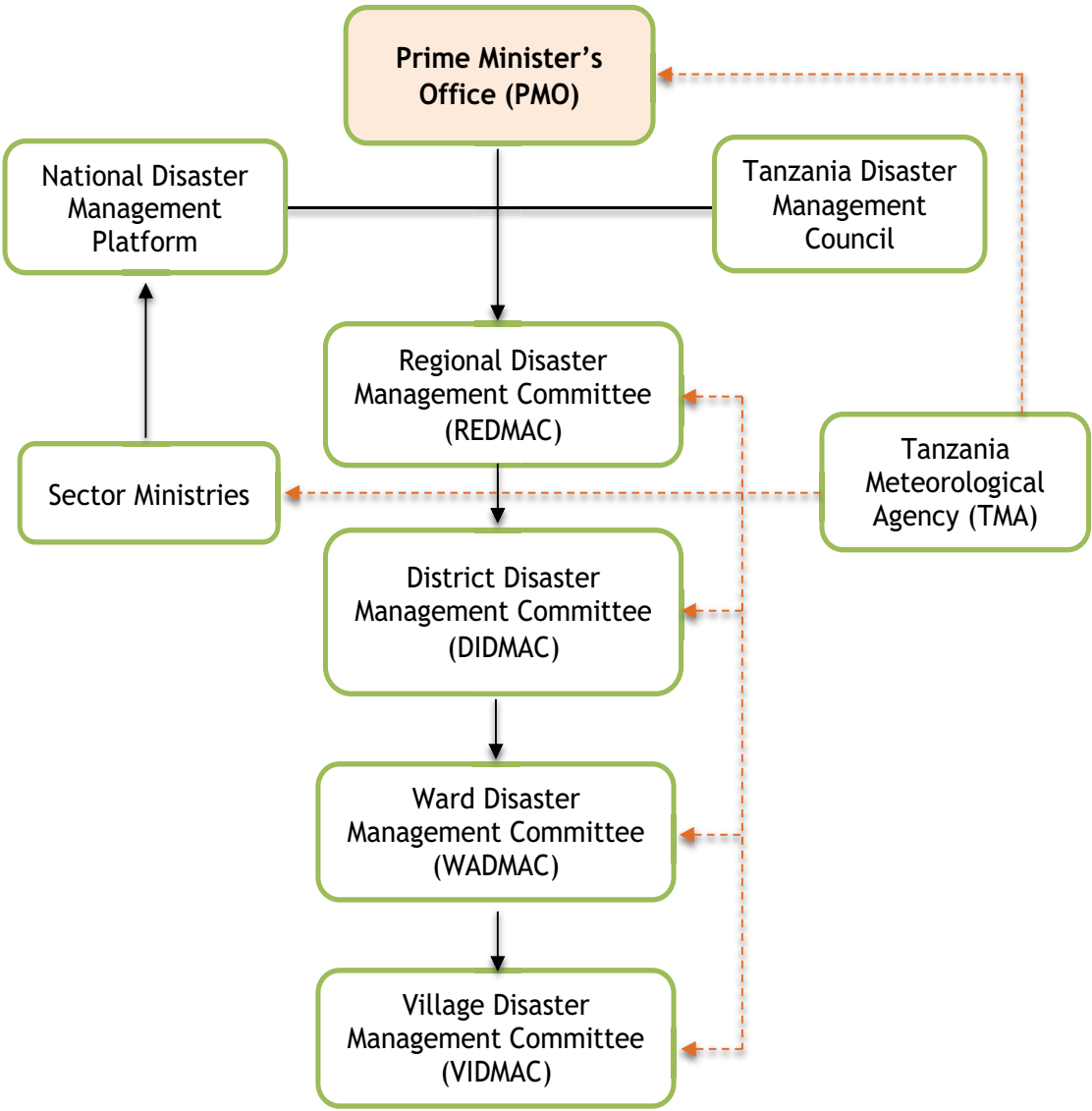
The Tanzania Red Cross Society (TRCS) is a voluntary humanitarian organization and partner in the provision of humanitarian assistance in disasters and health emergencies before, during, and after their onset.<sup>36</sup> TRCS strategizes on strengthening the community preparedness, and promote community-based activities that aim at preventing and mitigating effects from hazards.<sup>37</sup>

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<sup>36</sup> The National Operational Guidelines for Disaster Management Department (2<sup>nd</sup> Edition, 2014)

<sup>37</sup> <https://www.trcs.or.tz/index.php/en/what-we-do/disaster-management> // Accessed on 24th June 2020 0700 hrs

**Figure 2.1: Relationship among Key Actors in the Management of Measures on Floods Control**



*Source: National Operational Guideline for Disaster Management (2014)*

## 2.4 Allocation of Resources in the Department of Disaster Management

Effective management of measures for floods control requires the allocation of both human and financial resources. The Prime Minister's Office plays a direct role in ensuring effective management of measures for floods control at all levels of government operations in the country.

Therefore, this section provides details on allocated resources to the Prime Minister's Office - Disaster Management Department.

### 2.4.1 Financial Resources

**Table 2.1: Allocated Recurrent Fund at DMD in Billions TZS  
(2015/16-2019/20)**

Item	Financial Year				
	2015/16	2016/17	2017/18	2018/19	2019/20
Budgeted	3.44	3.91	3.77	2.24	2.92
Actual	1.37	1.18	1.85	0.31	0.89
Deficiency (%)	60.2	69.8	50.9	86.2	69.5

*Source: Estimates of Income and Expenditure - Prime Minister's Office (2015/16-2019/20)*

Table 2.1 indicates that from the Financial Year 2015/16 to 2019/20, the budgeted recurrent funds ranged between TZS 2.2 to 3.9 Billion. However, the Department has been receiving an average annual amount of TZS 1.1 Billion as recurrent funding.

**Table 2.2: Allocated Development Fund at DMD in Billions TZS  
(2015/16-2019/20)**

Item	Financial Year				
	2015/16	2016/17	2017/18	2018/19	2019/20
Budgeted	4.23	2.47	1.46	0.46	0.16
Actual	3.48	0.70	0.78	0.00	0.00
Deficiency (%)	17.7	71.7	46.6	100.0	100.0

*Source: Estimates of Income and Expenditure - Prime Minister's Office (2015/16-2019/20)*

Likewise, Table 2.2 indicates that from the Financial Year 2015/16 to 2019/20, the budgeted development funds ranged between TZS 0.2 to 4.2 Billion. Similarly, the Department has been receiving an average annual amount of TZS 0.9 Billion as development funding.

## 2.4.2 Human Resources

### Human Resources in the Disaster Management Department

To ensure effective management of operations within the Disaster Management Department, allocation of staff in each section needs to be adequate and appropriate. Table 2.3 provides a detailed description of the available and required number of staff at DMD.

**Table 2.3 Allocation of Staff in the Disaster Management Department**

Unit/Section	Available Number of Staff	Required Number of Staff
Research and Planning	4	7
Operations and Coordination	5	12
Emergency Operation and Communication Centre (EOCC)	4	12
<b>Total</b>	<b>13</b>	<b>31</b>

*Source: IKAMA - Prime Minister's Office (2020)*

Table 2.3 describes the total required number of staff at DMD which is 31 compared with the available number of 13 staff. In addition, the table illustrates presence of a big difference between the required and the available number of staff in Operations and Coordination, and EOCC Sections. It shows a deficiency of more than half of the required number of staff.

## 2.5 Process in the Management of Floods Control Measures

As described in the National Disaster Management Policy (2004), the process for the management of the flood control measures includes four main stages namely; preparedness, prevention, mitigation, recovery and evaluation.

Moreover, the National Disaster Risk Management Framework (NDRMF) provide a basis for disaster risk management structures and mechanisms to facilitate improved disaster preparedness, response, and recovery including integration of a more effective disaster risk reduction considerations into the national development planning and budgeting processes. The process for the management of flood control measures is as described below:

### **(a) *Preparedness***

Activities for disaster preparedness are designed to ensure that vulnerable communities have the knowledge and understanding of the hazards and risks, to which they may be exposed to, in order to take appropriate actions to save lives, protect properties and the environment.

In addition, preparedness considers availability of resources and systems needed to cope with the effects of a disaster. This entails a state of readiness to ensure that the available resources are efficiently mobilized and deployed when needed. Preparedness also involves putting in place appropriate administrative, legislative and technical measures for floods control including early warning systems, training, organized communication systems, evacuation plans, and resources mobilization.

### **(b) *Prevention/Mitigation***

All sector ministries are required to include measures for floods control prevention and mitigation in their respective sector plans. During the implementation, sector ministries are required to ensure adherence to laws and regulations governing all aspects of floods control as specified in their plans.<sup>38</sup>

Likewise, prevention and mitigation should be based on hazard identification, vulnerability, and exposure and capacity assessment in order to determine the level or extent of disaster risk for development of plans, strategy and programs. In addition, being part of structural flood control measure, flooding rivers are to be stabilized through construction of structures such as dams, detention reservoirs, flood ways, levees (flood embankments) for multipurpose serving as water supply, irrigation, and/or hydropower.

### **(c) *Response***

This involves activities that are conducted during the period that begin with the detection of the flooding disaster event and ends with the stabilization of the situation following the impact. Among other things, quick responses to flooding disasters are crucial for evacuating potential victims and saving lives and properties.

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<sup>38</sup> Prevention measures seek to eliminate the impact of hazards and reduce vulnerability, whereas mitigation measures accept that the event will occur and seek to reduce the inevitable impact by either physical or structural means.



#### **(d) *Recovery***

It includes activities that begin after the flooding disaster impact has been stabilized and everything has been returned to normal. The immediate objective of the recovery phase is to restore the physical infrastructure for the basic public utility services.

#### **(e) *Post Disaster Review***

The PMO-DMD in collaboration with other lead sector ministries and agencies are required to review the operationalization of the available floods control measures after a disaster occurrence. In addition to the above mentioned procedures some other key steps are highlighted below:

##### **Flood Risk Assessment**

This is a process of determining the nature and extent of probable flood risks by evaluating the existing conditions of vulnerability that together could potentially harm the exposed community, property, services, and the environment on which they depend.<sup>39</sup>

##### **Flood Risk Mitigation**

These are prior actions that are to be taken to reduce or eliminate adverse flood impacts to human life and property. Flood risk mitigation activities focus on preventing flood-related disasters before they happen or reduce severity of their occurrence. These activities include:

- (i) Strengthening buildings and infrastructures that are exposed to flooding hazards using building codes, engineering design, as well as building protective structures such as Dams;
- (ii) Avoiding flood-prone areas by directing new development away from known flood-prone locations through comprehensive plans and zoning regulations; and
- (iii) Maintaining protective features of the natural environment to absorb and/or reduce flooding impacts.

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<sup>39</sup> Tanzania Emergency Preparedness and Response Plan (TEPRP, 2012)

## **Disaster Management Training Plan**

Disaster Management Training Plan is developed taking into consideration requirements at national, regional, and international levels. The training materials and programs are developed to support all government departments, sectors and agencies on flood-related matters to improve their capabilities relative to their designated functions.

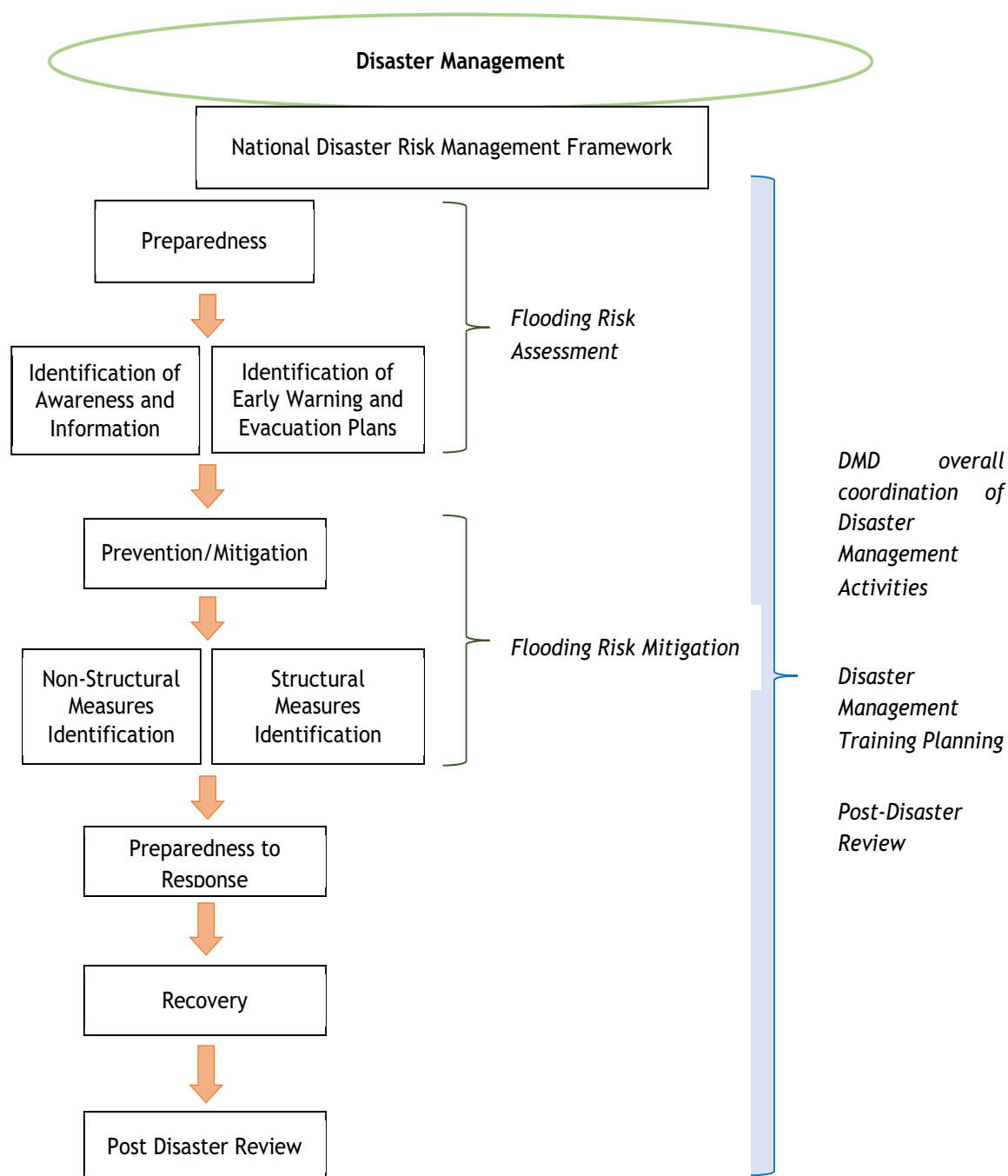
## **Coordination of Activities related to Disaster Management**

As articulated in the National Operational Guidelines for Disaster Management, the management of floods control measures must include the establishment of a system for coordination of activities at each administrative level and across sectors to ensure a multi-sector approach in overall disaster management. The PMO plays a central role in coordination for various disaster management activities both at the National and Local levels.

In addition, the DMD has the responsibility of recognizing the commitment and need of the stakeholders to collaborate across all levels of government, agencies and local authorities in all flood-related disaster management processes.

**Figure 2.2** provides a diagrammatical representation of the procedures in the management of flood control measures as linked with the main stages in the disaster management cycle.

**Figure 2.2: Schematic Summary of the Process in the Management of Measures for Floods Control**



*Source: National Operational Guidelines for Disaster Management (2014)*

## CHAPTER THREE

### AUDIT FINDINGS

#### 3.1 Introduction

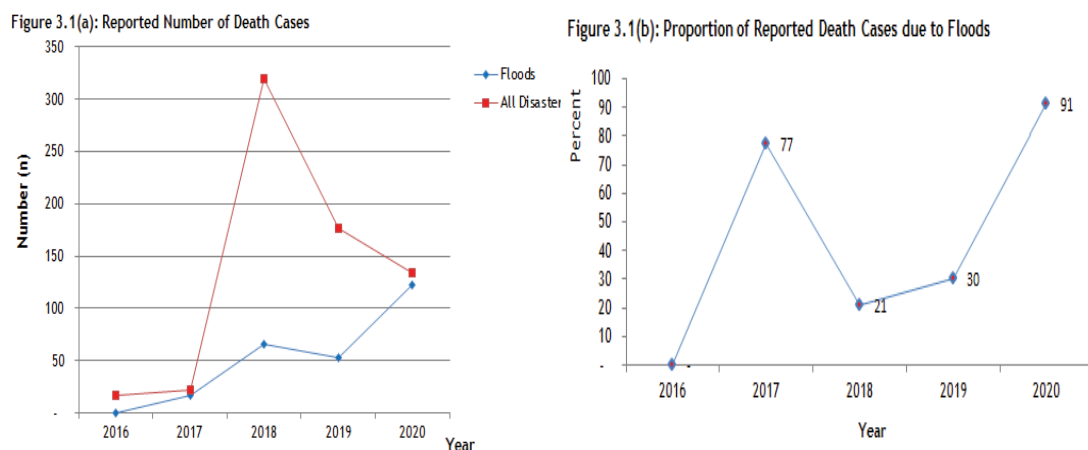
This chapter presents the audit findings on the performance of the Prime Minister's Office - Disaster Management Department on the management of flood control measures in the country. The findings are presented based on the audit specific objectives which generally focus on assessing the planning, implementation, and coordination and monitoring of the floods management activities.

#### 3.2 Extent of Damages Caused by Floods

As a consideration to the Disaster Risk Reduction, Section 5(2b) of the Disaster Management Act (2015) provides for the establishment of the Disaster Management Department as a central planning, coordinating and monitoring institution that aims to prevent and mitigate the impacts resulting from natural disasters.

The Review of the Statistics on Disaster Events in Tanzania (2016-2020) indicated an increasing trend in the proportion of reported death cases due to floods as compared to reported death cases from all other reported disasters. **Figure 3.1** describes trends in the number and proportion of reported death cases due to floods between the years 2016 and 2020.

**Figure 3.1: Reported Deaths Caused by Floods (2016 - 2020)**



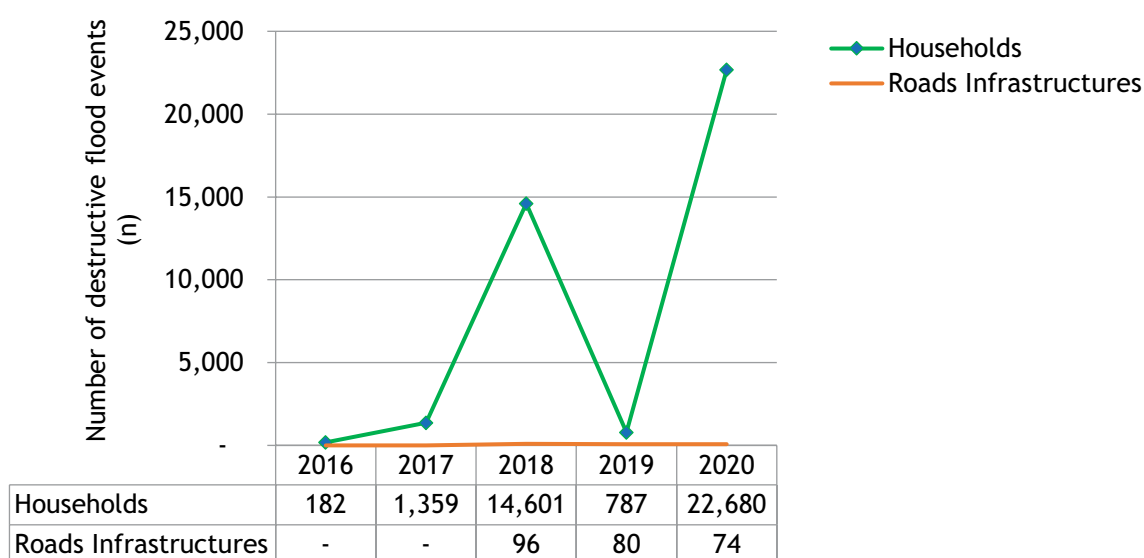
*Source: Disaster Events Database - Prime Minister's Office (2020)*

Figure 3.1(a) indicates that between the year 2016 and 2020 there was an increasing number of reported death cases due to floods respectively ranging between 17 and

122. On the other hand, Figure 3.1(b) shows the proportion in the number of reported death cases due to floods as compared to reported cases from all other disaster causes. However, the figure depicts that there was no reported cases in the year 2016 and that the proportion of reported death cases due to floods were high in the year 2017 (77%) and the year 2020 (91%).<sup>40</sup>

Further analysis of the Statistics on Disaster Events in Tanzania (2016-2020) revealed an increasing trend in the number of reported flood-related destructive events in Households ranging from 182 to 22,680 in 2016 and 2020 respectively. However, there was a decline in number of the reported destructive flood events to road infrastructure ranging from 96 to 74 between the year 2018 and 2020. **Figure 3.2(a)** indicates trends on the number of destructive flood events in Household and Road infrastructure between the year 2016 and 2020.

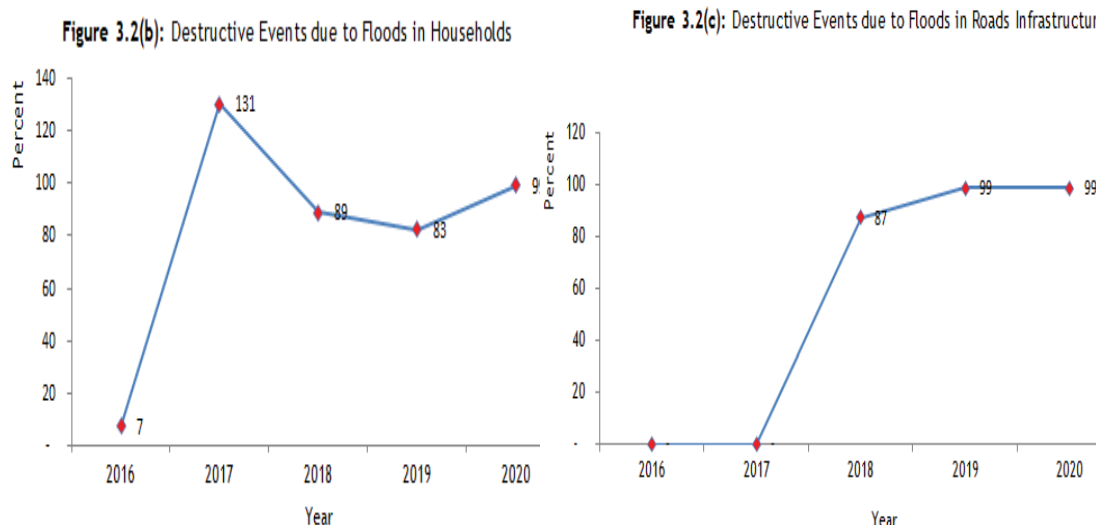
**Figure 3.2(a): Trends in Number of Reported Destructions due to Floods in Households and Road Infrastructures (2016-2020)**



*Source: Disaster Events Database - Prime Minister's Office (2020)*

Furthermore, **Figure 3.2(b)** and **(c)** below describes trends in proportion of reported destructive events accounted to floods in Households and Road infrastructure between the years 2016 to 2020.

<sup>40</sup> The other reported disasters are Landslides, Aflatoxin, Kimeta, Fire, Strong Wind, Thunderstorm, and Mvua ya Mawe



*Source: Disaster Events Database - Prime Minister's Office (2020)*

Figure 3.2(b) indicates that floods accounted for more than three-quarter of the reported destructive events in households between the years 2018 and 2020. Likewise, Figure 3.2(c) indicates an increasing<sup>41</sup> trend in the proportion of destructive events due to floods in road infrastructures. The destructive events due to floods in road infrastructures accounted for 87% in the year 2018 compared to 99% in the year 2020.

### 3.3 Existing Floods Control Measures

The Hyogo Framework for Action (2005-2015) for which Tanzania as a country is a member emphasised Disaster Risk Reduction through applying measures that aim to reduce underlying risk factors and mainstreaming of disaster issues into development programs and plans. The Framework further insists on increased awareness of the importance of disaster risk reduction policies, in so doing facilitate and promote their implementation.

Likewise, the National Disaster Management Policy (2004) requires all stakeholders to integrate activities for prevention and mitigation of floods in their sector plans.

In addition, the National Operational Guidelines for Disaster Management Department (2014) requires the DMD to prepare the National Emergency Plans and other similar plans at other administrative levels and disseminate information relating to disaster prevention, preparedness, and mitigation.

<sup>41</sup> The observed increase in proportion was contributed by the decreasing reported destructive events due to all causes which were 110, 81 and 75 in year 2018, 2019 and 2020 respectively

### 3.2.1 Floods Control Measures in Urban Planning Schemes

Section 3(b) of the Urban Planning Act No. 8 of 2007 instructs all Planning Authorities to improve the level of the provision of infrastructure and social services for sustainable human settlements development, in line with the fundamental principles of the National Land Policy and the Human Settlement Development Policy.

Despite being considered in planning schemes, the interviews held with officials from the Ministry of Lands, Housing and Human Settlements Development revealed supervision weaknesses during the implementation of the prepared flood control plans in respective Planning Authorities as indicated in **Table 3.1**. It was further noted that even for the well-thought-out Planning Areas, plot allocations take place before setting up of common utility infrastructures such as storm water drainage systems.

**Table 3.1: Floods Control Challenges in visited LGAs**

LGA	Observed Situation		
	Development in Flood-Prone Areas	Allocation of Plots in Flood-Prone Areas	Inadequate Storm Water Drainage Channels in roads
Mwanza CC	Yes	Yes	Yes
Tabora MC	Yes	Yes	Yes
Babati TC	No	Yes	Yes
Korogwe TC	Yes	No	Yes
Ruangwa DC	No	No	Yes
Kilwa DC	No	No	Yes
Kinondoni MC	Yes	Yes	Yes
Ilala MC	Yes	Yes	Yes
Kilosa DC	Yes	Yes	Yes

*Source: Auditor's Analysis from the Observation made during the Site Visits in selected LGAs (2020)*

Table 3.1 indicates the observed challenges in aspects of human settlement developments in identified flood-prone areas, allocation of plots in flood-prone areas, and availability of roadside storm water drainages. The challenge for lack of roadside drainages was common in all visited LGAs compared with challenges for allocation of plots and settlement development in identified flood-prone areas which varied across LGAs.

The Audit Team noted that allocation of plots and development in flood-prone areas was more common in urban LGAs namely; Mwanza CC, Tabora MC, Kinondoni MC, and Ilala MC.

In addition, the Audit Team noted through interview with Officials from the Department of Urban Development (DUD) of the PO-RALG that despite being considered during planning stages, there was inadequate implementation of recommendations derived from reconnaissance<sup>42</sup> survey reports.

### **3.3.2 Flood Controls measures in Water Management Systems**

The Water Resources Regulations (2018) instructs the Department of Water Resources Management of the Ministry of Water to promote construction of floods control structures such as water dams, levees and reservoirs.

Interviews with officials in Basin Water Boards at Lake Victoria, Pangani, and Wami Ruvu (Msimbazi River) in Mwanza, Tanga and Dar es Salaam regions respectively, revealed that despite being incorporated in their plans; there was inadequate enforcement of water and environmental-related by-laws especially in the management of water resource catchment conservation in LGAs.

Likewise, the review of the Plan and Budget from the Ministry of Water<sup>43</sup> indicated that the increasing socio-economic activities along rivers contribute to the observed weaknesses in water resource catchment conservation. Also, this was noted to be due to weaknesses in the enforcement of Water and Environmental requirements in LGAs.

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<sup>42</sup>Reconnaissance survey refers to an extensive study of the area. The main purpose is for taking survey in a particular area about its weather conditions and terrain.

<sup>43</sup> Randama ya Mpango na Bajeti ya Wizara ya Maji kwa Mwaka 2015/16





**Photo 3.1 (a):** Ongoing farming activities nearby the river at Nangara Ward, Nangara Ziواني Street, Babati TC (Photo was taken on 26<sup>th</sup> October 2020)



**Photo 3.1 (b):** Accumulated debris in storm-water drainage nearby the market at Manundu Ward, Korogwe TC (Photo was taken on 03<sup>rd</sup> November 2020)



**Photo 3.2:** Observed siltation at water inlet facilities of the irrigation system due to ongoing upstream activities at Mahenge Ward, Korogwe Town Council (Photos were taken on 02<sup>nd</sup> November 2020)

### 3.3.3 Inclusion of Measures for Flood Control in the Planning and Designing for Infrastructure Development

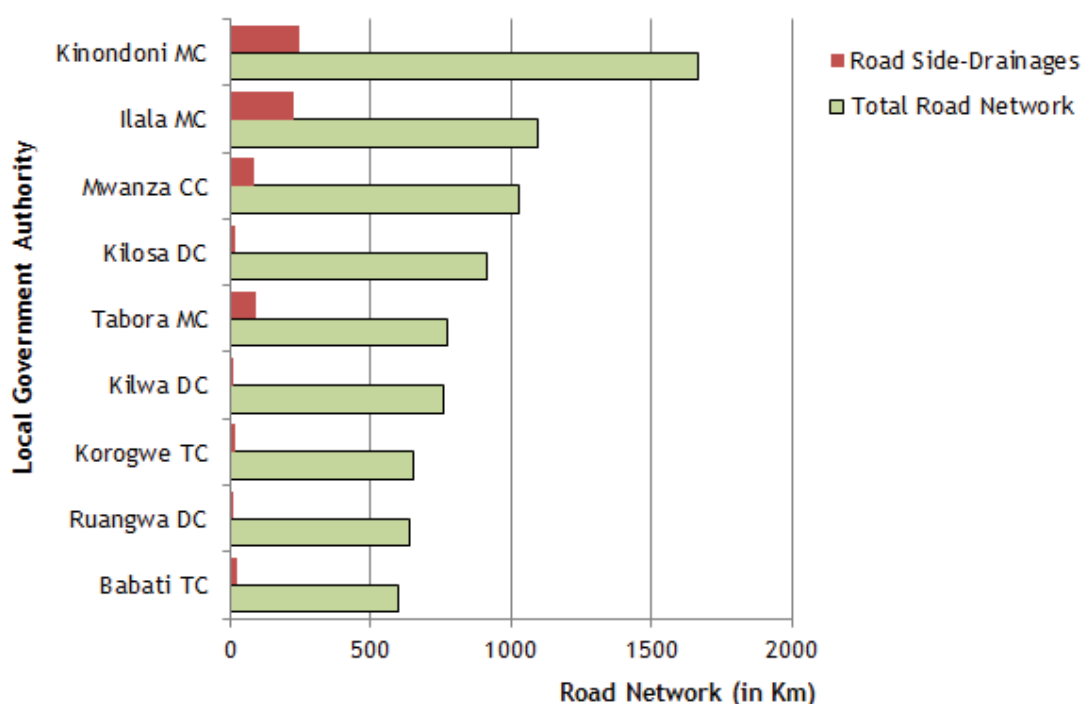
Clause Number 1217 of the Standard Specification for Road Works (2000) provides for the requirement to consider drainage as a significant factor to think through in all stages of road development. In addition, the Clause specifies that TANROADS has a role to ensure that roads maintenance takes place in all categories of routine, periodic, spot maintenance along with bridges maintenance.

Similarly, it is the requirement as per the guidelines of the Road Fund Board that damages of road infrastructure due to disasters need to be maintained within two (2) weeks since their occurrence to ensure recovery in transport communication.

Despite considering and providing measures for flood control during planning phase of the road network designs, review of the Committee Report under the Ministry of Works, Transport and Communications (Works) '*Tathmini ya Utayari wa Kukabiliana na Majanga Katika Kusimamia na Kutunza Miundombinu inayotekelezwa na Sekta ya Ujenzi (May, 2020)*' indicated that currently the Ministry has got no guidelines for disaster preparedness for road and bridge structures.

The Audit Team further noted absence of road side-drainages especially for the roads in urban LGAs despite the emphasis that the constructed roads must be provided with such structures. **Figure 3.3** shows the available total road networks under TARURA that are provided with side-drainage system in the visited LGAs.

**Figure 3.3: Road Network with Side-Drainages System in Visited LGAs**



*Source: District Road Management System (DROMAS, 2020)*

Figure 3.3 illustrates that in all visited LGAs there is less than 500 Km of road network provided with side-drainages with the percentage ranging between 0.5 to 15 per cent of the available total road network ranging between 297 Km to 1,664 Km.

Generally, the observed situations in the visited LGAs and the Ministry of Works are due to lack of long-term plans that aim for preparedness to mitigate the impacts that can be brought about by flood-related disasters.

### 3.3.4 System for the Provision of Early Warning Information

The National Disaster Management Policy (2004) calls for effectiveness in the management of disaster risks as a function of a well-developed early warning system, and a well-coordinated communication between stakeholders. Early Warning Systems have been cited as being essential in disaster preparedness and risks mitigation.<sup>44</sup>The Audit Team noted that the system for the provision of Floods Early Warning Information had the following deficiencies:

<sup>44</sup> Disaster Risk and Capacity Needs Assessment for Tanzania Mainland

### ***Inadequate Real-Time Information***

As a way to enhance mitigation of floods impacts, The National Water Policy (2002) instructs the Ministry of Water to establish floods monitoring stations and strengthen the existing hydrological stations.

The Audit Team noted deficits in the number of available monitoring hydro-met stations in the country. **Table 3.2** provides the extent of shortage of the Hydro-Met monitoring stations in the country.

**Table 3.2: Status of Available Hydro-Met Monitoring Stations**

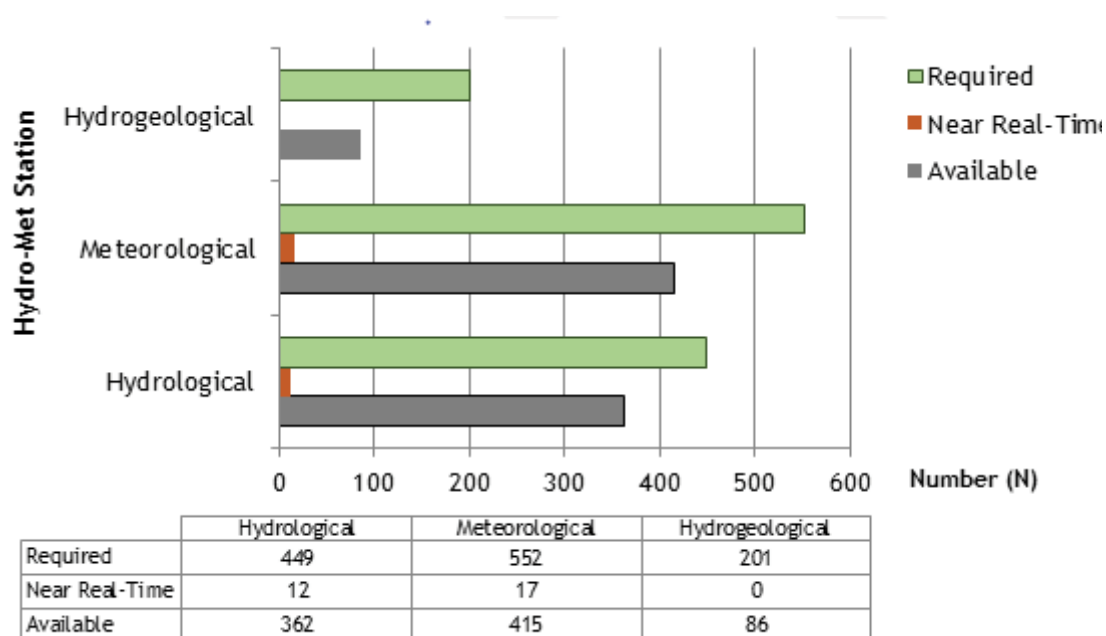
Stations	Number Available	Number Proposed	Shortage (%)
Hydrological	362	875	58.6
Meteorological	415	1,384	70.0
Hydrogeological	86	431	80.0

*Source: Tanzania Water Resources Atlas (2019)*

Table 3.2 indicates a shortage of more than 50% of the required Hydro-Met monitoring stations in all categories of Hydrological, Meteorological, and Hydrogeological.

Through the interviews held with Officials from the Department of Water Resources Management of the Ministry of Water the Audit Team noted that despite on-going efforts, the Department has very few stations that provide for an integrated and automated system for linking meteorological and hydrological data for floods forecasting, based on real-time information. **Figure 3.4** describes the countrywide status of the available Hydro-Met monitoring stations for the generation of near real-time data.

**Figure 3.4: Monitoring Stations Generating Near Real-Time Hydro-Met Data**



*Source: Hydrological, Meteorological and Hydrogeological Data from the Ministry of Water (2020)*

Figure 3.4 point out that only 12 out of the available 362 hydrological stations (3.3%) and 17 out of the available 415 Meteorological stations (4.1%) are capable of generating near real-time hydro-met data. The audit found out that there is a deficit of more than 85% on the number of stations needed to generate near real-time data across all three categories.



**Figure 3.3(a):** Manually operated water-level recorder for measuring water level located at Lake Victoria.



**Figure 3.3(b):** Rain gauge as observed at Headquarters of Lake Victoria Water Basin



Figure 3.3(a) and (b) indicate the observed water level monitoring instruments that are managed by Lake Victoria Water Basin Board. The instruments are manually operated to monitor water levels which pose a high risk in flood forecasting based on the accuracy of collected information.

It was further noted through interviews with the officials from the Ministry of Water that, apart from the noted deficits in the number of Hydro-Met monitoring stations, the Department of Water Resources Management lack the sufficient number of competent human resources in the fields of Hydrology. **Table 3.3** describes the need for human resources in the Department of Water Resources Management of the Ministry of Water.

**Table 3.3: Human Resource Need in the Department of Water Resources Management**

Cadre	Number Available	Number Required	Deficit (%)
Hydrologists	15	67	77.6
Hydrology Technicians	86	157	45.2

*Source: Staff Needs Assessment from the Ministry of Water (2020)*

Table 3.3 indicates a deficit of about 75% of the required Hydrologists and almost half the number that would be required for the cadre of Hydrology Technicians.

### 3.3.5 Risk Assessment Relating to Floods

Vulnerability assessment is a process of determining the extent at which people, property, environment, natural resources, social and economic activities are at risk through national-level assessments on Risk, Vulnerability and Capacity at LGAs, which in turn formulate a basis for the District's Emergency Preparedness and Response Plan (DEPRP).

Proper management of disaster information necessitates the need to identify, map and communicate to relevant stakeholders the vulnerable areas and elements at risk which is useful in the preparation of risk management plans.<sup>45</sup>

#### ***Flood Risk Assessment in Key Sector Ministries***

The Sendai Framework for Disaster Risk Reduction (2015-2030) for which Tanzania is a member, outlines four priorities for action to prevent new and reduce existing disaster risks. The Framework provides for an understanding of disaster risk,

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<sup>45</sup> Disaster Risk Profile for Flood and Drought (2019) - Tanzania

strengthening disaster risk governance to manage disaster risk, investing in disaster reduction for resilience, and enhancing disaster preparedness for effective response.<sup>46</sup>

The Audit Team noted insufficient coordination of institutional framework for Disaster Risk Reduction (DRR) in visited sector ministries. Similarly, the disaster focal officials at respective sector ministries indicated the absence of ministerial plans for Disaster Risk Assessment and Disaster Risk Reduction. **Table 3.4** provides status for the availability of plans for disaster risk assessment and disaster risk reduction in the visited sector ministries.

**Table 3.4: Disaster Risk Assessment and Disaster Risk Reduction Plans in Key Sector Ministries**

Sector Ministry/Agency	Risk Assessment Plan	Disaster Risk Reduction Plan
Water	Yes	No
Land	No	No
Works, Transport and Communication	No	No
Agriculture	Yes	Yes
TMA	Yes	Yes

*Source: Auditor's Analysis from the Interviews Minutes (2020)*

Table 3.4 indicates that 3 out of 5 visited entities have plans for disaster risk assessment which included components on measures for flood. It further illustrates that two key sector ministries i.e. the Ministry of Lands, Housing and Human Settlements Development and the Ministry of Works, Transport and Communication have got no plans for Disaster Risk Assessment and Reduction.

However, the Audit Team noted that the missing plans for disaster risk assessment and/or disaster risk reduction in sector ministries was contributed by lack of a National Disaster Risk Management Framework (NDRMF) which is currently in a proposal version. Presence of this framework would improve coordination and integration of the activities to build, sustain, and enhance the capability of DMD and other sector ministries in preparing, responding and recovering from disaster impacts.

### ***Risk Assessment in the Visited LGAs***

The Report for Risk, Vulnerability, and Capacity Assessments (RVCAs) conducted by DMD in selected Districts and the interview held with officials from DMD revealed

<sup>46</sup> <https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030>

that only 15 out of 188 Local Government Authorities (LGAs)<sup>47</sup> countrywide (equivalent to 8%) had RVCA done between the year 2012 and 2017. Likewise, the Audit Team noted further that there was no evidence for the criteria used by the DMD to select 15 LGAs and leaving out other LGAs for the assessment.

The Audit Team further noted that despite the emphasis by the DMD the visited LGAs did not implement the recommendation to institutionalize the Disaster Risk Reduction (DRR) in their strategies and development plans. Worse enough, there was no evidence for the availability of plans and/or strategies for DMD to make a follow-up on the issued recommendations which if well considered could be the basis for the preparation of District DRR plans.

**Table 3.5** provides a summary of the observed situation regarding the availability of disaster risk assessment and reduction plans in the visited LGAs.

**Table 3.5: Disaster Risk Assessment and DRR Plans in the visited LGAs**

LGA	Disaster Risk Assessment Plan	Disaster Risk Reduction Plan
Mwanza CC	No	No
Tabora MC	No	No
Babati TC	No	No
Korogwe TC	No	No
Ruangwa DC	No	No
Kilwa DC	No	No
Kinondoni MC	Yes	No
Ilala MC	Yes	No
Kilosa DC	No	No

*Source: Auditor's Analysis from the Interviews Minutes (2020)*

Table 3.5 illustrates that only 2 out of 9 visited LGAs have plans for disaster risk assessment and none of them have plans for disaster risk reduction. The main reason for missing disaster risk reduction plans is the lack of institutional frameworks for disaster risk reduction from regional down to LGA level. Failure to have plans for disaster risk assessment and/or disaster risk reduction in the visited LGAs increases the likelihood of preparing mitigation measures that do not address the priority needs for effective disaster risk reduction.

<sup>47</sup> The District Councils are: Maswa, Mtwara Mikindani, Bariadi, Chamwino, Kishapu, Kondo, Mpwapwa, Mtwara, Mwanga, Kilombero, Same, Shinyanga, Masasi, Mvomero, and Kilosa



### 3.3.6 Ineffective Capacity Building Programs on Issues Related to Flood Control

Section 2.3 of the National Operational Guidelines for Disaster Management (NOG, 2<sup>nd</sup> Edition; 2014) provides for the requirement that due to the dynamic nature of disasters the government and other stakeholders will continue to strengthen capacity through the provision of necessary training and skills at all levels.

Likewise, Section 3.3.2(e) (c) provides for the requirement that among other functions of the Technical Committee is to recommend on the sector training requirements to DMD. Similarly, Section 3.3.4(g) provides that DMD through the established disaster management committees should prepare plans for the prevention and mitigation of disasters that also include the provision of training and simulation exercises.

Even though DMD developed the capacity-building training programs, it was noted through interviews held with DMD Officials that regional coverage in the provision of such trainings is still low. **Table 3.6** summarizes the status in the provision of capacity-building training in terms of regions covered from the year 2016 to 2020.

**Table 3.6: Geographical Coverage in the Provision of Capacity Building Training by DMD**

Available Zones	Geographical Covered Regions	Zones/Regions Not Covered
Coastal Zone	Morogoro	Tanga, Coast Region
Lake Zone	Mwanza, Mara	Tabora, Kigoma, Shinyanga, Kagera
Central Zone	-	Dodoma, Singida
Southern Highland Zone	Rukwa, Songwe, Iringa	Mbeya
Northern Highland Zone	Kilimanjaro, Arusha, Manyara	Kilimanjaro, Arusha, Manyara
Southern Zone	Mtwara	Lindi, Ruvuma

*Source: Prime Minister's Office - Training Reports (2016-2020)*

Table 3.6 indicates inadequate coverage in terms of the number of regions that were to be considered for capacity building training especially in Central and Lake Zones namely Tabora, Kigoma, Shinyanga, Kagera, Dodoma, and Singida.

It was further noted that the prepared capacity building programs focused more on creating awareness on response to disasters with little emphasis on matters for

preparedness to mitigate impacts resulting from disasters<sup>48</sup>. **Table 3.7** provides a summary of the capacity building training contents for the disaster focal personnel in the visited regions and LGAs. It highlights the differences between the training needed and training issued to the concerned officials.

**Table 3.7: Disaster Capacity Building Training Needs**

Needed Capacity Building	Issued Capacity Building
<ul style="list-style-type: none"> <li>• Refresher training to new appointed Focal Personnel;</li> <li>• General understanding of what need to be done regarding the management of disaster issues in general;</li> <li>• For newly appointed Disaster Focal Personnel: Orientation on disaster issues especially at LGAs; and</li> <li>• For newly appointed Disaster Focal Personnel: Orientation Seminars on tracking, recording, documenting, and reporting format of disaster information.</li> </ul>	<ul style="list-style-type: none"> <li>• Capacity building on an understanding of the Disaster Management Act No. 7 of 2015</li> <li>• Capacity building on understanding the structure of the Disaster Management Committees and their roles at all levels from Regional to Village levels; and</li> <li>• Training, Exercise and Drill (TED) for when disaster event occurred.</li> </ul>

*Source: Interviews with Disaster Focal Personnel and Reviewed Disaster Training Reports (2019/2020)*

In summary, Table 3.7 shows that the provided trainings focused more on building awareness on disaster matters and/or response to disasters compared to the actual training needs especially to the newly appointed disaster focal personnel in respective administrative levels.

Moreover, reviews of the prepared reports on training coordinated by DMD (2019-2020) have shown that despite having planned to provide training in all regions in the country, only 10 out of 26 regions (38.5 %) in Tanzania Mainland<sup>49</sup> were covered.

It was further revealed that the training programs were mostly conducted in the year 2019 and 2020 to promote awareness on Disaster Management Act No. 7 of 2015 along with clarification on the structures and roles of the disaster management committees as well as capacity building on overall disaster management cycle. **Table 3.8** summarizes status regarding implementation of capacity building training programs in flood-prone regions.

<sup>48</sup> Documentary review (Training Slides-Module 4; Disaster Preparedness and Response): 20 District Councils were facilitated to prepare disaster preparedness and response plans.

<sup>49</sup> The training was provided to Disaster Management Committees in the following regions: Mwanza, Morogoro, Kilimanjaro, Arusha, Rukwa, Manyara, Songwe, Iringa, Mara, and Mtwara

**Table 3.8: Consideration of Capacity Building to Flood-prone Regions**

Region	Level of Flooding Disaster		Covered/Not Covered
	Low	High	
Mwanza	✓		✓
Tabora		✓	x
Manyara	✓		✓
Tanga		✓	x
Dar es Salaam		✓	x
Lindi		✓	x
Morogoro		✓	✓

*Source: Prime Minister's Office - Reviewed Training Reports (2019/2020)*

Table 3.8 indicates that 3 out of 7 flood-prone regions were considered for capacity building trainings that were organized by DMD. However, despite being regarded as highly flood-prone areas, the regions covered in the capacity building training did not receive equal courses contents. It was noted that variations in delivered training contents (**Table 3.7**) and/or geographic coverage are mainly due to financial limitations and that the allocated funds for these trainings do not allow to cover all aspects of the disaster management cycle.

It was further noted that despite financial limitations, the reason for ineffective training is mainly attributed to the fact that demand for the capacity building trainings are derived from post-disaster occurrence and that the nature of consequences from these disasters to a great extent determine the training content to be delivered.

### **3.3.7 Un-integrated Communication System between Key Actors**

The National Operational Guideline (2<sup>nd</sup> Edition-2014) emphasizes on communication as being a key guiding principle for effective and efficient disaster management. Likewise, Section 5(2c) of the National Disaster Management Act (2015) provides for the importance of coordination among inter-ministerial, multi-sector entities, and technical committees responsible for disaster management at all levels.

The current communication system between stakeholders is mainly based on exchange of information on demand/request. The interviews with DMD officials revealed that there is no formal platform used for exchange of information among stakeholders.

The Audit Team noted further that communication takes place mainly during disaster times, through the established Emergency Operation and Communication Center (EOCC) and the media used are often the personal cell-phones.

Moreover, the audit found out that the disaster information requests at DMD are done on an ad hoc basis and that the EOCC which is responsible for the coordination of information exchange during the disaster is not well strengthened. Generally, the overall EOCC system is missing several important facilities for the operation of its day-to-day activities. **Table 3.9** provides a summary of missing facilities and their usefulness

**Table 3.9: Summary of Missing Facilities at EOCC**

SN.	Missing Information from EOCC System	Implication to Better Communication among Stakeholders
1	Disaster Emergency Communication System	To help facilitate communication at EOCC and Disaster Focal Personnel in respective disaster-affected areas
2	Data Platform for Emergency Information Sharing	Important as it is used for storing and easy exchange of disaster emergency information with stakeholders before, during and after disaster occurrence
3	Unified Emergency Call Management System	This is an 'inbound system' which operates by receiving emergency calls from different stakeholders during emergency and non-emergency situations
4	Integrated Disaster Management System	<ul style="list-style-type: none"> <li>• For disseminating disaster early warning information as an alert;</li> <li>• Monitoring of disaster; and</li> <li>• Integrate all institutions responsible for issuing/receiving disaster-related information</li> </ul>

*Source: Analysis of the Facility Needs Assessment from the EOCC in the Prime Minister's Office (2020)*

The Audit Team observed that the weaknesses in the exchange of information between key actors are largely contributed by the lack of an integrated communication system that would enhance and ease data access from each other. The following were highlighted as key reasons for the lack of an integrated communication system among sectors:

**(a) Presence of Operation Systems Designed to Function Independently**

The model of the operating system across sectors do differ and they are designed in such a way that they operate independently even though other sectors can depend on each other, for instance, parameters on meteorological forecasts (TMA) can be as important as input parameters to models that produce hydrological forecasts (Ministry of Water) and vice versa; and

**(b) Security Nature of Information to be Shared**

Nature of information in other sectors is subject to the security of the nation, for instance, TMA and therefore, though necessary sharing of information is guided by certain protocols.

Furthermore, the Audit Team noted that lacking an integrated communication system among stakeholders has the following major implications:

- (a) **Delays in acting to reported flood events:** Since early warning system plays a key role in disaster risk reduction, sectors must be informed of the potential disaster impacts thus enabling timely provision for precautions that should be taken to ensure resilience;
- (b) **Failure to act in uniform (divided efforts):** Public and institutional preparedness, including institutional response capacity to disasters have to be developed and properly communicated among stakeholders to a sufficient degree to allow for an organized risk-mitigating reactions to disasters. Therefore, lack of an integrated communication system to great extent calls for divided efforts in disaster response across sectors; and
- (c) **Duplication of Efforts:** Lack of an integrated disaster communication system to a certain extent infers untimely communication between sectors and generally results in inappropriate response to disaster impacts in such a way that sectors tend to act in a way that necessitates duplication of the available resources.

### 3.3.8 Low Number of LGAs with Evacuation Centers

Annex (B) of the National Operational Guidelines for Disaster Management (NOG, 2<sup>nd</sup> Version-2014) provides for the flood-specific guidelines that the President's Office - Regional Administration and Local Government (PO-RALG) must ensure that evacuation centers are established as part of disaster preparedness.

Evacuation centers play a fundamental role in managing the impacts resulting from natural disasters and help to protect the lives of vulnerable communities at risk.

However, it was further noted that given the financial constraints, selection of the LGAs was done based on the fact that the areas were prioritized as they key disaster-prone subjects to the disaster risk vulnerability and capacity assessment.

Furthermore, it was noted through interviews with disaster focal personnel in the visited LGAs that apart from lacking the Risk, Vulnerability, and Capacity Assessments and/or unavailability of disaster management plans, another weakness of the disaster management system in the DMD is the tendency to have reactive responses in which the evacuation centers are often identified when disasters occur. **Table 3.10** summarizes the status regarding the availability of evacuation plans in the visited LGAs.

**Table 3.10: Availability of Evacuation Plans in visited LGAs**

LGA	Assessment/Availability		
	Risk, Vulnerability and Capacity Assessment (RVCA)	Emergency Preparedness and Response Plan (EPRP)	Prepared Evacuation Plan
Mwanza CC	No	No	No
Tabora MC	No	No	No
Babati TC	No	No	No
Korogwe TC	No	No	No
Ruangwa DC	No	No	No
Kilwa DC	No	No	No
Kinondoni MC <sup>50</sup>	-	Yes	Yes
Ilala MC	-	Yes	Yes
Kilosa DC	Yes	Yes	Yes

*Source: Auditor's Analysis from the Interviews Minutes (2020)*

<sup>50</sup> The Evacuation centers in Ilala and Kinondoni municipals were made prior to conduct of Risk, Vulnerability and Capacity Assessments due to nature of disaster that had taken place in the past few years

Table 3.10 illustrates that the Risk, Vulnerability, and Capacity Assessments were conducted in only 1 out of 9 visited LGAs. In addition, only 3 out of 9 LGAs have both the Emergency Preparedness and Response Plans (EPRP) in place and plans for evacuation during the event of a disaster.

It was further noted that despite being commonly identified as flood-prone, the focal personnel and/or Disaster Management Committees in respective areas were not oriented on matters related to disaster management before their occurrence. This situation partly contributed to the lack of evacuation plans in the 6 visited LGAs.

### 3.3.9 Insufficient Mechanism to Ensure Resource Mobilization

Section 2.1.6 (b) of the National Disaster Management Policy (2004) requires the government and other stakeholders dealing with disaster issues to allocate adequate resources for activities related to the preparation and mitigation of disaster impacts.

To ensure effective coordination of disaster management activities in, Section 3.3.1(viii) of the National Operational Guidelines for Disaster Management (2014) requires the DMD among other things to ensure mobilization of financial and material resources during the non-emergencies.

The interviews with PMO officials further revealed that there are no mechanisms used by PMO to ensure that resources are mobilized for disaster-related activities. It was further revealed that despite being not flood-specific, the resources allocated in sector ministries and/or agencies targets to address measures intended to control floods through the implementation of the planned activities.

**Appendix 5** of this report summarizes activities through which financial resources for addressing flood disasters link with key roles in selected sector ministries and agencies.

The Audit Team noted further that despite the requirement by the law in all visited regions low priority was given to the allocation of financial resources for emergency preparedness. This is an indication that much of the resources are prioritized to other administrative and/or technical activities against disaster-related issues. **Table 3.11** provides a summary of the frequency of flooding disaster events against the budgeted and disbursed amounts between the Financial Years 2015/16 and 2019/20.

**Table 3.11: Frequency of Flooding Occurrence against Budgets in Visited LGAs in Million TZS (2015/16-2019/20)**

LGA	Number of Flooding Disaster Events (n)	Total Budgeted Amount	Total Disbursed Amount
Mwanza CC	8	335.0	6.1
Tabora MC	12	16.0	-
Babati TC	3	-	-
Korogwe TC	2	-	-
Ruangwa DC	1	5.0	-
Kilwa DC	2	-	-
Kinondoni MC	10	-	-
Ilala MC	10	14.4	34.1
Kilosa DC	10	114.7	104.7

*Source: LGAs' Annual Budgets (2020)*

Table 3.11 illustrates that despite frequently reported flooding disaster events and the arranged budgets, there has been a low motivation to allocate funds for disaster events claiming that disaster events are to be dealt with upon their occurrence and priority is given to other activities.

Likewise, it was noted during interviews with disaster focal persons in the visited LGAs that despite initiatives to allocate budgets to prepare for disaster activities, there have been little or no priority given to issues related to disaster activities since these are matters that are to be dealt with in an ad hoc basis. **Table 3.12** provides details on budgeted funds in each of the visited LGAs starting in the Financial Years 2015/16 to 2019/20.

**Table 3.12: Budgets for Disaster-Related Activities in the Visited LGAs (in Millions TZS)**

LGA	Financial Year				
	2015/16	2016/17	2017/18	2018/19	2019/20
Mwanza CC	20	80	150	52.2	32.7
Tabora MC	8	8	-	-	-
Babati TC	-	-	-	-	-
Korogwe TC	-	-	-	-	-
Ruangwa DC	-	-	-	-	5
Kilwa DC	-	-	-	-	-
Kinondoni MC <sup>51</sup>					
Ilala MC	-	20	67.4	28	28.8
Kilosa DC	10	44.7	60	-	-

*Source: Medium-Term Expenditure Framework for the Period from 2015/16 to 2019/20*

<sup>51</sup> Budgets information from this Municipal was not provided



It was noted that despite the requirement that DMD are to facilitate material and financial resources for the purpose of disaster management in LGAs, it was noted that failure to mobilize resources to manage disaster activities is contributed by lack of support that would have been provided by DMD for LGAs to prioritize budgeting for activities on disaster management.

### **3.4 Enforcement and Execution of Floods Control Measures**

#### **3.4.1 Inadequate implementation of Floods Control Measures Adopted in Urban Planning Schemes**

Section 77(1)(n) of the Urban Planning Act No. 8 of 2007 requires the Planning Authorities to foster cooperation and coordination of all agencies, land holders, utility bodies and other bodies and institutions involved in the preparation and implementation of the planning process.
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The interviews with Officials from the Ministry of Lands, Housing and Human Settlements Development and Town Planning Officials from the visited LGAs revealed that despite their inclusion in the preparation of General Urban Planning Schemes, stakeholders' opinions regarding provisions of the public utilities' infrastructure such as Storm Water Drainage Systems are not duly considered during the actual implementation of the prepared detailed Town Planning Schemes.

Furthermore, reviews of the prepared Town Planning-Drawings at Tabora MC and Babati TC revealed allocation of Plots in areas that were primarily identified and observed and marked as flood-prone. **Photos 3.4** (a) and (b) indicate the status of the visited areas with the challenge in Ipuri Ward at Tabora MC, and Maisaka Ward at Babati TC.



**Photo 3.4(a):** Surveyed and developed area that was previously identified as a flood-prone area at Mwalitani, Tabora Municipal Council. (Photo was taken before the start of the audit on 3<sup>rd</sup> December 2019<sup>52</sup>)



**Photo 3.4(b):** Known swamp area identified as such but has been surveyed and provided with beacons at Msasani Street - Maisaka Ward, Babati TC (Photo taken on 26<sup>th</sup> October 2020)

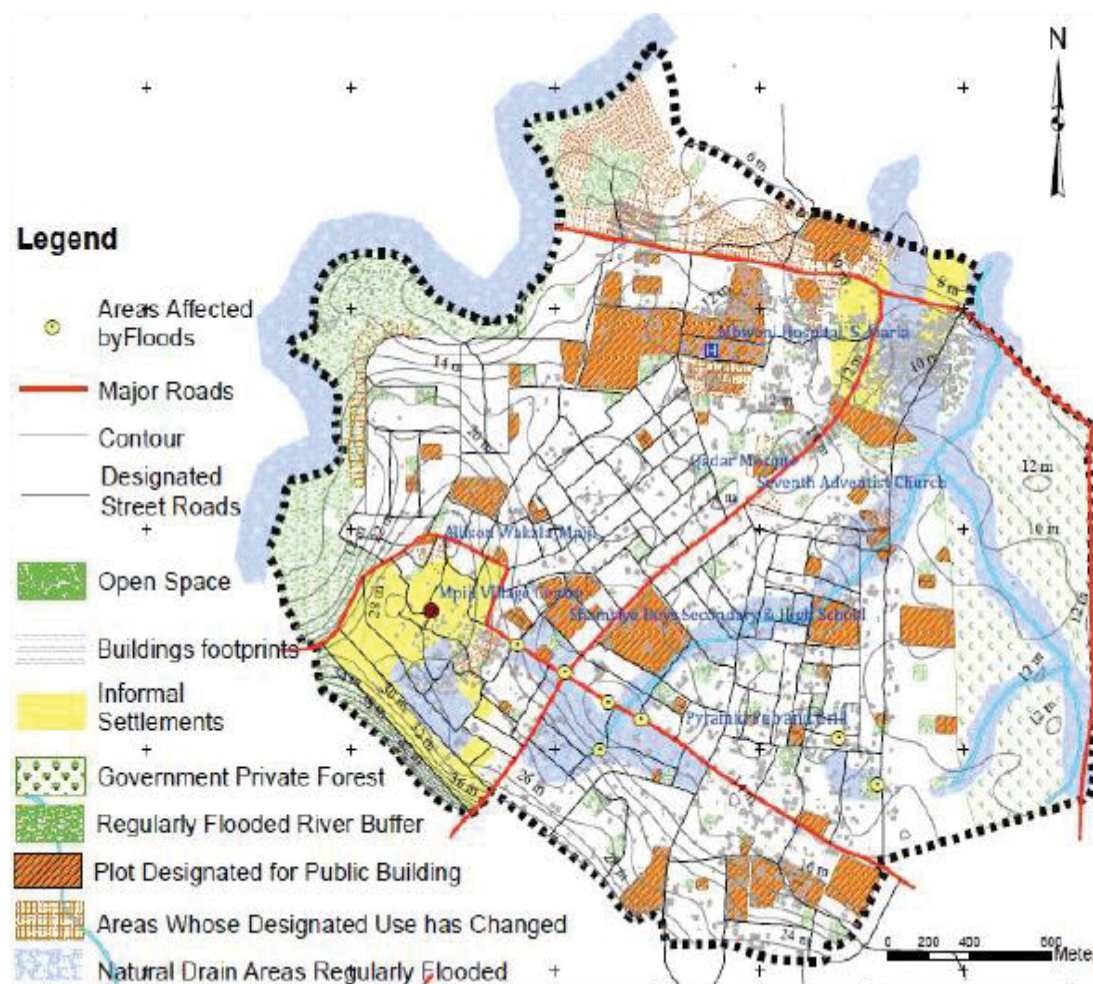
Likewise, it was further noted in Kinondoni and Ilala MCs that the frequently reported floods in flood-prone areas is attributed to weaknesses over development control. In addition, development in unplanned areas has been a challenge even though areas were generally identified as flood-prone and/or swamp areas.

The Audit Team further noted a distinctive scenario during the site visit at Mbweni-Teta Ward in Kinondoni MC whereby plot allocation was made in known flood-prone areas. In addition, the audit noted that the development of allocated residential plots was done before setting up of the basic service utilities such as storm water drainage system.

Moreover, a review of Research and Detailed Recommendations to Guide Upgrade Planning Guidelines of the Ministry of Lands (2020) indicated that the frequently reported floods at Mbweni-Teta are primarily because residential plots were planned in a flood-prone area. **Figure 3.5** indicates the prepared layout plans in Mbweni Suburb overlaid with topographical data. The photo further depicts that during the plan preparation stage topographical characteristics were not considered adequately.

<sup>52</sup> <https://issamichuzi.blogspot.com/2019/12/mvua-zinazoendelea-kunyesha-nchini.html>

**Figure 3.5: Layout plans in Mbweni Suburb overlaid with topographical data**



*Source: Research and Detailed Recommendations to Guide an Upgrade of the Ministry of Lands Tanzania Planning Guidelines (2007) - adopted from Namangaya and Alem (2019)*



**Photo 3.6:** A frequently flooded residential area at Mbweni Teta Ward in Kinondoni Municipal Council, Dar es Salaam (Photo was taken on 28<sup>th</sup> April 2020)

Additionally, Section 2.1 Sub-section 2.1.1(ii) of the Guidelines for the Preparation of General Planning Schemes and Detailed Schemes for New Areas, Urban Renewal and Regularization (2007) provides for the requirement that during the preparation process of the Urban Planning Schemes LGAs need to establish Technical Sub-Committees that include stakeholders in key themes.

Review of the Research for Detailed Recommendations to Guide an Upgrade of the Ministry of Lands ‘*Tanzania Planning Guidelines (2007)*’ indicated that in practice during the planning process involvement of stakeholders from utility sectors and/or agencies in Technical Sub-Committee meetings is rarely undertaken.

In addition, regardless of the acknowledgment that the stakeholders’ opinions, must be considered, the Audit Team was unable to verify the fact that the opinions issued were accounted for in respective final approved Urban Planning Schemes when these were compared to the initial draft plans due to improper documentation in all visited LGAs.

Despite the requirement of the National Disaster Management Act No. 7 (2015) that PMO should act as a central monitoring entity for all phases in disaster management; The Audit Team noted that inadequate implementation of the prepared planning schemes is due to lack of a solely coordinating entity to monitor individual entity’s activities during the implementation phase.

Given that, the Audit Team noted from interviews held with Officials from TARURA Council Offices in the visited LGAs and TANROADS Regional Offices in the visited regions that the main reason for the observed weaknesses in the implementation of the approved Urban Planning Schemes is due to absence of a fully mandated entity to organize the stakeholders' opinions, check for adherence and ensure effective coordination of activities during the implementation of the Planning Schemes.

The Audit Team noted further that despite the inclusion of the measures to control impacts from floods in individual entities' plans, the actual implementation of the planned activities does not sufficiently take these measures into account due to differences in time-space for which execution of the planned activities in each sector entities is subject to the availability of resources. As a result, entities from each key sector do not adhere to the agreed standard specifications as stipulated in the Urban Planning Schemes.

### **3.4.2 Inadequate Implementation of Water Management Schemes and Rivers**

The Water Resources Regulation (2018) requires the Department of Water Resources Management under the Ministry of Water to promote the construction of Dams and Levees as part of structural floods control measures. Likewise, Section 1.2 of the National Disaster Management Policy (2004) requires the stakeholders to ensure the inclusion of disaster prevention and mitigation activities in their respective sector plans.

#### ***Activities on the Construction of Dams***

Construction of Dams form part of Disaster Risk Reduction Investments in mitigating impacts due to floods and can be used to serve both hydropower generation and water storage. For instance, when managed properly they can provide the added benefit of improved downstream flood regulation.<sup>53</sup>

The Audit Team noted that low priority was given to the construction of Dams as part of floods mitigation initiatives. A review of the Annual Plans (2015/16-2019/20) from the Water Resources Department of the Ministry of Water indicated that despite being planned, the construction of Dams that were to serve both as water storage and flood control structures were not implemented.

In addition, it was further noted that the Water Resources Department of the

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<sup>53</sup> Multiple benefits of DRR investment “Reducing risk and building resilience against floods and droughts in Sub-Saharan Africa” – United Nations Office for Disaster Risk Reduction (2020)



Ministry of Water under the Water Sector Development Program initiated plans to construct strategic Dams to serve for the purpose of Water Security and Flood Management, but this was not sufficiently realized. **Table 3.13** indicates the status and location of the planned Strategic Dams in the country for the period starting in the Financial Years 2006/07 to 2019/20.

**Table 3.13: Number of Strategic Dams Planned versus Constructed (2006/07-2020)**

Region	Name of the Dam(s)	Number of Planned Dams to be Constructed	Number of Dams Constructed
Dodoma	Farkwa	1	-
Morogoro	Kidunda	1	-
Iringa	Lugola	1	-
Mbeya	Songwe	1	-
Lindi	Mwalimu Nyerere <sup>54</sup>	1	1

*Source: Data on List of Dams from the Ministry of Water (2020)*

Table 3.13 indicates that only 1 out of 5 planned strategic Dams was constructed. The Audit Team noted that delays in the construction of the remaining Dams are attributed to the failure in timely disbursement of funds.

### ***Management of Catchment Conservation***

Section 28(1) (c) of the Land-use Planning Act provide for the requirement that Planning Authorities are to include matters relating to the preservation of the quality and flow of water in dams, lake or river. The section also provides for the Planning Authorities to consider the creation of buffer zones for the protection of water catchment areas, rivers, dams, and river banks.

It was noted during the interviews with the Officials from Basin Water Board Offices found within the visited LGAs that flooding due to river overflows was due to inadequate upstream catchment conservation that led to the siltation and accumulation of debris along watercourses. Some practical examples were noted at Msimbazi, and Pangani Rivers managed under the Wami-Ruvu and Pangani Basin Water Boards respectively.

In addition, it was revealed during the site visits that the buffer zones identified for the aim of protecting Water Catchment Areas, Rivers, Dams and River Banks are not

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<sup>54</sup> Construction of this Dam was financed by the Ministry of Energy since it was one of the Strategic Dams to serve for the purpose of Water Security, Energy Security, and Flood Management.

functioning as such due to challenges brought about by the ongoing human activities, especially agricultural and structural development activities nearby catchment conservation areas. Such activities were mainly noted in areas such as Nangara Ziwani Street at Babati TC in Manyara region and Ukonga Mongo la Ndege at Ilala MC in Dar es Salaam region.

The Audit Team noted that violation of catchment conservation rules is mainly contributed by the socio-economic forces and lack of sufficient enforcement mechanisms of the environmental-related by-laws adopted by the Planning Authorities.

**Photo 3.7(c)** indicate the heaps of sediments at Jangwani Bridge along Morogoro Road in Dar es Salaam Region accumulated during rainfall seasons as a result of human activities taking place along the Msimbazi River. **Photo 3.7 (a) and (b)** indicate the state of the area close to Msimbazi River (Kisarawe) before and after excavation.



**Photo 3.7(a):** Section of the plantation nearby Msimbazi River at Kisarawe District indicating well-preserved part of the forest as of 21<sup>st</sup> June 2017; **Source:** Google Earth Pro-Satellite Pictures, accessed on 29<sup>th</sup> November 2020

**Photo 3.7(b):** Section of the plantation nearby Msimbazi River at Kisarawe District indicating the cultivated part of the same forest as of 17<sup>th</sup> March 2018; **Source:** Google Earth Pro-Satellite Pictures, accessed on 29<sup>th</sup> November 2020



**Photo 3.7(c):** Observed section of Jangwani Bridge along Morogoro road indicating cumulated sand which comes along Msimbazi river. (Photos were taken on 18<sup>th</sup> November 2020)



**Photo 3.8:** Part of the observed impacts due to widening of the river to the nearby residential houses along Msimbazi River caused by rainfall (Autumn Season) at Ukonga Mongo la Ndege Street; Ilala Municipal Council on 13<sup>th</sup> October 2020 (Photo was taken on 13<sup>th</sup> October 2020).

### 3.4.3 Exclusion of Designs that Enhance Control of Floods in Roads Infrastructure

Clause Number 1217 of the Standard Specification for Road Works (2000) instruct on the requirement for the need to consider provision for roadside drainages in all stages of road development projects to protect road works.



During interviews with officials from TARURA Council Offices in the visited LGAs, the Audit Team found out that the storm water road side-drainage structures are missing in the majority of the urban and rural road networks.

It was further noted that despite being considered in road designs, the construction works are often not timely realized as such due to budget constraints and/or partial disbursement of funds. This situation has led to the phase-wise construction of the approved road works.

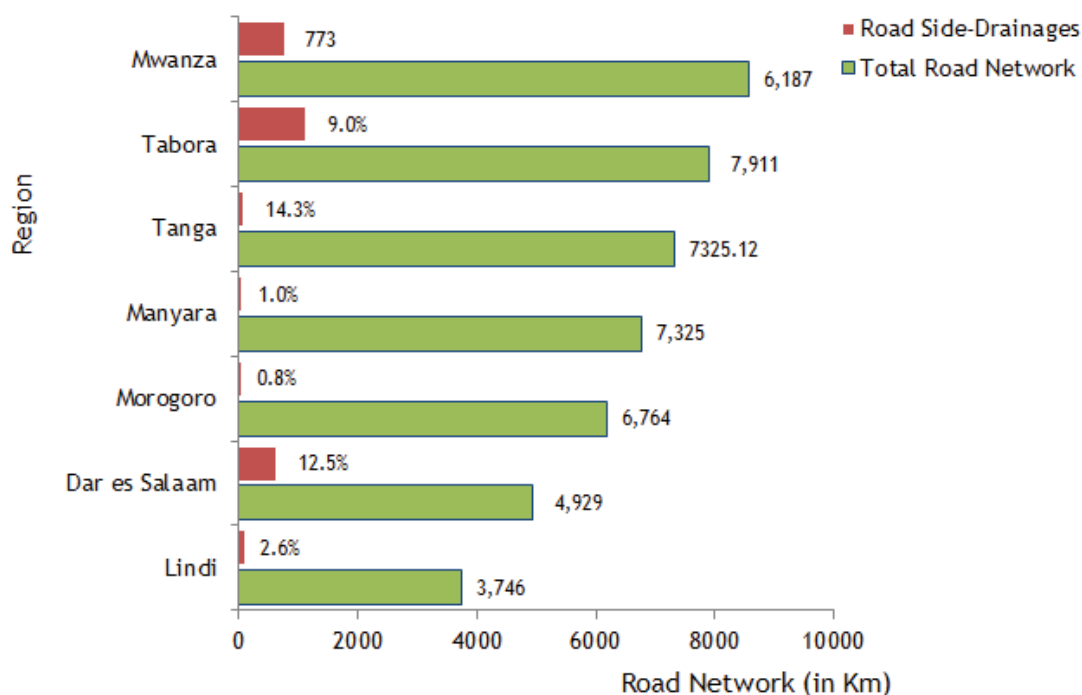


**Photo 3.9:** Paved tarmac roadway named Matumbi road at Kilwa Masoko in Lindi region. The roadway lacks side-drainages (*Photo was taken on 12<sup>th</sup> November 2020*)

In addition, TARURA Officials at Tabora MC revealed further that lack of road side-drainage structures in urban areas is to a certain extent attributed to the limited road width that does not adhere to the provision of roads width standards especially in informal settlement areas.

**Figure 3.6** indicates the status of the TARURA Road Network provided with road side-drainages in visited Regions.

**Figure 3.6: Road Network Provided with Road Side-Drainages in Visited Regions**



*Source: District Road Management System (DROMAS, 2020)*

Figure 3.6 indicates that in all visited regions there are less than 25% of the reported total road networks that are provided with road-side drainages with less than 15% for road networks in Cities of Mwanza and Dar es Salaam notwithstanding the fact that they are having lengthy networks.

Moreover, it was noted that a large network of the Rural and Urban roads in the visited LGAs are not provided with road-side drainages. **Table 3.14** summarizes the proportion of the available road networks that are provided with road-side drainages in the visited LGAs.

**Table 3.14: Status of the Road-Side Drainages in visited LGAs**

LGA	Total Road Network (Km)	Total Road Network with Side-Drains (Km)	%age Network with Side-Drains
Mwanza CC	1,025.6	86.1	8.4
Tabora MC	775.6	88.5	11.4
Babati TC	595.1	24.3	4.1
Korogwe TC	648.5	20.1	3.1
Ruangwa DC	639.0	12.6	1.9
Kilwa DC	756.3	9.7	1.3
Kinondoni MC	1,664	249	15.0
Ilala MC	1,096	223	20.4
Kilosa DC	913.7	14.9	1.6

*Source: District Road Management System (DROMAS, 2020) in visited LGAs (2020)*

Table 3.14 indicates that less than 25% of the available total road networks are provided with road-side drainages in all visited LGAs. Furthermore, the road networks for LGAs in District Councils were less likely to be observed with side-drainages with percent ranging between 1.3% and 4.1% compared to LGAs in Cities and Municipal Councils with percent ranging between 8.4% and 20.4%.

Generally, the interviewed Officials from the visited TARURA Offices indicated that untimely disbursement of the allocated funds necessitates prioritizing certain structures while leaving other items such as side-drainages.

Furthermore, the Audit Team noted inconsistencies in the requirements to provide for road reserve width in rural/urban roads as per Urban Planning Act (2007) and the Roads Act<sup>55</sup> (2007), Roads Management Regulations (2008), and the Urban Planning Space Standard Regulations. **Table 3.15** summarizes the requirements to provide for road reserve width as per the stated standard requirements from each sector.

**Table 3.15: Standard Requirements for Road Reserve Width**

Guideline(s)	Standard Requirement (in Metres)		
	Collector Roads	Feeder Roads	Community Roads
The Roads Management Regulations (2008)	40	30	25
The Urban Planning (Planning Space Standards) Regulation (2018)	30 - 60	60 - 80	20 - 60

*Source: Road Management Regulations (2008) and Urban Planning Space Standards Regulations (2018)*

<sup>55</sup> The Roads Management Regulations (2009)

In addition, the Audit Team noted that there is insufficient preservation of the available flood control measures especially in urban roads through but not limited to storm-water drainage systems and development control.

### ***Storm-water Drainage Systems***

Besides, it was revealed during the interviews with Officials at Ilala and Kinondoni Municipal Councils in Dar es Salaam Region that the observed flash-flooding is due to the low capacity of the available storm-water drainage systems.

However, Officials at Ilala and Kinondoni MCs revealed that the presently operating storm-water drainage system at Dar es Salaam region is overloaded<sup>56</sup> because the capacity of the storm-water drainage system was not designed to accommodate the currently increased storm water flows due to increased surface water runoff in the city. Likewise, the Audit Team noted further that the low capacity of the existing drainage system is also contributed by poor solid waste management in the city.

The Audit Team further noted that during rainfall seasons the observed mounted-up storm-water in several places across Dar es Salaam City Center is because there is no often dredging of the grounded storm-water channels as compared to existing open drainages. However, it was further noted that given the current pavement rate due to increased structural infrastructures, increasing the capacity of the existing drainage system has cost implications.

#### **3.4.4 Inconvenient System for Dissemination of Early Warning Information**

Section 5(2)(e) of the Disaster Management Act (2015) provides for the requirement that DMD has to establish an Early Warning System that covers all stakeholders and retain a close link with different institutions that provide early warning services.

Likewise, the National Operational Guidelines for Disaster Management (NOG) Disaster Management Department requires DMD to collect, analyze and disseminate disaster management information including early warning information through the respective Disaster Management Committees at Regional, District, Ward, and Village levels.

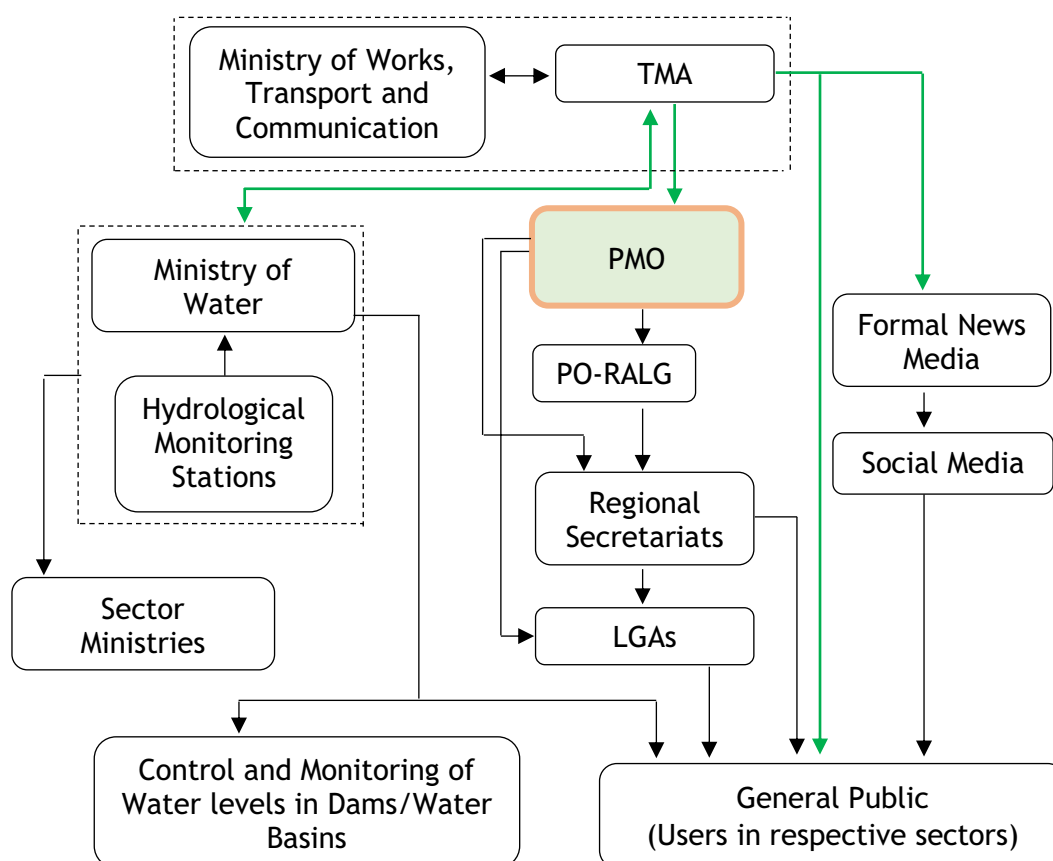
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<sup>56</sup> Despite being acknowledged that the overall system is overloaded, there was no documented evidence for data to provide for the previously designed discharge capacity compared to the currently observed situation.

The audit found out that no clear communication channels for the exchange of floods early warning information between and among the key actors exist, as noted during interviews with the Officials from PMO and other sector ministries. It was further noted that channels for early warning communication between and among the key actors are essentially determined by the urgency and degree of vulnerability for a particular hazard.

Moreover, the Audit Team noted from interviews with officials in sector ministries that management and provision of early warning information within government entities rely mostly on the degree of vulnerability in respective sectors. For instance, Officials in the Ministry of Water have stated that at times, due to urgency, the early warning information is directly exchanged with the client and/or the surrounding community. **Figure 3.7** presents the current practice on the Early Warning Information flow between the key actors.

**Figure 3.7: Floods Early Warning Information Flow**



*Source: Auditors' Analysis of the Interviews with Disaster Focal Personnel in the visited LGAs (2020)*

It is of utmost importance that floods early warning information is issued sufficiently early prior to the potential flood to allow for adequate preparation. The warning should be issued in such a way that persuades community to take appropriate action to minimize damages and/or costs that might result from floods impacts.

Figure 3.7 indicates channels in floods early warning information flow across sectors and government institutions. It illustrates the administrative routes through which the information should flow. However, given the degree of urgency for floods emergency preparedness, the available routes pose some challenges as described below:

- (i) **Delayed Responses:** Even the information may reach the targeted audience at the shortest time possible e.g. through social media, it was noted that in certain circumstances it takes almost the forecasted time-period to the occurrence of disaster-event for the targeted community to respond to the issued warnings; a scenario that was more experienced by farmers.

It was further noted that despite the urgency of the information, the observed time-delays to receive flooding early warning information and thereby taking of appropriate actions is attributed to the requirement to adhere to the existing system of government operations in different administrative levels since each level react based on the issued directives from the next higher level.

- (ii) **Quality of Information:** Since alerts for early warning are received through different channels, it was noted that the intended features of the provided early warning information are likely to be distorted since interpretation for the perceived impacts tend to vary across institutional/administrative levels contrary to the initially issued early warning details from TMA.

Review of the Report on the Conducted Disaster Risks and Capacity Needs Assessment for Tanzania Mainland (2008) acknowledged the existence of a strategy for the establishment of an early warning centre to coordinate, manage and disseminate early warning information to stakeholders for disaster risk mitigation. The report asserts further that for the centre to be fully resourced in terms of equipment and trained Human Resources there must be thoroughly resource need assessments.

Irrespective of the requirement to act as a focal point in communicating and coordination of early warning information system, the Audit Team noted that,

currently, the established Emergency Operation and Communication Centre (EOCC) lacks the necessary resources. This situation affects its operations.

For instance, review of the Proposed Resource Needs for the EOCC indicated the need for having operation and communication systems, stakeholders' data platform, and human resources. These are further described below:

### ***Operations and Communication Systems***

The availability of effective operations and communication systems enhances and facilitates the exchange of information between EOCC and the other stakeholders in disaster management, including disaster coordinators in disaster-affected areas.

### ***Stakeholders' Data Platform***

This is essential for storing stakeholders' information on disaster and will help facilitate the exchange of disaster information before, during, and after the occurrence. Also, the platform will act as a database for all stakeholders in disaster management, recording all important resources that can be used during disaster events as well as a database for all ever happened disaster events along with their impacts.

### ***Human Resources***

This calls for the cadre of staff in different professionals depending on the phase of operation. For instance, in non-emergencies the centre would need to have personnel in Geographical Information System (GIS), Information and Communication System (ICT), Hydrology, and Telephones and Radio Operators. **Table 3.16** highlights the human resources gap at Emergency Operation and Communication Centre.

**Table 3.16: Need for Human Resource at EOCC**

<b>Cadre of Staff</b>	<b>Number Available (n)</b>	<b>Number Required (n)</b>
Geographic Information System (GIS)	0	2
Information and Communication Technology (ICT)	2	4
Hydrologist	0	1
Radio Operators (24/7)	0	5
Telephone Operators (24/7)	0	5

*Source: Staff List of the Prime Minister's Office (2020)*

Table 3.16 indicates that there is a deficit for cadres of staff in the fields of ICT, Hydrology, Radio Operations, and Telephone Operations. The Audit Team noted further that lack of the mentioned resources was due to reliance on resources from the former EOCC Unit under Dar es Salaam Multiagency Emergency Response Team (DarMAERT).

However, the Audit Team noted that despite the timely sharing of climate early warning information 3 to 4 weeks before the forecast of the time for the event, TMA officials revealed weaknesses for the community preparedness and taking of appropriate actions that to a great extent are attributed to the untimely provision of disaster preparedness awareness and/or community readiness in taking appropriate actions.

Besides, it was noted through the review of Summary Reports on Trends of Seasonal Rains (TMA, 2020) that despite being sector-wise, an invitation to advise and share likely impacts from each sector based on the magnitude of the forecasted rainfall. Moreover, there is no evidence for the making use or follow-up and/or preparedness measures that have been taken by each sector ministry.

Generally, the Audit Team noted that the effectiveness of the provided early warning information down to end-users is to a greater extent challenged by lack of an institutional arrangement and/or coordination to provide flooding early warning information.

#### **3.4.5 Level of Capacity Building to Disaster Coordinators at LGAs**

Section 2.3 (vii) of the National Operational Guidelines of Disaster Management Department (NOG, Second Edition 2014) provides that based on the dynamic nature of disasters then effective and efficient disaster management requires strengthening of capacities through the provision of necessary equipment, training, and skills development at all levels.
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Grounded on the basic aspects in disaster management cycle for prevention, mitigation, preparedness, response, and recovery; the Audit Team noted that provision of capacity building for disaster control measures to either personnel at DMD and/or focal personnel in other key sectors was insufficient.

The Audit Team further noted that the PMO Office lacks enough personnel with thorough training on disaster management issues. Given the weight of the responsibilities to coordinate disaster issues in the country, the existing number of personnel with exclusive and extensive knowledge on matters related to disaster



management in the PMO is low. For instance, there are only 2 out of 20 staff with advanced training on disaster issues.

Furthermore, through the review of the Summarized Training Reports for staff at DMD, the Audit Team noted that majority of staff had undergone in-house short-term training on disaster issues relating to Post Disaster Needs Assessment.

The Audit Team noted that the identified weaknesses in skills and competencies are mainly attributed to the fact that the conducted training programs are not derived from the Training Need Assessments that ought to be conducted to all personnel working at DMD.

Similarly, the Audit Team noted a lack of basic knowledge on disaster-related issues for disaster focal personnel at regional and district levels in the visited regions. Also, it was revealed that even for the recently appointed disaster focal personnel neither the induction nor capacity building training programs on matters related to disaster management have been conducted.

**Table 3.17** and **3.18** summarizes information about the year of appointment and awareness on key aspects in the disaster management cycle among disaster focal personnel in the visited Regions and LGAs.

**Table 3.17: Training Status of Disaster Focal Personnel in visited Regions**

Region	Year of First Appointment	Knowledge on Key Aspects in Disaster Management
Mwanza	2019	No
Tabora	2018	No
Manyara	2017	Yes
Tanga	2012	Yes
Lindi	2014	No
Dar es Salaam	2013	Yes
Morogoro	2019	Yes

*Source: Appointment Letters of the Members of Disaster Management Committees in visited Regions (2020)*

**Table 3.18: Training Status of Disaster Focal Personnel in visited LGAs**

LGA	Year of First Appointment	Knowledge on Key Aspects in Disaster Management
Mwanza CC	2019	No
Tabora MC	2011	Yes
Babati TC	2012	Yes
Korogwe TC	2019	No
Ruangwa DC	2015	No
Kilwa DC	2018	No
Kinondoni MC	2018	Yes
Ilala MC	2017	Yes
Kilosa DC	2016	Yes

*Source: Training Reports - Disaster Management Committees in visited LGAs (2020)*

Table 3.17 and 3.18 indicate that most of the provided trainings to the disaster focal personnel at Regional and District levels focused on understanding the basic issues on disaster management rather than key aspects in discharging their roles in the disaster management cycle.

Also, the Audit Team noted that all disaster focal personnel were only trained once since their appointment while the responsibilities they carry are in constant change due to climatic variability and advanced use of technology that necessitate periodical updates on the personnel knowledge, skills, and competencies. For instance, some of the disaster focal personnel were lastly trained and/or made aware of the disaster management issues in the year 2015.

#### ***Inadequate Capacity Building to LGA's Disaster Management Committees***

Out of 8 visited District Disaster Management Committees and 6 Regional Disaster Management Committees only 2 Committees, namely Ilala and Babati District Disaster Management Committees conducted training on disaster-related issues.

The reason for the low number of training to members of Disaster Management Committees stipulated by disaster coordinators from Districts and Regions that were visited was that disaster management including floods control is not given a priority at the level of Districts and Regions.

The absence of periodical and sufficient training has contributed to ineffective performance of Regional and District Committees.

### ***Inadequate Mechanism to Ensure Implementation of Capacity Building Programs***

Section 2.3 (vii) of the National Operational Guidelines on Disaster Management (2014) outlines that based on the dynamic nature of disaster events, the government and other stakeholders should continue to strengthen capacities through the provision of necessary equipment, training, and skills development at all levels.

Besides, Section 3.2.4 provides further that DMD must ensure the provision of capacity building in Regions and Districts primarily through the respective Disaster Management Committees at Regional, District, Ward, and Village levels.

Through interviews with the DMD Officials, it was noted that there are no mechanisms to ensure effective conduct of the capacity building programs (**Section 3.3.6 of this report**) at respective administrative levels.

The Audit Team further noted that even with the implemented capacity building programs, priority is only given to the disaster focal personnel at Regional and/or District levels. The creation of awareness on disaster management issues to the Disaster Management Committees is only considered during disaster occurrence.

The audit further noted that due to lack of sufficient financial resources it is difficult to ensure execution of the training programs down to the village levels. Also, no mechanisms are available to assure programs' effectiveness down to the Ward or Village levels.

### **3.4.6 Absence of Integrated Communication System between Sector Ministries**

Section 22, 2(b) of the Disaster Management Act (2015) requires DMD to prepare Guidelines for proper management of Regional, District, Ward, and Village Disaster Management Committees which prescribe for mode of communication and dissemination of information relating to disaster risk reduction and management.

Currently, there is no guideline for communication between PMO-DMD, Sector Ministries and LGAs regarding floods control matters. Emails and personal phones are the main means of communication at the moment.

It was further noted that no platform for data sharing between PMO-DMD and sector ministries on the disaster management issues exists, the situation which hinders smooth information-sharing regarding preparedness and/or mitigation of impacts from floods.

Similarly, the disaster focal personnel from the visited LGAs indicated that lack of communication guidelines contributed much to the delays in receiving or giving to one another information, specifically the early warning information. Also, the disaster focal personnel from the visited LGAs stated that there are situations for which the issued early warning information and/or directives are received by responsible Officials after the period of warning has expired.

### 3.4.7 Lack of Evacuation Centers with Basic Features

Section 4.7(B) (i) (c) of the National Operational Guidelines for Disaster Management (2014) provides that as part of the operational procedures, protection of life, security, and physical, mental and moral integrity are to be assured through the establishment of evacuation centers located in a manner that fully respects the right to life, dignity, liberty, and security of those affected.

Despite the documentations of the government guidelines, only 3 out of 9 visited LGAs have planned for the evacuation centers (**Table 3.10 of this Report**), Review of the Risk, Vulnerability and Capacity Assessment Reports for several identified LGAs revealed that the majority of the identified evacuation centers are public service facilities such as Primary and Secondary Schools, and/or Health Facilities which in most cases are occupied by the other utility services.

Apart from the low number, (**Section 3.3.8 of this Report**); it was further noted that the established evacuation centers do not fully abide with the requirements as stated in the National Operational Guidelines for Disaster Management. **Table 3.19** summarizes the status of the available evacuation centers in the visited LGAs.

**Table 3.19: Status of the Available Evacuation Centres in Visited LGAs**

LGA	Availability of Evacuation Plan	Availability of Evacuation Centre	Nature of the Located Evacuation Centre	Features Requirements of the Centre
Mwanza CC	No	Yes	Public Service Facility	Incomplete
Tabora MC	No	Yes	Public Service Facility	Incomplete
Babati TC	No	Yes	Public Service Facility	Incomplete
Korogwe TC	No	Yes	Public Service Facility	Incomplete
Ruangwa DC	No	Yes	Public Service Facility	Incomplete
Kilwa DC	No	Yes	Public Service Facility	Incomplete
Kinondoni MC	Yes	Yes	Public Open Space	Incomplete
Ilala MC	Yes	Yes	Public Open Space	Incomplete
Kilosa DC	Yes	Yes	Public Service Facility	Incomplete

*Source: Auditor's Analysis from the Interviews and Observations made during the Site Visits in the visited LGAs (2020)*

Table 3.19 indicates that regardless of the availability for evacuation plans, identified evacuation centers in visited LGAs were designed to serve the provision of the general public services. Likewise, the Audit Team noted that in all visited LGAs the identified centers lack all of the features that ought to be available such as assurance for security and physical matters.

#### **3.4.8 Lack of Initiatives to Ensure Resource Mobilization for Disaster Management Activities**

Section 2.1.6(b) of the National Disaster Management Policy (2004) requires the government and other stakeholders dealing with disaster issues to grant adequate resource allocation for activities relating to the preparation and mitigation of impacts due to disasters.

Likewise, to ensure effective coordination of the disaster management activities in non-emergencies, Section 3.3.1(viii) of the National Operational Guidelines for Disaster Management (NOG, 2<sup>nd</sup> Version-2014) provides that the DMD among other responsibilities is charged with the task to ensure mobilization of financial and material resources.

Despite such provision from the government guidelines, there is insufficient mechanism to ensure the availability of resources to cater for activities on disaster management (**Section 3.3.8 of this Report**). The interview with DMD Officials indicated that arrangements for disaster resources mobilization are found at the sectors and/or administrative levels at Regional and District levels only. Currently, there are no initiatives by DMD to ensure resources are mobilized for activities on disaster events before their occurrence.

The audit further noted that the DMD only ensures the availability of resources intended to respond to flooding disaster events through the establishment of Disaster Warehouses located in specified zones.

#### **3.5 Coordination in the Implementation of Measures for Floods Control**

Section 5(2c) of the Disaster Management Act (2015) calls for the availability of effective inter-sector coordination and enhancement of the formulated technical committees for disaster management at all levels of government operations to control for the impacts due to disasters.

Through the Operations and Coordination Section, DMD is required to prepare, coordinate and implement plans for disaster preparedness and monitor their

implementation. Also, DMD has the role to coordinate Ministries, Departments and Agencies (MDAs), and other stakeholders on disaster preparedness.<sup>57</sup>

The following section provides details of the effectiveness of the procedures used by DMD to coordinate the implementation of measures for flood control in different levels of government operations. Generally, several weaknesses have been identified concerning the coordination role of the DMD as discussed below:

### **3.5.1 Insufficient Mechanism to Ensure Integration of Flood Control Measures**

Section 28 of the Disaster Management Act (2015) provides for the availability of the National Disaster Management Plan to facilitate mainstreaming of disaster risk reduction and management practice in respective sector development plans.

Despite the requirement of the Disaster Management Act (2015), at present, there is no National Disaster Management Plan. Interviews with disaster focal personnel in the visited Ministries for Water, Works, Agricultural, and Land revealed that there are no formal means for which DMD use to ensure the implementation of the available measures for flood control take place as per each sector standard requirements.

Moreover, it was noted through the interview with DMD Officials that despite sector agreements that are made through the Tanzania Disaster Management Committee (TADMAC), in practice, the procedures used to ensure actual implementation of the issued recommendations from this Committee remain uncertain. The Audit Team noted further that currently, DMD authenticates the status of implementation of the measures on disaster through the use of telephones and/or letter inquiries to make follow-up on the status of the implementation.

Besides, it was noted that the existing government requirements on the format for production of quarterly reports for each year in different government operational levels necessitate prioritizing and reporting of other operational activities and leaving-out reporting of the activities for disaster management which if when prioritized would encourage the inclusion of disaster management activities in respective sector plans.

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<sup>57</sup> <https://www.pmo.go.tz/index.php/about-pmo/departments/dm> // Accessed on 18<sup>th</sup> January 2021

### 3.5.2 Ineffective Institutional Framework

Section 3.3 of the National Operational Guidelines for Disaster Management (2014) emphasizes the need for an integrated multi-sectoral approach in disaster management. Similarly, the Guideline acknowledges the presence of the Tanzania Disaster Management Committee (TADMAC) with a role to oversee and coordinate the activities of DMD and to ensure effectiveness in its undertakings regarding preparedness and mitigation of disaster events.

Despite the existing guidelines, the Audit Team noted that much of the activities of the TADMAC focused on overseeing and coordinating activities designed to operate in the event of a disaster instead of ensuring integration of disaster risk reduction interventions in relevant governmental institutions.

Review of the National Operational Guidelines for Disaster Management (2014) indicated key functions which ought to be done by DMD in non-emergencies. These functions include but are not limited to: conduct of hazards mapping, vulnerability analysis, and risk assessments as well as arranging for and carrying out the dissemination of information concerning disaster prevention, preparedness, and mitigations.

In addition, despite the efforts to ensure the establishment of disaster management committees in Regional, District, Ward, and Village levels, there is no proof of the mechanism used by DMD to ensure effectiveness in operations of these Committees as per the requirements in the National Disaster Management Act (2015). The activeness of these Committees is to a great extent determined by the knowledge and/or awareness of the key roles supposed to be accomplished by the Committees.

Regarding the role of Disaster Committees, the Audit Team noted that the observed weaknesses are mainly attributed by the changes in the roles assumed by the committee which were accounted for in the newly enacted Disaster Management Act (2015). For instance, it was clarified that for not being aware of the changes, the roles of Disaster Management Committees are taken by the Defence and Security Committees at Regional and District levels.

**Table 3.20** indicates the year of establishment and status of the respective Disaster Management Committees in the visited Regions and LGAs.

**Table 3.20: Establishment of the Disaster Management Committees**

Region	Committee Level			
	Regional		District	
	Year	Active	Year	Active
Mwanza	2018	No	2018	No
Tabora	*	N/A	2018	No
Manyara	2018	No	*	N/A
Tanga	*	*	*	N/A
Lindi	2019	No	2019	No
Dar es Salaam	2018	Yes	2019	Yes
Morogoro	2020	Yes	2010	No

*Source: Analysis of the Interviews Minutes from the visited Regions and LGAs (2020)*

Notes: \* = Not Established, N/A = Not Applicable

Table 3.20 indicates that Disaster Management Committees in Regional and District levels in the visited regions were established starting in the year 2018 which is three years post-enactment of the Disaster Management Act (2015). The table depicts further that in the Tanga region none of these Committees were established at Regional and District levels. As well, in other areas, for instance, Tabora region the Committee is missing at Regional and available at the District level.

In addition, the audit revealed that ineffective performance of the Disaster Management Committees is mainly attributed to lack of awareness and/or knowledge on disaster management issues among appointed disaster focal personnel in respective Regional and District administrative levels.<sup>58</sup>

### 3.5.3 Absence of Directives and Guidelines on Preparatory Measures for Floods Control Activities

Section 5(2e) of the Disaster Management Act (2015) requires the PMO to establish an Early Warning System covering all stakeholders and maintain a close link with different institutions which provide early warning services.

Despite the availability of the Emergency Preparedness and Response Plan (EPRP) which focuses more on emergency preparedness, there are no directives and/or guidelines issued by DMD to other stakeholders to prepare for measures intending to control impacts from flood. The Audit Team noted that these guidelines are not

<sup>58</sup> Several designated disaster focal personnel are faced with the challenge of being changed (either through post/placement re-allocation or retirement) which poses demand for capacity building to a new appointee.



available to stakeholders especially in the visited Sector Ministries and Disaster Management Committees at Regional and District levels, therefore, currently the operational means of instruction for disaster management depends on the available National Operational Guidelines for Disaster Management (2014) and the Tanzania Emergency Preparedness and Response Plan (TEPRP, 2012).

However, review of the National Operational Guidelines for Disaster Management (2014) and the Tanzania Emergency Preparedness and Response Plan (2012) indicated that the operational contents of these instruments have been overtaken by the Disaster Management Act (2015).

### **3.6 Periodical Monitoring and Evaluation of Flood Control Measures**

Section 3.4 of the National Disaster Management Policy (2004) asserts that at the national level, the overall responsibility to monitor and evaluate management disaster control measures lies within the Disaster Management Department.

Likewise, Section 5(2c) of the Disaster Management Act (2015) gives mandates to the PMO to monitor operations in disaster management activities at all levels in sector ministries and Disaster Management Committees at all levels of the government operations. The Audit Team noted various shortfalls in fulfillment of this obligation, as discussed below:

#### **3.6.1 Inadequate Monitoring of the Urban Planning Schemes for Control of Floods**

Section 5(u) of the Urban Planning Act (2007) provides that based on their capacity, Planning Authorities are required to monitor and evaluate progress in the implementation of the General Planning Schemes and associated Detailed Planning Schemes.

Through the interviews conducted with the Officials from the Ministry of Lands and the Department of Urban Development (DUD) of the PO-RALG, weaknesses were noted on monitoring of urban development control leading to the allocation of plots on flood-prone areas. Also, the Ministry of Lands has got no full mandate to monitor the implementation of the Urban Planning Scheme since its implementation involves different stakeholders such as the Transportation, Communication, Forestry, Water, and Agricultural sectors.

Moreover, the audit revealed inadequate cooperation in monitoring the implementation of the Detailed Urban Planning Schemes. For instance, despite being developed by the PMO, the implementation of the monitoring plans by the LGAs remains to be the role of PO-RALG. Moreover, the PO-RALG plays the role in

monitoring and evaluation of the technical and financial matters although there was no evidence as to whether the two entities (PMO and PO-RALG) exchange information regarding monitoring and evaluation of the disaster-related activities in LGAs.

The audit revealed that such inconsistency exists mainly due to inadequate coordination between DMD and other sector ministries including PO-RALG. Generally, the existing weaknesses jeopardise implementation of the plans and budgets on Urban Planning Schemes for enhancing flood control measures.

Similarly, interviews with the Town Planners in the visited LGAs revealed that inadequate monitoring of urban planning schemes was caused by inadequate resources for monitoring the implementation of the Planning Schemes. It was further noted that despite recently being not available, the Land Rangers played a vital role in ensuring development control.

Moreover, review of the Annual Reports from the Department of Urban Development of the PO-RALG (2015/16-2019/20) revealed that development control focused more on activities for the already constructed structures rather than control of development in planning areas and/or the identified flood-prone areas.

The Audit Team further noted that the establishment of settlements on unplanned areas and other areas established as hazardous areas is contributed by the lack of updated Master Plans in Cities and Towns while those areas were experiencing the growth and population increase that accelerated human developments faster than the capacity of Planning Authorities to cope with.

**Table 3.21: Master Plans for Different Cities and Towns and Periods of Updates**

Region/LGA	Last Master Plan (Year)	New Master Plan (year)
Dar es Salaam	1978-1998	2016-2036
Mwanza	1976-1996	2015-2035
Korogwe	N/A	2015-2035
Babati	N/A	2017-2037
Tabora	1978-1998	2015-2035
Kilwa	-	-
Ruangwa	N/A	-
Kilosa	-	-

*Source: Reviewed Master Plans in the visited Regions and LGAs*

Table 3.21 indicates the gap between previous Master Plans and newly updated or reviewed master plans prepared in different visited LGAs. Over 15 years, cities, for instance, Dar es Salaam and Mwanza were operating without any Master Plans and several visited LGAs got their Master Plans in 2015.

The Audit Team noted that this was due to poor control of development due to high level of developments in Cities and Towns that exceeded the capacity of LGAs to control and monitor developments that took place unconditionally leading to construction on un-planned and hazardous areas that are prone to flooding.

### **3.6.2 Insufficient Monitoring of the Water Management Schemes**

Section 5(2e) of the Disaster Management Act (2015) provides for the requirements for DMD to monitor inter-ministerial and Technical Committees responsible for disaster management at all levels of the government operations. Likewise, Water Resources Regulations (2018) calls for Water Resources Department to promote the construction of flood control structures such as Dams, Levees, and Reservoirs.

Officials from the Ministry of Water pointed-out that DMD did not conduct monitoring and evaluation to ensure that the Ministry of Water through its Water Resources Department had plans and implemented the construction of flood control structures.

Reviewed Plans and Monitoring Reports from DMD (2015-2020) indicated that there are no plans to ensure monitoring of the sector ministries to implement disaster preventive measures. This led to poor implementation of flood control measures as planned by the Water Resources Department in their Five-Year' Strategic Plans.

During site visits to Mahenge Irrigation Scheme in Korogwe TC it was revealed that river and other water schemes were not well monitored to control flooding to settlements and infrastructures. Also, areas around rivers in urban centres were used for agricultural activities and some have established settlements.

For instance, Mwanza established settlements near Lake Victoria at Ziwa Street, and also encroachments were found near River Milongo. Moreover, the audit revealed that settlements have established in Kitopeni and Mansese-Kilole in Korogwe DC within 60m from the Pangani river banks contrary to the requirement of Water Resources Management Act<sup>59</sup>

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<sup>59</sup> Section 34 of The Water Resource Management Act (2009)



**Photo 3.10:** Observed residential buildings constructed within 60m of the Pangani River banks at Manzese-Kilole Ward, Korogwe District Council (*Photo was taken on 03<sup>rd</sup> November 2020*)



**Photo 3.11:** Observed residential buildings nearby Lake Victoria at Butimba Ward in Mwanza Region (*Photo was taken on 16<sup>th</sup> October 2020*)

### **3.6.3 Inadequate monitoring of Infrastructure Constructed to ensure Enhanced Floods Control Measures**

Clause Number 1217 of the Standard Specification for Road Works (2000) provides for the requirements to account for drainages as a significant factor to be considered in all stages of road work development projects.
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Officials from the Ministry of Works revealed that monitoring of road works is done by the Ministry to ensure that roads have the required structures that support the flow of water through side drains, culverts, and bridges. These structures are designed by considering the maximum flow of water that occurred within the return period.

Officials from TARURA at the Council level in the visited LGAs revealed that monitoring of constructed road is conducted through road condition survey and bridge inspections, these two activities are used to prioritize maintenance works regarding the situation of roads during the inspection.

TARURA conducts maintenance works for flood control activities such as de-siltation on ditches and culverts and provision of culverts on areas that experience water problems as part of routine maintenance that is conducted once per year. It was noted that the routine road maintenance works are taking place once a year and that priority is given to roads or structures with the need of urgency and therefore, this leads to accumulated siltation in the available drainages and causes storm water overflow due to decreased depth.

On the other hand, TANROADS Officials at the regional level in the visited regions revealed that Road Condition Survey and Bridge Inspection are activities conducted to monitor constructed roads and structures. Findings from these surveys are used to prioritize maintenance works.

For routine maintenance as part of flood control measure, TANROADS has prepared a long-term contract with contractors responsible for de-siltation works on all roadside drains and structures, also through Road Condition Survey and Bridge Inspections consider all roads that need the provision of culverts and bridges maintenance.

It was further noted that during Bridges Inspection and Road Condition surveys they normally deal with the road corridor issues related to human activities, and on-going upstream development activities are not considered. Non-consideration of these



issues leads to ignoring hydrological studies and catchment analysis during the maintenance.

During site visits in the Tanga region, it was noted that destruction on roads was mainly caused by floods. For instance, the Audit Team observed that flood water was overflowing on Mandra and Ngombe Bridges along Korogwe-Segera Road during 2019/20 extra rainy season because of greater discharge than the one designed for; this led to the provision of additional openings to both bridges to accommodate excessive discharge of the accumulated storm water (**Photo 3.12**).



**Photo 3.12:** Observed part of the Mandra Bridge along Seger-Korogwe Section with added Box Culverts to accommodate the excessive flow of Storm-Water (*Photo was taken on 05<sup>th</sup> November 2020*).

It was further noted that the frequently observed storm water overflows at Jangwani Bridge in the Dar es Salaam region is contributed by the increased rainfall intensity over time and the increased level of siltation that has reduced its designed clearance height from 6m to 1.5m.



**Photo 3.13:** Observed part of the Jangwani Bridge along Morogoro Road in Dar es Salaam region with accumulated debris/sediments (*Source: Ilala Municipal Council, 2020*)

It was further noted from TANROADS Officials, at the Dar es Salaam Regional Offices that the reasons for the high increase of sediments were: (a) Encroachment to nearby and along Msimbazi Valley (b) Unauthorized sand mining activities during dry seasons and (c) High level of clearance at the upper course of the Msimbazi River (Pugu Area) that led to the high level of soil erosion leading to sediments transportation and deposition at the lower course. These factors are further described below:

**(a) *Encroachment on Flood Plains***

The increase of flooding disasters is reflected in both human and natural processes. For instance, floods are liable to the diversion of original river courses, deforestation, and encroachment along river banks.



**Photo 3.14:** Damaged structures located along Mbezi River at Ukwamani Street, Kawe Ward; Mbezi Beach (A) in Dar es Salaam region (*Source: Kinondoni Municipal Council, 2020*)

**(b) Unauthorized Sand Mining**

It was noted that the observed flash floods along Msimbazi River were mainly due to uncontrolled erosion and sedimentation taking place in the river plains. Therefore, sand mining practices to a great extent contribute to soil erosion in the upper and middle sections of rivers that lead to a higher level of sedimentation downstream. This consequently led to the decreased depth of rivers and hence storm water overflows.





**Photo 3.15:** Sand mining along Mbezi River that crosses along Mbezi and Kawe Wards (Source: Kinondoni Municipal Council, 2020)

**(c) High Level of Clearance**

The increased activities at Msimbazi upstream catchment were noted to increase the vulnerability of the soil to erosion and as a result, this mounted-up to the high level of sedimentation processes taking place downstream (**Photo 3.7(b), Section 3.4.2 of this Report**).

Besides, through reviewed Annual Progress Reports from the Ministry of Transport, it was noted that activities and/or plans to monitor construction of roads that targets to enhance measures on flood control were not included. It was further noted that PMO-DMD has not put in place regulations and guidelines that would require sector ministries to conduct monitoring and evaluation and provides reports on disaster (flood) and share them with DMD for further actions and coordination.

**3.6.4 Inadequate Evaluation of the Accuracy of Early Warning Systems in Providing Information on Flood Occurrence**

It was highlighted from the interview with DMD Officials that the accuracy of the floods-related early warning information emanating from rivers remains to be a challenge since collected information from these sources are not real-time based.

It was further noted that the rainy forecasts produced by TMA are too general in geographical coverage. For instance, forecasts might cover the entire zone, Region, or District and not specific to the catchment level. This poses a challenge that despite the issued precautions and/or preparedness to areas in the forecast, there are no such precautions to the nearby areas with the same topographical characteristics and that might bear effects caused from the forecasted areas.

However, the Audit Team noted minimal participation of key sectors in platforms that might help in making weather-informed decision making in the implementation of their activities. For instance, reviews of the Letters of 24<sup>th</sup> August 2020 with Reference No. TMA/1622/Vo 1.IV and of 12<sup>th</sup> October 2020 with Reference No. TMA/1622/Vo 1.IV issued by TMA indicated the absence of potential sectors in Land and Road Infrastructures (TANROADS and TARURA) for the stakeholders' meetings organized by TMA on 3<sup>rd</sup> September 2020 and 19<sup>th</sup> October 2020.<sup>60</sup>

Consequently, challenges in the evaluation of accuracy in providing floods' Early Warning System are attributed to the lack of an integrated hydro-met data platform between stakeholders and/or deployment of out-dated or manually operated devices used to inform decision making in flood forecasting models.

### **3.6.5 Ineffective Communication System for Measures on Flood Control**

Interviewed Officials from Sector Ministries namely PO-RALG, Ministry of Water, Ministry of Land, and Ministry of Transport, and disaster focal personnel in Disaster Management Committees indicated that DMD has not established a centralized system for communication for all types of disasters.

Besides, it was further pointed out that the exchange of disaster information between DMD and other stakeholders is demand-driven and takes place during or at post-disaster period.

However, it was noted that for successful downward or upward communication between DMD and LGAs in non-emergence events, the information has to go through PO-RALG an arrangement that poses a challenge in the realization of effective communication between the two parties since the existing routes imply delays due to bureaucracy along the way.

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<sup>60</sup> The aim for the organized meetings is for TMA to discuss with stakeholders on likely impacts due to forecasted weather conditions in relevant sectors and needed precautions following the provided weather forecasts in a particular season.

Delays in exchange of disaster information between parties have been contributed by the lack of an integrated data system at each Disaster Management Committee level. That system is crucial for enabling easy access to disaster information at any convenient time.

### **3.6.6 Lack of Initiatives to Follow-up on Effectiveness of the Provided Capacity Building Programs for Measures on Flood Control**

The National Operational Guidelines for Disaster Management (2014) calls for DMD to monitor and ensure that Regional Disaster Management Committees and the District Disaster Management Committees include Disaster Risk Reduction concerns in their respective Plans.

Despite delivered trainings by PMO to several disaster focal personnel; there are no initiatives by DMD to ensure monitoring of the provided capacity building trainings to check whether they cover issues regarding disaster preparedness.

Likewise, it was further revealed that PMO lack plans to follow up and ensure that the trained disaster focal personnel at Regional and District levels disseminates the acquired knowledge on disaster management as gained during the training through the conduct of the same training to lower levels of Disaster Management Committees.

It was explained and noted that failure to address issues relating to the effectiveness of the issued capacity building trainings is attributed to the lack of a well-coordinated structure within PMO. Such structures are crucial for enabling follow-up on the implementation status for the disaster capacity building training to the disaster focal personnel and other Disaster Management Committees in other administrative levels.

### **3.6.7 Absence of Plans to Monitor and Evaluate Available Evacuation Centres**

Despite the availability of the designated evacuation centres in several visited LGAs (**Section 3.3.8 of this Report**), the Audit Team noted that there are no initiatives by DMD to monitor and assess the availability of the features that ought to be present for the identified evacuation centres.

In addition, reviewed Action Plans and Progress Reports (2015/16-2019/20) from DMD revealed that planning and/ or monitoring for the availability of evacuation centres in Regional and/or LGAs is not the priority and that these are issues that are

given more attention during disaster occurrence. It is important to note that the established Evacuation Centres must be protected from likely hazards.

**Table 3.22** provide a summary of some of the key issues to monitor in the evacuation plans and their associated risks if not monitored.

**Table 3.22: Consideration of Key Issues to Monitor in Evacuation Centres**

SN	Consideration(s)	Associated Risk(s)
1	Be elevated above any likely impact from high tide or storm surge level (without being unnecessarily exposed to wind impacts)	Possibility for the centre to experience other likely impacts in the midst of the same disaster event
2	Be raised at least 500mm above the identified highest known or predicted flood levels	Possibility for the centre to experience other likely impacts in the midst of the same disaster event
3	Have no nearby large trees, structures, power lines (or other potential hazards) that might represent a threat	The nearby facilities/structures most likely to be impacted by the same disaster event and bring chaos again
4	Be easily accessible and considers those with disability (for all types of hazards event, whether floods, cyclones or tsunami)	Failure to access e.g. vehicles getting humanitarian aids and/or likely to downgrade those with disability
5	Be safe for women, children, the elderly, people with disabilities, and other vulnerable individuals	Failure to cater service needs based on the basic requirements for vulnerable groups

*Source: Auditors' Analysis from the Reviewed Evacuation Centres' Guidelines (Selection and Assessment)<sup>61</sup>*

However, the Audit Team noted that low priority given on activities in pre-disaster times to a great extent contribute to the observed weaknesses. Despite being one of the important components in disaster responses, it is noted that planning for and/or assurance for availability of the evacuation centres is given minimal attention during pre-disaster periods.

<sup>61</sup> Best practice: Guidelines for Selection and Assessment of Evacuation Centres – Government of Vanuatu-Ministry of Climate Change Adaptation (Version 001\_Approved May 2016)

### **3.6.8 Inadequate Monitoring and Evaluation of Initiatives for Resources Mobilization in Floods Control**

Interviews conducted with DMD revealed that except for post-disaster which is on an ad hoc basis, there was no established mechanism to monitor and evaluate the mobilization of resources in Sector Ministries and Disaster Management Committees at all administrative levels of the government.

Officials from the selected sector ministries and in the visited Regional Disaster Management Committees indicated that DMD has not managed to plan, monitor and evaluate the available initiatives in place to ensure resource mobilization for floods control measures.

Generally, initiatives that ought to be monitored from the key identified stakeholders on disaster management consist of checking whether they arrange or plan for assessment on the resource needed for disaster preparedness, arrange for disaster management activity plan, identify potential sources of funding, and prepare activity-based budget.

Furthermore, it was noted that there are no efforts for DMD to make inquiries for submission of disaster management plans and/or meeting minutes from the respective Disaster Management Committees as a means to monitor and verify whether the meetings' agenda covered issues of resource mobilization. Also, DMD did not conduct visits to the Regional Disaster Management Committees for inspection on the utilization of the mobilized resources.

Accordingly, it was further noted that failure to monitor, enquire and review the plans as well as meeting minutes from the respective Disaster Management Committees was attributed to lack of initiatives to plan for monitoring and coordination of the ongoing disaster management activities before disaster occurrence including assessing the setting up of the Disaster Management Committees in respective administrative levels.

## **CHAPTER FOUR**

### **AUDIT CONCLUSION**

#### **4.1 Introduction**

This chapter presents the conclusion based on the overall objective and specific objectives of the audit, as detailed hereunder.

#### **4.2 Overall Conclusion**

The general conclusion from this audit is that the overall task to manage the implementation and coordination of measures towards control of flood risks is not adequately done and there is room for further improvements.

This is mainly because the Prime Minister's Office - Disaster Management Department (PMO-DMD) has not sufficiently guaranteed that government institutions have measures in place to mitigate impacts due to floods. Likewise, PMO-DMD has got no mechanism in place to ensure effectiveness in the implementation of flood control measures at all levels of government operations.

Much of the observed inefficiencies in the operation of activities are attributed to the lack of a guiding National Disaster Risk Management Framework along with the established strategy for actual implementation. The National Framework is important as it provides for the mechanism towards ensuring effective and efficient disaster risk management across sectors and all levels of government operations.

#### **4.3 Specific Conclusions**

##### **4.3.1 Low awareness of Measures to Mitigate the Effects from Floods**

The Disaster Management Department (DMD) has not assured the availability of floods control measures across sectors and Government administrative levels that are set to mitigate effects from floods. This is contributed by the fact that there is limited awareness among sector ministries and/or regions except for few entities such as the Ministry of Water and the Ministry of Agriculture that are frequently experiencing negative impacts due to floods.

Failure to integrate flood-related control measures in sector plans is attributed to the fact that either responsible disaster focal personnel do not get access to capacity building training or the provided capacity building training programs focus more

and/or emphasize on managing the response phase to disasters rather than preparedness and/or mitigation.

Generally, inadequate capacity for DMD to coordinate and ensure effective institutional arrangement to mainstream disaster management issues into development plans and programs at all levels of government operations was the main contributing factor to the observed weaknesses.

#### **4.3.2 Insufficient Mechanism to Ensure the Effectiveness of the Available Flood Control Measures**

Even with the availability of well-known disaster focal personnel in several sector ministries and in Regional and District levels, DMD has not adequately put in place a mechanism to be informed of the availability and effectiveness of the flood control measures.

Generally, regardless of the mandate to coordinate all disaster-related activities in the country, this affects DMD since it is not in the position to be informed of the entities' preparedness on floods related disaster issues. Assurance for the effectiveness of the available flood control measures across sectors would enhance the role of DMD in integrating and coordinating activities in the overall disaster management cycle.

Inadequate use and involvement of the nominated disaster focal personnel in respective sector ministries, regional, and district levels to coordinate flooding disasters before their occurrence was the main reason for poor realization of the available floods control measures.

#### **4.3.3 Lack of Coordination in the Implementation of Measures to Control the Impacts from Floods**

There is no coordination in the course of implementation of activities by the identified sector ministries to minimize impacts from floods. Given the cross-cutting nature of the impacts due to floods in sectors such as Health, Agriculture, Transport, and Land; this requires and necessitates coordination for measures intended to control impacts from floods.

Little or lack of observance on the directives provided in the National Operation Guidelines for Disaster Management, was the main reason for deficiencies in the coordination of activities to mitigate impacts from floods.

#### **4.3.4 Lack of Monitoring for Activities Focused to Mitigate Impacts from Floods**

There are no initiatives to monitor and evaluate the implementation of activities targeting to mitigate impacts from floods. This has resulted into failure to be informed on potentiality for vulnerability and associated risks as well as the existing capacity in sectors and/or areas likely to be impacted.

Lack of the National Disaster Risk Reduction Management Framework to raise understanding and awareness on the goals to mitigate impacts from the existing disaster risks was the main cause for the failure to monitor activities that target to mitigate impacts from floods.



## **CHAPTER FIVE**

### **AUDIT RECOMMENDATIONS**

#### **5.1 Introduction**

The audit findings and conclusions reached indicate the presence of weaknesses in managing flood control measures across sectors and different levels of government. Suggestions for improvement of the audited area in ensuring planning, execution, and monitoring of the measures to control floods have been identified.

The National Audit Office believes that the recommendations that have been given in this report need to be fully implemented to improve the operations in the coordination of measures to control flood in sector ministries and other administrative levels of the government. The suggested audit recommendations take into account the assurance for the presence of Economy, Efficiency, and Effectiveness in the use of the available public resources.

#### **5.2 Main Audit Recommendations**

##### **5.2.1 To Ensure that the Government Entities Responsible for the Control of Floods have Measures in Place**

The Prime Minister's Office - Disaster Management Department should in addition:

1. Promote awareness on measures to mitigate effects from floods in sectors and other levels of the government operations; and
2. Invest in efforts to coordinate and ensure mainstreaming of disaster management issues in respective sectors and other levels of the government operations.

##### **5.2.2 To Ensure Effectiveness in the Coordination for the Implementation of Floods Control Measures in Respective Levels of the Government Operations**

The Prime Minister's Office - Disaster Management Department should:

1. Develop mechanism to ensure there is effectiveness in the coordination of the available measures for flood control across sectors and other levels of government operations;

2. Develop mechanism(s) that will ensure effective use of the available disaster focal personnel to coordinate measures for flood control; and
3. Ensure there is effective coordination on the efforts to realize potential benefits in Disaster Risk Reduction investment through the construction of multipurpose strategic dams.

#### **5.2.3 To ensure Effective Coordination in the Implementation of Measures to Control Impacts from Floods**

The Prime Minister's Office - Disaster Management Department should:

1. Develop a mechanism that will ensure effective coordination in the implementation of measures to control impacts from floods.

#### **5.2.4 To Improve on the Monitoring and Evaluation of the Implementation of Floods Control Measures**

The Prime Minister's Office - Disaster Management Department should:

1. Roll-out and make use of the National Disaster Risk Management Framework along with the strategy that will provide for the basis to monitor the effectiveness of the available measures; and
2. Develop a mechanism that will ensure effective coordination in the monitoring of the activities focused on mitigating impacts from floods.

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## **APPENDICES**

## Appendix 1: Audit Questions and Sub-Audit Questions

This part provides details on the list of main audit questions and sub-audit questions used based on the specific audit objectives.

<b>Audit Question 1</b>	<b><i>Have the measures for floods management been put in place by responsible government institutions?</i></b>
Sub-Audit Question 1.1	Does the preparation of urban planning schemes ensures that flood control measures are considered?
Sub-Audit Question 1.2	Do the plans for river and other water management systems include flood control measures?
Sub-Audit Question 1.3	Do the plans and designs for infrastructure development consider control measures for floods?
Sub-Audit Question 1.4	Does PMO - DMD ensure that early warning systems for flood control are developed And sustained?
Sub-Audit Question 1.5	Does PMO - DMD ensures that LGAs have a plan on risk assessment relating to floods?
Sub-Audit Question 1.6	Does PMO - DMD have measures in place to ensure that capacity building programmes on flood control are developed and timely implemented?
Sub-Audit Question 1.7	Does PMO - DMD ensure that communication systems between key actors are in place?
Sub-Audit Question 1.8	Does PMO-DMD ensure that LGAs develop evacuation plans?
Sub-Audit Question 1.9	Does PMO - DMD ensure that initiatives for resources mobilization to enhance measures for controlling floods are developed?
<b>Audit Question 2</b>	<b><i>Are measures for managing floods being sufficiently enforced and executed at all levels of government operations?</i></b>
Sub-Audit Question 2.1	Does the implementation of urban planning schemes put in place provisions for flood control measures?
Sub-Audit Question 2.2	Are rivers and other water management schemes implemented in a manner that considers flood?
Sub-Audit Question 2.3	Does PO-RALG ensure that construction works adhere to designs standards that enhance control of floods?
Sub-Audit Question 2.4	Does PMO-DMD ensure that available early warning systems are effective in providing information regarding flood occurrences?
Sub-Audit Question 2.5	Does PMO-DMD have measures in place to ensure that capacity building programmes on floods are implemented?
Sub-Audit Question 2.6	Does PMO-DMD ensure availability of effective communication systems across organizations for exchange of information on flood controls measures?
Sub-Audit Question 2.7	Do PMO-DMD and PO-RALG ensure that evacuation plans are prepared and executed?
Sub-Audit Question 2.8	Do PMO-DMD and PO-RALG mobilize resource prior and during flood occurrence?

<b>Audit Question 3</b>	<b><i>Does PMO-DMD effectively coordinate the implementation of measures for managing floods in the Country?</i></b>
Sub-Audit Question 3.1	Has PMO - DMD developed a mechanism for integrating and Main-streaming floods control measures in the national development plans?
Sub-Audit Question 3.2	Has PMO - DMD established and maintained effective institutional framework in the control of floods in the country?
Sub-Audit Question 3.3	Are there effective directives and guidance on preparatory measures for floods control activities in the country?
<b>Audit Question 4</b>	<b><i>Does PMO-DMD periodically monitor, evaluate and report on the effectiveness of the instituted measures for managing floods?</i></b>
Sub-Audit Question 4.1	Is there a monitoring of the implementation of urban planning schemes to ensure that they enhance control of floods?
Sub-Audit Question 4.2	Does PMO - DMD monitor implementation of rivers and other water management schemes with a purpose to ensure that they enhance controls of floods?
Sub-Audit Question 4.3	Is there a monitoring of infrastructure construction works to ensure they enhance floods control?
Sub-Audit Question 4.4	Does PMO-DMD evaluate the accuracy of early warning systems in providing information on flood occurrences?
Sub-Audit Question 4.5	Does PMO-DMD evaluate effectiveness of the available communication systems for floods control?
Sub-Audit Question 4.6	Does PMO-DMD monitor and evaluate implementation of capacity building programmes on floods control measures?
Sub-Audit Question 4.7	Does PMO-DMD monitor and evaluate implementation of Evacuation Plans in areas that are prone to floods?
Sub-Audit Question 4.8	Does PMO-DMD monitor and evaluate implementation of initiatives for resource mobilization in controlling floods?

## Appendix 2: Details of Criteria Used to Select Regions

This part provides for the details on the criteria used to select regions and respective LGAs

Zone	Factors Influencing Occurrence of Floods			Selected Regions/LGAs
	Urban Planning	Water Management	Infrastructure Development	
Northern	Manyara (Babati Town Council)	Manyara (Babati)  Mara Arusha	Manyara (Babati)	Manyara (Babati TC)
Southern	Lindi (Kilwa DC, Ruangwa DC)	Iringa Ruvuma Mbeya		Lindi (Kilwa DC, Ruangwa DC)
Central	Tabora	Dodoma (Bahi)	Tabora (Tabora MC)	Tabora (Tabora MC)
Western	Kigoma (Ujiji MC)	Katavi (Katavi, Mlele)  Kigoma (Ujiji)		
Eastern	Dar es Salaam (Kinondoni MC, Ilala MC and Temeke MC)  Morogoro (Kilosa DC)	Dar es Salaam (Kinondoni MC, Ilala MC, Temeke MC)  Tanga (Korogwe)  Morogoro (Kilosa)	Dar es Salaam (Ilala, Kinondoni)	Dar es Salaam (Ilala, Kinondoni)  Tanga (Korogwe TC)  Morogoro (Kilosa DC)
Lake Zone	Mwanza (City Council)  Kagera (Bukoba)		Mwanza	Mwanza CC (Nyamagana)



### Appendix 3: List of Key Documents Reviewed

This part provides details on the list of the key documents reviewed during the audit and the reasons for reviewing.

Category	Document Name	Reason(s) for Reviewing
Preparatory Measures	<ul style="list-style-type: none"> <li>• Early Warning Systems Reports;</li> <li>• Water Sector Reports</li> <li>• Urban Planning Schemes;</li> <li>• Implementation Reports;</li> <li>• Infrastructure Design Reports;</li> <li>• MTEF for Financial Years 2015/16 to 2019/20;</li> <li>• Risk Assessment Tools;</li> <li>• Institutional Development Plan; and</li> <li>• Minutes for Technical Committees (TADMAC, REDMAC, DIDMAC)</li> </ul>	<ul style="list-style-type: none"> <li>• To assess whether there is established early warning systems for floods preparedness;</li> <li>• To assess whether there are plans for Management and Land Use Schemes;</li> <li>• To assess availability of flood control infrastructures and ensure that are well prepared for; and</li> <li>• To assess whether Environmental Impact Assessments considers issues related to floods.</li> </ul>
Execution of Preparatory Measures	<ul style="list-style-type: none"> <li>• Early Warning Systems Reports;</li> <li>• Reports on Implementation of land use Master Plans;</li> <li>• Institutional Implementation Reports;</li> <li>• Flood Infrastructure Development Reports; and</li> <li>• Other relevant reports on enforcement of measures to control floods</li> </ul>	<ul style="list-style-type: none"> <li>• To establish the extent to which preparatory measures for floods control are being enforced and executed at all levels of the government.</li> </ul>
Coordination	<ul style="list-style-type: none"> <li>• Inter-Ministerial reports on flood controls measures; and</li> <li>• Minutes from meeting held for Technical Committees (TADMAC, REDMAC, and DIDMAC).</li> </ul>	<ul style="list-style-type: none"> <li>• To assess the extent of coordination done by PMO-DMD in implementing activities related to floods control.</li> </ul>
Monitoring and Evaluation	<ul style="list-style-type: none"> <li>• Action Plans for Preparatory Measures;</li> <li>• Monitoring Reports for Water Management Systems, Urban Planning and Land Use Schemes; and</li> <li>• Evaluation Reports for Early Warning Systems, Evacuation Plans, and Capacity Building.</li> </ul>	<ul style="list-style-type: none"> <li>• To assess the extent of monitoring and evaluation conducted to establish effectiveness of measures for managing floods in the country.</li> </ul>

#### Appendix 4: List of Interviewed Officials

This part provides details on the list of interviewed officials and the reasons for selecting the officials.

Entity	Interviewed Official	Reason(s) for Interview
Prime Minister's Office - Disaster Management Department (PMO-DMD)	Selected Officials within the Disaster Management Department	To understand the procedures used to ensure effective coordination in management of activities for measures to control impacts from floods across sector ministries and other levels of government operations.
Ministry of Water (Water Resources Department)	Selected Officials from the Department of Water Resources Management	To understand the mechanism used by the ministry to ensure effective coordination of activities for measures to control impacts from floods across entities operating under the Ministry.
Ministry of Agriculture (Land Use Planning and Management)	Selected Officials from the Department of Land Use Planning and Management	To understand the mechanism used by the ministry to ensure effective coordination of activities for measures to control impacts from floods across entities operating under the Ministry.
Ministry of Works, Transport and Communications	Selected Officials from the Directorate of Works	To understand the mechanism used by the ministry to ensure effective coordination of activities for measures to control impacts from floods across entities operating under the Ministry.
Presidents' Office - Regional Administration and Local Government (PO-RALG)	Selected Officials from the Department of Urban Development (DuD)	To understand the mechanism used by the ministry to ensure effective coordination of activities for measures to control impacts from floods in Regional and Local Government Authorities (LGAs)
Tanzania Meteorological Authority (TMA)	Selected Officials	To understand the roles assumed by TMA towards ensuring effective communication in the provision of floods early warning information across sectors and other levels of government operations.
Disaster Focal Personnel at Regional Level (Regional Disaster Management Committee)	Disaster Focal Personnel at Regional level	To understand the mechanism used to coordinate activities on measures to control impacts from floods at Regional, District, Ward and Village levels.

Entity	Interviewed Official	Reason(s) for Interview
Disaster Focal Personnel at District Level (District Disaster Management Committee)	Disaster Focal Personnel at District level	To understand the mechanism used to coordinate activities on measures to control impacts from floods at District, Ward and Village levels.

## Appendix 5: Roles of Key Sector Ministries as Linked to Floods Control Measures

Entity/Agency	Key Activity for Measures on Flood Control	Linkage to Measure(s) on Flooding
Ministry of Lands, Housing and Human Settlements Development	Formulation of Policies, issuance of Regulations and Guidelines	Monitoring the implementation of Urban Planning Schemes targeting management of storm water drainage systems and/or Development Control in identified flood-prone areas
Ministry of Works, Transport and Communication (TANROADS/TARURA)	Formulation of Policies, issuance of Regulations and Guidelines	Ensuring reflection of storm water drainage channels during designing, construction, and maintenance of road works through monitoring of the implemented activities as well as conduct of flood risk assessment
Ministry of Agriculture	Formulation of Policies, issuance of Regulations and Guidelines	Ensuring the provision of guidelines on close monitoring and identifying coping strategies to counteract effects that could be brought by due to flooding in the agriculture sector.
Ministry of Water	Formulation of Policies, issuance of Regulations and Guidelines	Monitoring on effectiveness in flood management as an integral part in the overall water resources management through construction of flood control dams, ensuring catchment conservation, flood monitoring, flood forecasting and provision of early warning system
Tanzania Meteorological Agency (TMA)	Weather forecasting and provision of flooding early warning information	Issuance and dissemination of severe flooding weather-related warnings, processing and dissemination of meteorological information

**Source:** Tanzania Emergency Preparedness and Response Plan (2012)