



DISASTER RISKS AND CAPACITY NEEDS ASSESSMENT FOR ZANZIBAR

Final Report

**Prepared for and on behalf of the Disaster Management Department
(DMD), Chief Minister's Office**

By

**The Disaster Management Training Centre (DMTC)
Ardhi University (ARU)
Dar es Salaam**

March 2008

Table of Contents

LIST OF TABLES	3
LIST OF PLATES	4
LIST OF FIGURES	5
LIST OF ABBREVIATIONS AND ACRONYMS	6
1. INTRODUCTION	7
1.1 Background:	7
1.2 Purpose and objectives of the study:.....	7
1.3 Terms of Reference:.....	8
1.4 Methodological approach:	8
2. LOCATION AND SIZE OF ZANZIBAR:	11
2.1 Unguja and Pemba Islands:	11
2.2 Climate:	15
2.3 Population size, density and distribution:.....	16
2.5 Administrative set-up:.....	17
2.6 History and administration of disasters in Zanzibar:.....	17
2.7 Establishment of the Disaster Management Department (DMD):...18	
2.8 Role of the Disaster Management Department in Zanzibar (DMD):19	
2.9 Key Stakeholders:	19
2.10 Review of existing documents related to disaster management in Zanzibar:	20
3. DISASTER RISK PROFILE OF ZANZIBAR.....	23
3.1 Fire outbreaks:	23
3.2 Floods:	25
3.3 Marine accidents:.....	25
3.4 Epidemics:.....	26
3.5 Drought:.....	27
3.6 Environmental degradation:.....	27
3.7 Proliferation of unplanned settlements:	29
3.8 Cyclones:.....	29
3.9 Civil conflicts:.....	30
3.10 Earthquakes:	31
3.11 Old and dilapidated buildings:	31
3.12 Tidal Wave Action (Tsunami):.....	31
4. CURRENT CAPACITIES FOR COPING WITH DISASTERS IN ZANZIBAR.....	33
4.1 Disaster Management Department (DMD):.....	33
4.2 Kikosi Maalumu cha Kuzuia Magendo (KMKM):.....	37
4.3 Police Force:.....	38
4.4 Armed Forces:	38
4.5 Fire and Rescue Department:.....	39
4.6 Tanzania Meteorological Agency:.....	39
4.7 Department of Construction:.....	40
4.8 Zanzibar International Airport:	40
4.9 Zanzibar Port Corporation (ZPC):	41

4.10 Ministry of Agriculture, Livestock and Environment:	41
4.11 Department of Environment:.....	41
4.12 Zanzibar Municipal Council:	42
4.13 Regional Disaster Committees:.....	42
4.14 Tanzania Red Cross Society:	43
5. CAPACITY NEEDS	47
6. CAPACITY BUILDING PROGRAMME.....	50
APPENDICES	62
APPENDIX 1: TERMS OF REFERENCE	63
APPENDIX 2: LIST OF DOCUMENTS REVIEWED	67
APPENDIX 3: LIST OF INSTITUTIONS CONSULTED	69
APPENDIX 4: ZANZIBAR DISASTER RISK PROFILE MATRIX.....	70
APPENDIX 5: LIST OF STAKEHOLDERS WHO ATTENDED A WORKSHOP TO DISCUSS THE DRAFT REPORT	71
APPENDIX 6: GLOSSARY OF KEY TERMS	72

LIST OF TABLES

Table 1: Ten leading diagnoses in Zanzibar 2000 – 2004.....	26
Table 2: Responsibilities, requirements and existing capacities of different institutions responsible for DRR.....	44
Table 3: Capacity needs.....	48
Table 4: Programme focus areas and activities	53

LIST OF PLATES

Plate 1: Consultation with stakeholders in the office of the Regional Commissioner (Urban West Region).....8

Plate 2: Members who attended a consultative meeting to discuss the draft report in a group picture with the Permanent Secretary in the Chief Minister’s Office.....10

Plate 3: Residential buildings located in a public health and environmentally hazardous area.....30

LIST OF FIGURES

Figure 1: Location map of Unguja and Pemba Islands.....	12
Figure 2: Map of Unguja Island	13
Figure 3: Map of Pemba Island	14
Figure 4: Reported fire incidences in Zanzibar 2001-2007	24

LIST OF ABBREVIATIONS AND ACRONYMS

AU-NEPAD	African Union-New Partnership for Africa's Development
CCM	Chama cha Mapinduzi
CUF	Civic United Front
DMD	Disaster Management Department
DMTC	Disaster Management Training Centre
DME	Distance Measuring Equipment
DR	Disaster Risks
DRR	Disaster Risk Reduction
GIS	Geographical Information Systems
ICAO	International Civil Aviation Organisation
ICT	Information and Communication Technology
ISDR	International Strategy for Disaster Reduction
KMKM	Kikosi Maalumu cha Kuzuia Magendo (Anti-Smuggling Unit)
MoH	Ministry of Health
NGOs	Non Governmental Organisations
NOG	National Operating Guidelines
SP	Strategic Plan
TCAA	Tanzania Civil Aviation Agency
TMA	Tanzania Meteorological Agency
TOTs	Training of Trainers
TRC	Tanzania Red Cross Society
UNDP	United Nations Development Programme
UNESCO	United Nations Education, Scientific and Cultural Organisation
VOR	Very High Frequency Omni Directional and Ranging
ZPC	Zanzibar Port Corporation
ZSGRP	Zanzibar Strategy for Growth and Reduction of Poverty

1. INTRODUCTION

1.1 Background:

The Revolutionary Government of Zanzibar for over time has undertaken disaster management initiatives, which are geared towards reducing disaster risks (DR) that the country experiences. These initiatives are coordinated by the Disaster Management Department (DMD) which was established in June 2006 and located within the office of the Chief Minister. The key focus of DMD in its efforts to reduce disaster risk in Zanzibar is to mainstream disaster management programmes and activities within the development sectors across key players of disaster risk reduction at all levels. However, the implementation of this is currently constrained by lack of adequate knowledge on the type and levels of disaster risks facing Zanzibar and capacity of key players around such risks to address them. It is on the basis that the Chief Minister's Office, through the DMD contracted Ardhi University to carryout a study on the disaster risk management in Zanzibar

1.2 Purpose and objectives of the study:

The purpose of carrying out disaster risk and capacity needs assessment study has been to assist the Disaster Management Department together with key stakeholders involved in disaster risk management in Zanzibar in order to firstly, establish their current capacity in dealing with disasters; secondly, to identifying their capacity needs; and thirdly, to come up with a capacity building programme for better handling of disaster related matters. In view of the above, this report has been prepared in order to realize the following specific objectives:-

- i. To analyze disaster risks besetting Zanzibar;
- ii. To determine the current capacities of DMD and its key stakeholders in addressing disaster risk management in Zanzibar;

- iii. To identify necessary infrastructure, human and financial resources to support disaster risk management in Zanzibar; and,
- iv. To propose a programme for capacity building of DMD and its key stakeholders for better management of disaster risks in Zanzibar.

1.3 Terms of Reference:

The Terms of Reference (ToR) for this assignment is appended in this report as Appendix 1. However, in summary, the client required the consultant to accomplish the following tasks:

- i. To review relevant Government documents including the existing legislations and such other legal instruments akin to disaster risk management in Zanzibar;
- ii. To conduct in-depth consultations with key informants and stakeholders including Government and Non-Government Institutions with the view to identify major disaster and disaster risks besetting Zanzibar including, their frequency, intensity and socio-economic and environmental impacts; and,
- iii. To produce a detailed report containing the disaster risks besetting Zanzibar, the current capacity of DMD and its key stakeholders in addressing such risks, capacity building needs required and a programme for capacity building of DMD and its key partners to better manage disaster risks in Zanzibar

1.4 Methodological approach:

In order to realise the Terms of Reference cited above, the consultants sought to use a participatory approach in which the views of key stakeholders involved in Disaster Risk Management are represented (see, e.g., Plate 1). Thus in the process of preparing this report the following key activities have been covered:

- i. Review of different Government policies, legislations and other documents relevant to disaster risk management in Zanzibar. The list of documents reviewed is appended as Appendix 2.
- ii. In-depth consultations and discussion with DMD and other key stakeholders from the Government and Non-Governmental institutions in both Unguja and Pemba. However, some of the key stakeholders could not be consulted due to other pressing commitments. A list of key stakeholders or institutions consulted is appended as Appendix 3.



Plate 1: Consultation with stakeholders in the office of the Regional Commissioner (Urban West Region).

- iii. Analysis of the findings and production of the draft report.
- iv. Presentation and discussion of the draft report before key stakeholders at a consultative meeting. A list of key stakeholders who attended the consultative meeting is appended as Appendix 5.
- v. Refining of the draft report, production of the final report for submission to the DMD office.



Plate 2: Members who attended a consultative meeting to discuss the draft report in a group picture with the Permanent Secretary of the Chief Minister's Office

2. LOCATION AND SIZE OF ZANZIBAR:

2.1 Unguja and Pemba Islands:

Zanzibar is made up of a group of islands in the Indian Ocean 25 – 30 kilometres off the coast of East Africa which is part of Tanzania. The islands consist of numerous small islands and two large ones; namely, **Unguja** (the main island, sometimes informally referred to as **Zanzibar**) and **Pemba** (Figure 1). The capital of Zanzibar is Zanzibar town. The Pemba Island also known as 'Al Jazeera Al Khadra' (the Green Island) is situated about 50 kilometres to the north of the island of Zanzibar. Pemba is regarded to be hillier and more fertile than Unguja and is dominated by small scale farming. The islands extend between latitude 4° and 6° south and between longitude 39° and 40° east. Unguja Island is about 40 kilometres from Tanzania mainland at its narrowest point and is separated from its sister island - Pemba by about 50 kilometres. The total surface area of Zanzibar is 2,648 square kilometres of which Unguja covers 1,660 square kilometres and Pemba covers the remaining 988 square kilometres. On the average, Unguja Island is 91 kilometres long and 22 kilometres wide (Figure 2) while Pemba is 68 kilometres long and 18 kilometres wide (Figure 3).



Figure 1: Location map of Unguja and Pemba Islands



Figure 3: Map of Pemba Island

Unguja Island is relatively flat with the highest point of 105 meters above sea level. Pemba Island on the other hand consists of a torturous hill system. The maximum height is 75 meters above sea level. The geological composition of Unguja Island is mostly clayed sand submerged in alluvial terrain along the coast and other soil composition is mainly of low spread of dry thinly vegetated reef limestone with smaller terrace features at intervals. On the other hand, Pemba Island consists of:

1. Marine clay and sand in Chake chake areas;
2. Slip of clay and sand terrain in Wete;
3. Raised limestone reef in the eastern side of island.

Based on the economy analysis, both Pemba and Unguja Islands have five distinct livelihood zones each. In total Zanzibar have ten (10) broad livelihood zones.

2.2 Climate:

Due to their location, Zanzibar islands experience maritime equatorial climatic regime with an average temperature between 30°C and 35°C during the larger part of the year. The minimum mean temperature is 20°C during the cooler seasons. The main rainy seasons in both islands are during the months of March to June (locally known as **Masika**) and during October to December (locally known as **Vuli**). During other months the rain is moderate. The average annual rainfall is 1600 mm in Unguja and 2000 mm in Pemba. Humidity in Unguja is about 80 percent for a long period of the year while in Pemba the humidity is slightly lower. Zanzibar Islands experience the Southeast monsoon (locally known as **Kusi**) from March to August and Northeast monsoon (locally known as **Kaskazi**) in October and November.

2.3 Population size, density and distribution:

Zanzibar consists of a multiracial and multicultural community. It is a society of many faiths and of different origins. The population is of mixed races primarily of African and Arab decent and blended with local culture. According to the Population and Housing Census (2002), Zanzibar had a population of 981,754 with a growth rate of 3.1 percent and a population density of 370 per square kilometre.

Of the total population, 40 percent of the people live in urban areas while the remaining 60 percent live in rural areas. The outburst of the population growth rate was mostly attributed to high fertility rate of 5.3 and the current (2007) population of Zanzibar is estimated at slightly above 1 million people. Worth noting is that Zanzibar is the most densely populated part of East Africa with around 400 persons per square kilometre.

2.4 Socio-economic Activities:

Fishing and agriculture are the main economic activities of the local people. Zanzibar was once the world's largest producer of cloves, and her economy was based on large incomes thus derived. Although cloves are still a major export along with coconut products, spices and sea weeds, tourism has been earmarked as the primary foreign exchange earner. Besides clove trees, the local people also grow rice, banana, cassava and red beans. Also, between the Pemba Island and mainland Tanzania, there is the 32 kilometres wide deep Pemba channel, which is the most profitable fishing ground for game fishing on the East African Coast.

2.5 Administrative set-up:

Zanzibar gained her independence from the United Kingdom on December 10, 1963 as a Constitutional Monarchy under the Sultan. This state of affairs was short-lived, as the Sultan and the elected government were overthrown on January 12, 1964 and on April 26 of the same year, Zanzibar united with the mainland state of Tanganyika to form the United Republic of Tanzania. Zanzibar, therefore, is an Island State within the United Republic of Tanzania and it has its own semi-autonomous government headed by a President. The government is made up of a Revolutionary Council and a House of Representatives (Legislative Assembly). Zanzibar is divided into five Administrative Regions: - three regions in Unguja (Zanzibar South; Zanzibar North and Zanzibar Urban/West) and two regions in Pemba (Pemba North and Pemba South). Altogether there are 10 Districts (two in each region), 50 Constituencies and 299 Shehias (Villages).

2.6 History and administration of disasters in Zanzibar:

Zanzibar has experienced a variety of both natural and man-made disasters. Past experience has shown that drought, floods, epidemics, fire, strong winds, accidents (road, industrial, marine, civil aviation), pest infestation, civil conflicts and minor earthquakes are major types of hazards in Zanzibar. Some of the previous disasters in Zanzibar have caused loss of lives, damage to properties and infrastructure and, environmental degradation causing serious disruption of the development gains made over the years. A very serious cyclone incidence according to the Tanzania Meteorological Agency (Zanzibar Office) happened in 1872 and it had impacts to the people and properties. A remarkable disaster that happened in Zanzibar in recent years that drew the attention of the Revolutionary Government of Zanzibar and some of the Development Partners, were floods that happened in 2005. They were the worst floods in Zanzibar in 40 years.

Heavy rain which was recorded at 400 millimetres poured for three consecutive days from 17 – 19 April, 2005 causing floods to most parts of Unguja and substantially affecting the lives of the people, their properties, infrastructure and the environment. Approximately 1,760 families were affected.

Epidemics (especially cholera outbreaks) had also been experienced. This is very much due to poor sanitary living environment especially in the unplanned settlements, which according to the available statistics account for about 70% of the housing areas in Zanzibar. Other disasters that have occurred in Zanzibar include marine accidents (e.g., capsizing of sea vessels), sinking of two houses in Jang'ombe area and the occurrences of marine cyclones that sometimes resulted in pulling down houses mostly in areas along the coast. The impacts of the Tsunami in December 2004 were also experienced in Zanzibar. It is worth noting however, that measures that had been taken to deal with previous disaster incidences focused more on responses to disasters – a reactive approach. Nonetheless, current thinking calls for amalgamating reactive approach with a proactive approach to disasters. In other words there is need of streamlining Disaster Management with Disaster Risk Reduction.

2.7 Establishment of the Disaster Management Department (DMD):

In June 2006, the Revolutionary Government of Zanzibar established the Disaster Management Department (DMD) mainly for the purposes of coordinating activities related to disaster management in Zanzibar. The Disasters Management Act, 2003 that became operational in 2006 is the basis for the establishment of the Disaster Management Department; although, the Act stipulates the establishment of a Commission for Disaster Management.

The establishment of a Department instead of a Commission was said to have been influenced by the activities of the newly established unit; that is, since the unit has just been established and it is still being capacitated then there was no need for the unit to start functioning as a Commission. As the Department expands its functions, then it will gradually be upgraded to a Commission.

For efficiency, DMD established a unit in Pemba. Currently the unit is having only one staff who is the officer in charge for activities related to disasters in Pemba. Under The Disasters Management Act, 2003 Pemba has also established Regional Disasters Management Committees for the two regions of Pemba South and Pemba North. The disasters management unit in Pemba is answerable to DMD-Zanzibar.

2.8 Role of the Disaster Management Department in Zanzibar (DMD):

The DMD is an overall coordinating body for disaster activities in Zanzibar (elaborated more in capacity section). These activities need adequate capacity for effective implementation. There are also participatory organs, which aim at ensuring that the management, execution and, monitoring and evaluation of disaster incidences will be multi-sectoral, inter-disciplinary and inclusive.

2.9 Key Stakeholders:

Zanzibar has the following stakeholders who are involved in the whole process of disasters management: The Government as the key player. Line Ministries include the Ministry of Health, Ministry of Water, Construction, Energy and Land, Ministry of Agriculture, Livestock and Environment, and Ministry of Communication and Transport. Key departments include Tanzania Meteorological Agency (Zanzibar Office), Fire and Rescue Department, Survey and Urban Planning Department in

Ministry of Agriculture, Livestock and Environment, Department of Road Construction and Department of Public Health Services within the Ministry of Health. Other stakeholders are the Chief Ministers' Office, Police Force, Tanzania Metrological Agency (Zanzibar Office), Zanzibar Port Corporation, Local Government Authorities, NGOs, Donor/Development partners as well as the Community as a whole. These stakeholders are divided into four main categories: Beneficiaries, Implementers, Decision Makers and Donors/Financiers. Some stakeholders may fall into more than one category, depending on their role and involvement in the disaster management process. One important point to take note of is that all stakeholders are the key players and beneficiaries in the process.

2.10 Review of existing documents related to disaster management in Zanzibar:

As stated earlier on, the Disaster Management Department in Zanzibar was established mainly for the purposes of co-ordinating activities related to the management of disasters in Zanzibar. The Disasters Management Act, 2003 is the basis for the establishment of the Department. It is worth noting that the Act provides for establishment of a Commission for Disasters Management rather than a Disaster Management Department.

The Zanzibar Strategy for Growth and Reduction of Poverty (ZSGRP) - 2007 recognises that Disasters can easily erode economic and poverty reduction achievements. Both natural and man-made disasters lead to losses of life and property as well as environmental degradation. Therefore, containing disasters calls for definitive disaster management policy and optimal utilisation of resources.

Improved Public Safety also stipulates Improved Disaster Management and Early Warning System. ZSGRP identifies major problems and challenges besetting the management of disasters and early warning system and also the activities that different Actors will do in order to address such problems and challenges.

The Draft Strategic Plan (2005 – 2008) for managing disasters sets out a Strategic Direction for Intervention. That is, the Strategic Plan sets out a ‘Vision Statement’, a ‘Mission Statement’ and the purpose of Intervention. The logic of intervention and the disaster management Planning Matrix for Zanzibar are pretty well enunciated therein.

The Strategic Plan (SP) also emphasises *inter alia* on the need to strengthen capacity of communities to respond to disaster events. Preparedness to disasters allows for contingency plans as a coping strategy and efficient response. Since the management of disasters is multi-sector in approach, it takes into cognisance all sectors’ endeavours so as to ensure that disaster management is integrated with development activities of all sectors. Thus, the draft Strategic Plan presents an in depth analysis of all the Stakeholders.

The Police Forces have specific roles to play in the whole realm of disaster management. Specifically in Part II – Section 5(1) of Cap. 322-Supp. 58 of the Police Force Ordinance, ‘Duties of the Police Force’ have been tacitly spelled out. On the other hand, Part VIII and Part IX of the Maritime Transport Act 2006 spell out Prevention of Collision and Navigation (Collision Regulations, Distress and Safety) and Safety of Life at Sea, respectively.

A 'Disaster Management Policy' is one of the most important documents, yet it is missing. It is recommended, therefore, that efforts to prepare such an important document be expedited, since a disaster management Policy is the axis of all disaster management activities.

3. DISASTER RISK PROFILE OF ZANZIBAR

The disaster risk profile of Zanzibar was compiled using literature, observations and interviews that were conducted both in Unguja and Pemba. Eleven (12) types of disasters were mentioned by the stakeholders as occurring commonly in both Unguja and Pemba (Appendix 4). These include fire outbreaks, floods, marine accidents, epidemics, drought, marine pollution, proliferation of unplanned settlements, strong winds, civil conflicts, earthquakes, collapsing of old and depilated buildings and tidal wave action (tsunami).

3.1 Fire outbreaks:

Frequent Fire outbreaks have been reported and pose potential risk in both Unguja and Pemba islands. The areas most at risk with fire hazards include oil depots, petrol stations, Zanzibar Harbours, warehouses, industrial areas and Zanzibar International Airport. It should be noted that according to the available statistics, Zanzibar International Airport is second busiest airport in Tanzania after The Julius Nyerere International Airport in Dar es Salaam. Other vulnerable areas include residential, institutional and commercial area in which fire outbreaks can have disastrous impacts. Factors contributing to the frequent occurrences of fires include poor enforcement of the standards and regulations that govern fire risk reduction. For instance, it is very rare to find buildings with adequate fire fighting facilities and emergency fire exits. The compactness of buildings, narrow streets and lack of accessibility for fire fighting vehicles to go pass during fire incidences are other noticeable shortcomings that are more pronounced in Unguja, especially in the Stone Town area and unplanned settlements. It is also worth noting that fire hydrants that were installed in 1960's have been destroyed or encroached by housing development. Most of the available fire hydrants are not in a working condition.

Frequent fire outbreaks are most problematic disaster events in Pemba. There have been numerous incidents of fire whereby clove plantations have been destroyed causing significant economic losses. Fire outbreaks are at times accidentally started by individuals who set fire in their farms in order to clear them ready for the planting season. Another cause of fires is said to be excessive heat during dry and extreme sunshine periods whereby fires occur spontaneously. Honey harvesting has at times been identified to be the other source of fire outbreak. These fires have been reported to destroy not only clove trees but also rubber plantations, which are also commonly found in Pemba. Fire has not only caused damage to cloves and rubber trees but also has destroyed a number of houses and shops in the central business district in which a lot of valuables and goods including houses and shops were burnt to ashes. Figure 4 shows incidences of fire reported in Zanzibar between 2001 and 2007. The incidences involved burnt of buildings, vehicles, forest and transformers.

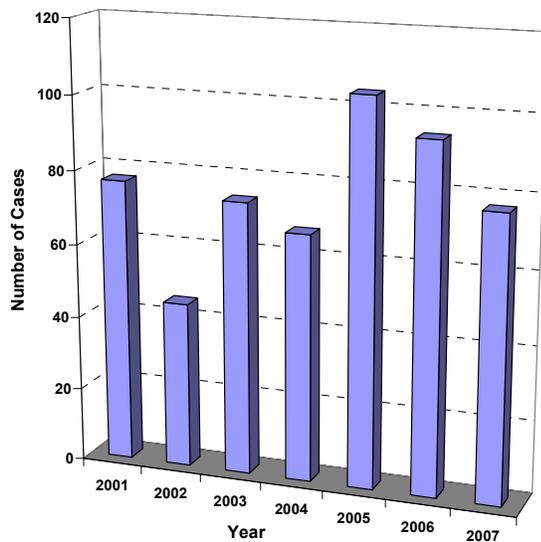


Figure 4: Reported fire incidences in Zanzibar 2001-2007

(Source: Fire and Rescue Department, Zanzibar)

3.2 Floods:

Flooding was mentioned by stakeholders (Appendix 4) as one of the common disasters occurring in both Unguja and Pemba islands. Flooding occurs more frequently in urban areas partly due to a generally flat and low lying terrain of the islands. Unregulated urban development whereby people built their houses in fragile and flood prone areas including wetlands and river valleys also contribute to the problem. Lack of proper storm water drainage system is also a contributing factor for flooding for some areas both in planned and unplanned areas. Unplanned areas are highly affected by flooding, as most of them are not only developed in lowlands but also have high density haphazardly built houses, which do not have proper storm water drainage systems. In some cases even in areas where drains are provided, flooding occurs due to the blockage of storm drains because of solid waste that has been haphazardly dumped. Available statistics show that about 216 tonnes of solid wastes are generated daily in Zanzibar urban areas but only about 40% to 43% of the wastes generated are collected.

3.3 Marine accidents:

Marine activities constitute one of the important undertakings that have a substantial contribution to the economy of Zanzibar. These activities include shipping, fishing and marine tourism. A number of small marine disasters have occurred over time in both Unguja and Pemba, including capsizing of marine vessels. This has led to property loss especially fishing gear, injury and at sometimes loss of life. In addition, oil spill from marine vessels was also mentioned as one of prominent environmental disasters facing the islands.

3.4 Epidemics:

Epidemic problems experienced in Zanzibar are mainly contributed by poor living environment. Between 60% and 70% of the population in urban areas in Zanzibar live in the unplanned settlements. These settlements are characterized by lack/inadequate provision of infrastructural services such as water supply and liquid and solid waste collection, treatment and disposal. Common health problems resulting from unsanitary living environment include outbreaks of communicable diseases such as cholera, malaria and respiratory ailments notably Tuberculosis (TB). Outbreaks of cholera and paralysis have been reported in Pemba Island in the past. These epidemics were reported to the Ministry of Health (MoH) and other relevant organs, which took stern measures to contain them. For example, the MoH has been stockpiling drugs and vaccines in anticipation of a cholera outbreak. The fishing campsites (commonly referred to as *Madago*) have been identified to be most vulnerable to cholera; and in the event of a cholera outbreak, such campsites are put under quarantine immediately. The Health Statistical Bulletins as quoted from the Country Health Profile for Zanzibar, 2007 indicates the top ten leading diagnosis for the years between 2000 and 2004 to be as follows:

Table 1: Ten leading diagnoses in Zanzibar 2000 – 2004

Diagnoses	2000	2001	2002	2003	2004
Malaria	49.2	46.9	46.2	47.1	44.6
Bronchitis	6.6	7.6	6.5	7.8	7.2
Pneumonia	3.9	4.4	4.4	5.3	5.8
Upper Respiratory Infections	4.7	4.8	5.4	5.5	5.8
Open wounds	5.7	4.8	5.0	4.2	4.5
Gastro-enteritis	3.7	3.7	3.5	3.6	4.1
Anaemia	3.1	3.7	3.0	2.9	2.4
Other skin diseases	***	1.6	1.9	1.9	2.2
Conjunctivitis	2.4	2.1	2.9	2.0	2.1

Diagnoses	2000	2001	2002	2003	2004
Intestinal worms	3.0	3.8	3.1	2.2	1.9
Other diagnoses	17.7	16.6	18.1	17.5	19.4
Total %	100.0	100.0	100.0	100.0	100.0
All diagnoses	435,177	547,705	620,559	510,987	812,520

(**Source:** Health Statistical Bulletin: In Country Health Profile for Zanzibar, 2007)

3.5 Drought:

The frequency of drought occurrences in Zanzibar is perceived by some stakeholders to be on the increase. Generally, drought occurrence is a natural phenomenon, normally caused by annual and inter-annual climate variability that leads to wet and dry seasons and wet and dry years. Example of drought incidences include the one that occurred in the north-east coast of Pemba, which led to food shortage and starvation to the communities living in those areas. The increase in drought incidences has led to some stakeholders to believe that it is being contributed by climate change, even though currently there is no scientific data in Zanzibar to support this view.

3.6 Environmental degradation:

According to the 2004 report on the State of the Environment for Zanzibar, the quality of the environment of Zanzibar is to some extent being compromised by unsustainable anthropogenic activities. The coastal area and its resources are some of the Zanzibar's most valuable ecological and economic assets. There are rapid changes in the environment of Zanzibar's coastal areas especially the Unguja East Coast (notably in Kiwengwa area) as a result of development of tourism industry. In Pemba, the coastline is largely still intact however it is yet to be clearly known how the development of tourism will affect the coastal areas. In addition the sustainability of mangroves, which protect the coastline from erosion and provide breeding grounds for fish, is also becoming a challenge.

Mangroves continue to be felled down for construction of houses among other uses. Salt farming is also posing a risk to mangrove stock in the east coast. Coastal erosion and coral reef damage, if left unchecked, will negatively impact the tourism and fishery sector as well as Zanzibar's marine biodiversity.

In social service provision, water is a top priority. Currently, the water demand on Zanzibar is not being met and some sources are contaminated, mainly from human waste. The contamination negatively affects the overall health of the population. Even though the access to water for Zanzibar's population has increased, some districts still face water shortage problems. The Zanzibar Water Policy of 2004 highlights these issues. The Policy stipulates that conservation, recycling and general awareness of the population and improved coordination between the Department of Water and other relevant departments, can improve water services in Zanzibar.

The State of Environment Report has also documented the problems of degradation of natural vegetation especially in unprotected areas. The protected forest areas such as Jozani and Ngezi forests have led to increased tourism and environmental values. However, increasing population is placing pressure on unprotected forests. Coral rag forests are cut down for fuel and cultivation. It is estimated that about 500 hectares of coral rag forest is cleared each year.

In addition, unregulated quarrying activities are causing land degradation in some parts of the countryside. There are 29 active quarries, which are used for extraction of fine and course aggregates as well as stone. Some reinstatement is taking places but not for the majority of quarries. The increased demand for building stone is causing an increase in quarrying activities.

Furthermore, Flagship species such as the Pemba Flying Fox and the Ader's Duiker continue to be under threat though there are some efforts to protect them. If this trend will be left unchecked, it may result into serious and irreversible ecological damage to the environment.

3.7 Proliferation of unplanned settlements:

Unplanned settlements as pointed out earlier constitute about 70% of the urban housing area in Zanzibar. Like many other unplanned settlements, these areas are characterized by unguided housing densification and spatial disorderliness that inhibit provision of basic services, including water and access road services. Some of the unplanned settlements are located in environmentally hazardous areas including flood prone areas (Plate 3). The emergence and growth of these settlements is to large extent a result of unguided land acquisition and housing development processes. Increasing housing density has resulted into poor sanitation, inadequate solid waste management services, vehicular inaccessibility and lack of fire hydrants in case of fire eruptions.

3.8 Cyclones:

All areas along the coast are prone to cyclones. Even though, these winds very rarely hit the coast of Zanzibar but in case it happens the consequences can be very serious. Strong winds can destroy, various kinds of infrastructures including homes, power lines and other service infrastructures. They can also cause injury and loss of life.



Plate 3: Residential buildings located in a public health and environmentally hazardous area

3.9 Civil conflicts:

Zanzibar has two main political parties, namely, Chama cha Mapinduzi (CCM) and Civic United Front (CUF), which have strong ideological differences. The political differences have led to civil unrest especially during election periods. If these differences are not properly managed they might lead to civil conflicts and bring social, economic and humanitarian disasters to the people of Zanzibar. There is a challenge, therefore, of maintaining peace and harmony in Zanzibar to avoid possible disaster that may arise due to the political tension existing between the two major political parties.

3.10 Earthquakes:

Despite not being in the earthquake zone, it has been reported that there have been two incidences of earthquake occurrence in Zanzibar in recently. This is an indication that there are possibilities of earthquake incidences to occur in the future. Depending on the magnitude, any community located within the epicentre of the earthquake can feel the devastating impacts of an earthquake. However, there are some areas in Zanzibar especially the Stone Town, which seem to be more vulnerable to the devastating effects of an earthquake. The Stone Town is predominantly comprised of old and dilapidated buildings, which were built during the Sultanate era. This is yet another challenge facing the authorities in Zanzibar to ensure that measures are put in place to minimize the potential impacts that may arise should a strong earthquake strike in Zanzibar.

3.11 Old and dilapidated buildings:

The Stone Town strongly portrays the culture and history of Zanzibar as a number of historical sites and buildings are found in the area. The area not only preserves the culture and history of Zanzibar and manifests cultural fusion and harmonization but it is one of the most important tourist attractions in Zanzibar. In addition, Stone Town is a UNESCO World Heritage Town. The area is, therefore, not very safe from the disaster point of view. The challenge here is to balance between minimization of disaster risks and the sustenance of the historical value of the Stone Town.

3.12 Tidal Wave Action (Tsunami):

A tsunami is created when an earthquake occurs under the sea. On December 26 2004 a big Tsunami hit several countries surrounding the Indian Ocean, covering Indonesia, Thailand, Sri Lanka, Malaysia, and

India including the entire East African coast. The Tsunami killed over 200,000 people causing huge damages within the countries. In the East African coast the tsunami killed about 12 people especially fishermen but also caused a lot of damage to the fishermen's boats and dhows.

Tidal waves date as far back as 1872 when a massive wave hit the coast of Unguja killing a lot of people and uprooting Clove and Coconut trees. A testimony to this is a grave of one person believed to be of a Goan origin. This grave is said to be representing other peoples' graves whose cause of death was the Tsunami. The grave is located near the Nkrumah Teachers Training College.

Therefore, Zanzibar is potentially vulnerable to Tsunami strikes, which calls for putting in place an effective Early Warnings System.

4. CURRENT CAPACITIES FOR COPING WITH DISASTERS IN ZANZIBAR

The current capacities for coping with disasters in Zanzibar are based on information collected from the key stakeholders and from literature including, the draft strategic plan for strengthening Disaster management in the Country.

4.1 Disaster Management Department (DMD):

As stated previously, DMD was established in June 2006 under the Chief Minister's office. The Disasters Management Act, 2003 is the basis for the establishment of DMD. The Act assigns the following mandate to DMD:

- i. Promoting and maintaining the interrelationship between the Disaster Management Department and other institutions and departments which directly deal with disaster issues;
- ii. Facilitating the establishment of database which includes names, contact addresses and all other important information for different institutions and department dealing with disaster issues;
- iii. Preparing a map of Zanzibar indicating all areas with potential disaster risks;
- iv. Making evaluation of the disaster effects before and after disaster occurrences;
- v. Facilitating the collection and distribution of information to the different stakeholders concerning the areas with high disaster risks;
- vi. Making evaluation of disaster victims' needs during and after disaster.

In general terms, the Act mandates DMD to be the overall in charge of disaster management issues in Zanzibar. In order for DMD to perform its mandated functions properly it needs to have adequate capacity in the following key areas that directly affects its performance:

- Sound policy and legal framework, coordination system and operational guidelines;
- Properly trained and qualified manpower;
- Good information and communication system;
- Sufficient office space and related facilities and infrastructure;
- Adequate budget to implement planned activities.

Assessment of the current capacity of DMD has revealed the following critical areas that the department needs to make improvement in order to perform its mandated functions properly and efficiently:

- **Policy, legislation and plans:**

Although the Act for disaster management is in place, it was not enacted on the basis of the policy framework. The Act is also inadequate in addressing some critical disaster issues. For instance, some of the key actors in disaster issues such as communities and civil society organizations are not covered by the Act. In other words, the institutional arrangement for disaster issues is not accommodative enough to utilize the potentials of all key stakeholders. DMD has recently initiated the process of formulating a disaster policy. Formulation of the policy will necessitate reviewing of the existing Act (Disasters Management Act, 2003). The existing DMD strategic plan which guides the day to day activities of the department will also need to be reviewed to take on board provisions of the disaster policy, which is under preparation and amended Act.

- **Human resource capacity:**

The department has 8 members of staff out of whom one member is stationed in Pemba. Only 3 members of staff have undergone basic short-term training on disaster issues. The number of trained staff and the level of their training are not sufficient to enable the department to handle disaster issues adequately. As the coordinating unit of disaster issues in Zanzibar, DMD requires to have adequately trained staff in all crucial aspects of disaster issues. Therefore, the importance of investing in short and long-term training of staff of DMD can not be overemphasised if the department is to perform its mandated obligations adequately. Most importantly, DMD staffs must also undergo a Trainers course for effective multiplication of knowledge on disaster issues from the national to grassroots level.

- **Information and Communication Technology (ICT):**

As stated earlier on, DMD is mandated to facilitate the establishment of a database for different institutions and departments dealing with disaster issues; prepare disaster potential risk maps and facilitate the collection and distribution of information pertinent to areas with high disaster risks. Effective performance of these functions requires adequate ICT infrastructure and skills. For example, preparation of disaster potential risk maps requires knowledge in GIS and skills in using available GIS tools/software, whereas establishment of a database needs a good command of database software. For smooth and timely communication with stakeholders there is a dire need to put in place an e-mail system. At the moment there is an ICT specialist at DMD who is not knowledgeable in disaster issues.

Therefore, there is a need to offer basic training in disaster issues to all ICT specialists to enable them apply the ICT knowledge in disaster risk reduction and management effectively.

Given the nature of communication and data processing required by virtue of its mandates, there is a need for DMD to improve in the following ICT areas:

- *Client Server Architecture* that will facilitate both inter and intra e-mail communication as there will be a need to have a Server(s) that will handle e-mail facilities and also storage of important application software and working files.
- *Client PC's or Laptops*; given the establishment and if all the professional staff would be recruited according to the establishment, there will be a need to increase the number of PC's and Laptops for staff to participate in the Client Server Architecture.
- *Local Area Network* that will provide the environment for the implementation of the Client Server Architecture. This would mean installation and cabling costs plus other accessories for mounting the racks and cables.
- *System and Application software*: The Servers and Client computers (i.e., desktops and laptops) would need to be installed with DRR specific application or related software (such as GIS and database preparation software).

Adequate ICT infrastructure and skills will also improve efficiency of staff.

- **Office Accommodation and Furniture:**

The current office space and furniture of DMD are not enough. The available two rooms in the Office of the Chief Minister where DMD is accommodated are also shared with other Government units.

Regrettably, this situation reduces the working efficiency of DMD staff as they lack good working environment. Therefore, there is an urgent need to provide separate and adequate office accommodation, new office furniture and fixtures to cater for the full staff establishment of DMD.

- **Budget Allocation:**

In order to implement the improvement proposals given above and to enable the DMD to perform its day to day mandated functions properly and efficiently, it is very crucial to allocate sufficient financial and other resources to the department. The present budget allocation to the department is mainly for recurrent expenditures covering remunerations and other administrative functions. Therefore, budget allocations which commensurate with mandated obligations that seek to minimize disaster risks in Zanzibar at all levels should be provided to the Department. By so doing, Zanzibar shall be complying with the Hyogo Framework for Action 2005-2015, which among others emphasises on mainstreaming disaster issues in development.

4.2 Kikosi Maalumu cha Kuzuia Magendo (KMKM):

KMKM (Anti-Smuggling Unit) is a special force created to deal with smuggling issues in Zanzibar. KMKM is also mandated to deal with marine and rescue operations. Currently, the KMKM has a well-organised structure and well distributed operational points in both Unguja and Pemba for handling its obligations. It, however, has a limited number of equipment including lifeboats, inflammable life crafts, life jackets, lifebuoys and outdated marine charts and lifting barges that can lift up to 30 tons only.

In addition, it has about 40 trained divers. However, they do not have staffs that are specially trained in DRR issues, and there is no budget for disaster issues

4.3 Police Force:

The Police force is involved in disaster related activities on daily basis. In the context of disaster risk reduction, the police have to be involved in all main stages including prevention, preparedness, response (especially crowd control, security provision and communication), search and rescue and rehabilitation. To effectively fulfil their obligations, the police force must be well facilitated and organised. The current functional and technical requirements more or less fulfil the daily obligations of the police force. This is reflected by clearly organised police structure, one common radio frequency used by first other responders including the ambulance services, fire-fighters, and private security agencies. Police stations are well distributed in the regions of Unguja and Pemba. However, they do not have a document spelling out Standard Operational Procedures (SOP) for dealing with disasters in general together with other agencies, they have no people specifically trained on DRR issues and they have no budget specific for disaster issues.

4.4 Armed Forces:

The Armed Forces have been and still are potential key stakeholders in disaster management in Tanzania as a whole both in disaster preparedness and in response. The Armed Forces are mobile, have trained manpower, requisite equipment and well organised. In the past, the Armed Forces have been providing tents for cholera patient treatment camps and participated in rescue operations involving accidents of passenger marine vessels. What is required is for the Armed Forces to be

made more aware on the DRR issues in general and how to operate as a team with other stakeholders in handling emergency events.

4.5 Fire and Rescue Department:

The main function of the fire and rescue department is to prevent and fight fire and also to conduct search and rescue operations. In terms of functional requirements, the department has a well-organised structure just like the police and the military. However, the main functional limitation is lack of a document spelling out the Standard Operational Procedures during a fire outbreak. The technical capabilities are relatively low as only three fire stations in both Unguja and Pemba have fire tenders. In Pemba, the fire station though has adequate fire fighters; it has no fire tender and is located far away from the urban centre. The Zanzibar International Airport does not have its own fire fighting vehicles. In addition, the Zanzibar port also has no adequate fire fighting equipment and neither a special marine vessel for fire fighting.

4.6 Tanzania Meteorological Agency:

In the DRR context the Tanzania Meteorological Agency (Zanzibar Office) is responsible for providing climate data especially for extreme weather events such as strong winds, heavy downpours, rough seas and extreme temperatures. This information can be used as Early Warning message for the general public and government and non-government agents to take precautionary measures against impending disaster events. However, the agency has very little interactions with other stakeholders dealing with disaster management issues and the agency's workers have little knowledge on disasters.

4.7 Department of Construction:

The Department of Construction develops and implements Building Laws and Regulations in Zanzibar. It is also responsible for quality control for structures built in the islands. In addition, the Department of Construction controls the structures built in Zanzibar through the issuing of building permits and carrying out site inspections. In the past, the Department has been involved in emergency operations during disaster events. However, the Department has yet to internalise DRR in its day-to-day activities as it has limited knowledge on disaster management issues.

4.8 Zanzibar International Airport:

The main responsibility of the Zanzibar International Airport management is to safely run the airport as per ICAO and TCAA Regulations. The airport meets the minimum requirements for an international airport. The runway is about 2,642 meters long and has a number of gadgets including non-omni directional beacons, distance measuring equipment (DME) and, very high frequency omni directional and ranging (VOR). The airport has an emergency plan but does not have its own fire-fighting brigade. The staffs of the airport seem to lack the broader context of DRR and management. Zanzibar International Airport management operates as a Government Department, which at times makes it difficult to quickly respond to issues that need un-delayed funding.

4.9 Zanzibar Port Corporation (ZPC):

Zanzibar Port Corporation is responsible for running marine ports in Zanzibar. It has facilities that can be used in search and rescue for marine related disasters. However for other types of disasters, it appears it is not well connected with other key stakeholders especially on disaster related information. Also the awareness by the ZPC staff on DRR issues is low. For the ZPC to be more active in disaster response and rescue, protocols and guidelines ought to be put in place.

4.10 Ministry of Agriculture, Livestock and Environment:

Generally, the Ministry is overall responsible for agriculture and livestock development in Zanzibar. Some of its key activities include preparing policies and plans for agriculture development, monitoring of annual and seasonal crop production, animal and plant diseases, pests infestation and food security. It has an Early Warning unit that works together with the Tanzania Meteorological Agency (Zanzibar Office) that warns the community of extreme climatic events. The Ministry is fairly equipped to handle its everyday activities but it needs to streamline DRR activities in its development plans.

4.11 Department of Environment:

The main function of the Department of Environment is to provide advisory services to others sectors on environmental issues. The Department is also concerned with developing different types of environmental standards and environmental monitoring. The department uses most of its resources in developing and implementing environmental plans but not disaster management issues per se. The fact that many disasters are normally environmentally related there is a need for the department to streamline disaster issues in its everyday activities.

Consequently, more of its staff have to be trained at least up to a postgraduate level in both environmental and disaster issues.

4.12 Zanzibar Municipal Council:

Zanzibar municipality has about 250,000 residents out of which 18,000 live in the stone town. Among other functions, the Zanzibar Municipal Council is responsible for keeping the town clean and maintaining public places. Unlike other Municipalities elsewhere, urban physical planning is a preserve of the Urban Development Control Authority in collaboration with the ministry responsible for construction. The main function of the Municipal Council in the context of DRR is to minimize disaster occurrences and to respond to such incidents when they occur. The authority has some capacities in preventing and dealing with disasters through preventing the municipal dwellers from building in flood prone areas and by constructing and maintaining storm water drainage channels. In an event of disaster, the Municipal authorities are involved in availing necessary equipments and facilities for disaster response. The main limitations are lack of Operating Procedures, trained people on disaster issues and well-facilitated Municipal Disaster committee.

4.13 Regional Disaster Committees:

The regional disaster committees have many functions within their areas, including making inventories of DRR issues, promoting awareness, preparing against and responding to small disasters, and linking the region with the DMD offices. The capacities of Regional Disaster Committee in Zanzibar are still low even though all Regions in Zanzibar have disaster committees. The main limitations are Lack of funding for managing small disaster events, training and lack of local operations guidelines.

4.14 Tanzania Red Cross Society:

Tanzania Red Cross Society (Zanzibar) deals with all types of disasters in Zanzibar. However, when a disaster is too big for them to handle they can appeal to other levels of RCS elsewhere. The RCS in Zanzibar has over 600 volunteers and it works very closely with the Ministry of Health. The RCS can improve its operations in Zanzibar by also working very closely with other first responders including hospitals, police, fire and the military by for example carrying out joint search and rescue operations.

Table 2 summarises the responsibilities, functional and technical capacity requirements and current capacities of the consulted stakeholders.

Table 2: Responsibilities, requirements and existing capacities of different institutions responsible for DRR

S/N	Organization	Responsibilities	Requirements		Current capacities	
			Functional	Technical	Functional	Technical
1	DMD	Overall coordination on DRR issues, development and implementation of policies, laws and operational guidelines, capacity building in DRR, preparing DRR profiles, vulnerability assessments and DRR information systems, disaster preparedness plans and conducting public awareness on DRR	DR policy, laws, organization structure and operational guidelines, rolling strategic plan	Trained manpower, offices and equipments, budget, communication equipments	Disaster law, draft strategic plan, organizational structure	Budget, office facilities, basic training on DRR to some few staff
2	KMKM	The main responsibility of KMKM is to prevent illicit trade of goods. It is also responsible for search and rescue operations.	DRR Policy, operational guidelines	Trained personnel on DRR issues, specialized training of search and rescue, DRR budget, technical equipments including specialized boats, marine charts, aircraft or helicopter,	Law, organization structure, operating specific to the unit	Trained personnel, both in Unga and Pemba, and offices, equipments,
3	Police Force	Multitude, including disaster preparedness, search and rescue, first responders, crowd controllers, information disseminators, security providers	DRR policy, DRR, operational guidelines	DR training, technical equipment (in communication, jaws of life, crowd control tools) DRR budget	Law, operating guidelines specific to the police, organization structure	Trained personnel, offices, equipments, communication network

S/N	Organization	Responsibilities	Requirements		Current capacities	
			Functional	Technical	Functional	Technical
4	Armed Forces	First responders, search and rescue, disaster preparedness	DRR policy, Operational guidelines. DRR budget	Trained manpower in DRR, communication equipments	Law, operating guidelines specific to the military, organization structure	Trained personnel, offices, equipments, communication network
5	Fire and Rescue Department	Fire fighting, search and rescue	DRR policy, Operational guidelines	Fire fighting cars and associated tools,	Law, operating guidelines specific to the fire brigade, organization structure ,	Trained personnel, offices, equipments, communication network
6	Tanzania Meteorological Agency	Weather focusing including early warning	DRR policy, operation guidelines Early warning communication system	Climate analytical tools, early warning dissemination equipment	Law, operating guidelines, organization structure	Trained personnel in meteorology, offices, equipments, communication network
7	Department of Construction	DRR in building regulations, investigations in collapsed buildings	Building codes in context of DRR, DRR Operational Guidelines, Building inspection plan	Trained personnel in DRR issues, DRR Budget , rescue equipments	Law, operating guidelines, organization structure	Trained personnel in building technology, offices, equipments, communication
8	Zanzibar International Airport	Fire services at the airport	DRR policy, Operational guidelines	Trained personnel in DRR issues, mock exercises, fire equipments	Law, operating guidelines, organization structure	Trained personnel in building technology, offices, equipments, communication evacuation signs

S/N	Organization	Responsibilities	Requirements		Current capacities	
			Functional	Technical	Functional	Technical
9	Zanzibar Port Corporation	Management and operations of ports in Zanzibar	DRR policy, Operational guidelines	Trained personnel in DRR issues, marine rescue equipments	Law, operating guidelines, organization structure	Trained personnel, offices, facilities including, communication facilities
10	Department of environment	Overall responsible for environmental management in Zanzibar	DRR policy, Operational guidelines	Trained personnel in DRR issues	Law, operating guidelines, organization structure	Trained personnel in environments related fields, offices, facilities
11	Zanzibar Tourist Cooperation	In charge of tourism activities in Zanzibar	DRR policy, Operational guidelines	Trained personnel in DRR issues, first aid kits and knowledge	Law, operating guidelines, organization structure	Trained personnel in tourism' offices,
12	Ministry of Agriculture, Livestock and Environment	In charge of agricultural, livestock, fishery and environment in terms of policy, programmes and project developments and implementation	DRR policy, Operational guidelines	Trained personnel in DRR issues	Law, operating guidelines, organization structure	Trained personnel in agriculture, livestock and environment.
13	Zanzibar Municipal Council	Overall management of Zanzibar municipality in planning and service provision (drainage, sewerage and solid waste management).	DRR policy, Operational guidelines	Trained personnel in DRR issues	Trained personnel in DRR issues	Trained personnel, equipments and facilities (though limited)
14	Ministry of Health	In charge of health related matters in Zanzibar.	DRR policy, Operational guidelines	Trained personnel in DRR	Law, operating guidelines	Trained personnel

5. CAPACITY NEEDS

Capacity building needs were identified using the disaster profile, current capacities of key stakeholders of DRR, DMD draft strategic plan and Disaster law. Overall, the capacity needs are classified into two main categories; i.e., functional and technical. Functional capacity building includes reviewing or developing policies, laws, operational guidelines and procedures, strategic plans, research areas, simulated exercise plans, emergency plans, mainstreaming of disaster issues in key sectors and information dissemination plans. Technical needs include the training or raising of awareness in disaster issues, provision or improvement of office accommodation and related facilities, conducting simulated exercises, providing relevant equipment and facilities to key stakeholders, conducting research including vulnerability assessment in the islands. The needs for each key stakeholder are shown in Table 3 below. The capacity needs are both for the DMD and other stakeholders. The DMD needs are focused on developing of policies, laws, plans, training and improvement of office accommodation and facilities. The first responders for example the Police Force, Armed Forces, KMKM, and selected hospitals their capacity needs focus on preparedness and response including carrying out joint exercises and stockpiling of essential medicines, tents, food and equipment. For other sector ministries and regional offices, the focus is on mainstreaming and raising awareness of disaster issues.

Table 3: Capacity needs

S/N	Organization	Capacity needs	
		Functional	Technical
1	DMD	Review of disaster related laws that are conflicting, DRR policy, operational guidelines, rolling strategic plan ,joint simulated exercise plans, information management plan, DRR research areas	Adequately trained human resources, adequate budget, offices and associated facilities, communication facilities.
2	KMKM	Review of disaster related laws that are conflicting, streamline of DRR, disaster unit	Specialized training on search and rescue, DRR budget, technical equipments including specialized boats, marine charts, aircraft or helicopter,
3	Police Force	Review of disaster related laws that are conflicting, streamline of DRR, disaster unit	DRR training , technical equipment (in communication, jaws of life, crowd control tools) DRR budget
4	Armed Forces	Review of disaster related laws that are conflicting, streamline of DRR, disaster unit	DRR training , technical equipment (in communication, jaws of life, crowd control tools) DRR budget, joint simulated exercises
5	Fire and Rescue Department	Review of disaster related laws that are conflicting, streamline of DRR, disaster unit ,	Fire engines, joint simulated exercises DRR budget, more fire stations
6	Tanzania Meteorological Agency.	streamline of DRR, early warning communication system	Training on DRR issues, Climate analytical tools, early warning dissemination DRR budget equipment
7	Department of Construction	Review of disaster related laws that are conflicting, streamline of DRR, disaster unit	Training in DRR issues, DRR budget and rescues equipments
8	Zanzibar International Airport	mainstream DRR, plan for mock exercises	More trained personnel in DRR issues, more mock exercises and fire equipments, improve airport security, improve evacuation signs
9	Zanzibar Port Corporation	Review of disaster related laws that are conflicting, mainstream DRR, disaster unit	More trained personnel in DRR issues, more mock exercises and marine rescue equipments, DRR budget
10	Department of Environment	Review of disaster related laws that are conflicting, mainstream DRR, disaster unit, DRR research plan, DRR information system	Trained personnel in DRR issues,, DRR budget

S/N	Organization	Capacity needs	
		Functional	Technical
11	Zanzibar Tourist Corporation	Mainstream DRR, disaster unit	Trained personnel in DRR issues,, DRR budget
12	Ministry of Agriculture, Livestock and Environment	Review of disaster related laws that are conflicting, Mainstream DRR, disaster unit, research areas, DRR communication system	Trained personnel in DRR issues,, DRR budget, equipments
13	Zanzibar Local Authorities	Review of disaster related laws that are conflicting, Mainstream DRR, disaster unit, research areas, DRR communication system	Trained personnel in DRR issues,, DRR budget
14	Regional Disaster Committees	Review of disaster related laws that are conflicting, Mainstream DRR, disaster unit, DRR communication system	Trained personnel in DRR issues,, DRR budget
15	Ministry of Health	Review of disaster related laws that are conflicting, Mainstream DRR, disaster unit, DRR communication system, joint exercise plan, specialized emergency hospitals	Trained personnel in DRR issues, DRR budget, equipments, emergency stock, mock exercises, specialized hospitals equipped

6. CAPACITY BUILDING PROGRAMME

An assessment of the existing capacity and capacity needs for disaster risk reduction was analysed in Sections 4 and 5 for DMD, sector ministries and regions. The capacity building programme has nine focus areas and within each focus area a number of activities can be implemented. The nine focus areas are as follows:

- i. Policies, legislation and plans;
- ii. Institutional strengthening;
- iii. Risk mapping and vulnerability assessment;
- iv. Training, public awareness and sensitisation;
- v. Early Warning;
- vi. Disaster Information Management System;
- vii. Preparedness, response and mitigation;
- viii. National Emergency Plan; and
- ix. Emergency operational centre and warehouse.

The nine focus areas for capacity building will be implemented through the main disaster stakeholders in Zanzibar as follows: Firstly, the DMD, which is the overall in charge of disaster issues in Zanzibar, will also spearhead the capacity building programme. Secondly, the first responders, this includes the Police Force, Fire and Rescue department, the Armed Forces, KMKM, Red Cross Society, the Airports and the Hospitals. Thirdly, non-first responders including Department of Construction, Department of Environment, TMA, Local authorities, Ministry of Agriculture, Livestock and Environment and, Disaster committees at the regional level. For each of these groups of stakeholders there will be a slight difference on emphasis on the aspects of capacity building.

The suggested capacity building program is derived using experiences from other countries that have implemented disaster capacity building programmes, managerial judgment by the consultant and consultation with senior Zanzibar disaster managers. The programme also took into consideration all pertinent key issues in DRR circles ranging from implementation of Hyogo Framework of Action, the upcoming policy on DRR and Management, labour turnover and the rate at which DRR is becoming an important issue in Tanzania. In addition, capacity building is required in the following cluster areas in accordance with the five (5) priorities for action according to the Hyogo Framework for Action, which in a way can be put into two main categories, i.e. functional and technical improvement.

1. Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation.

Preparation of policy, legislative and institutional frameworks for disaster risk reduction will enable tracking of progress through specific and measurable indicators. This will enhance capacity to manage risks and to achieve widespread consensus for, engagement in and compliance with disaster risk reduction measures across all sectors of society.

2. Identify, assess and monitor disaster risks and enhance early warning.

The starting point for reducing disaster risk and for promoting a culture of disaster resilience lies in the knowledge of the hazards and the physical, social, economic and environmental vulnerabilities to disasters that most societies face in Zanzibar, and of the ways in which hazards and vulnerabilities are changing in the short and long term, followed by action taken on the basis of that knowledge.

3. Use knowledge, innovation and education to build a culture of safety and resilience at all levels.

Disasters can be substantially reduced if people are well informed and motivated towards a culture of disaster prevention and resilience, which in turn requires the collection, compilation and dissemination of relevant knowledge and information on hazards, vulnerabilities and capacities.

4. Reduce the underlying risk factors.

Disaster risks related to changing social, economic, environmental conditions and land use, and the impact of hazards associated with geological events, weather, water, climate variability and climate change, are addressed in sector development planning and programmes as well as in post-disaster situations

5. Strengthen disaster preparedness for effective response at all levels.

At times of disaster, impacts and losses can be substantially reduced if authorities, individuals and communities in hazard-prone areas are well-prepared and ready to act and are equipped with the knowledge and capacities for effective disaster management.

The capacity building elements for the DMD and other key sectors including the communities at the regional level are detailed in Table 4.

Table 4: Programme focus areas and activities

Area of focus	Main activities	Beneficiaries	Lead agency
1. Policies, legislations and plans	<ul style="list-style-type: none"> • Review/formulation of existing policies, legislations and strategic plan 	DMD	DMD
2. Institutional strengthening	<ul style="list-style-type: none"> • Preparation of operational guidelines • Provision of office and office facilities • Put in place a coordination mechanism for disaster issues • Establishment of fund for disaster reduction activities at various levels • Implementation of organization structure and strengthening of disaster offices at the national to regional, district, ward and village levels • Streamlining of DRR issues in sector strategic plans • Appointment of DRR focal officers at sectors, regional and district levels 	<ul style="list-style-type: none"> • DMD • KMKM • Police Force, • Armed Force • Fire & Rescue Department, • TMA • Department of Construction, • Zanzibar International Airport • Zanzibar Port Corporation • Department for Environment • Ministry of Agriculture, livestock & Environment • Local Government Authorities • Ministry of Health • Disaster committees • DMD 	DMD
3. Risk mapping and vulnerability assessment	<ul style="list-style-type: none"> • Conduct a National, regional and district risk mapping and vulnerability assessment 	DMD	DMD, academic institutions and consultants, NGOs
4. Training, public awareness and sensitization	<ul style="list-style-type: none"> • Prepare training programmes for long and short term, public 	DMD	DMD Local training

Area of focus	Main activities	Beneficiaries	Lead agency
	awareness and sensitization	<ul style="list-style-type: none"> • Sector Ministries • Disaster committees 	institutions International training institutions Media houses, NGOs
5. Early warning	<ul style="list-style-type: none"> • Prepare early warning systems for different types of hazards at the national and local levels • Secure specialized equipments for early warning for climatic related events • Establish a national centre for early warning and risk studies 	<ul style="list-style-type: none"> • DMD • TMA • Ministry of Health • Disaster committees • Department of Environment • Local committees • Department of Agriculture • NGOs • DMD 	DMD Academic Institutions Consultants Local committees Media
6. Disaster information and management system	<ul style="list-style-type: none"> • Develop disaster management and information system at the National, Sector, Regional and District levels • Identify the main disaster research areas • Establish disaster information centre at the National level 	<ul style="list-style-type: none"> • DMD • Sector ministries • Regional and District • DMD 	DMD Academic Institutions Consultants NGOs
7. Preparedness, response and mitigation	<ul style="list-style-type: none"> • Identify 5 common hazards for disaster preparedness • Develop preparedness strategies • Identify and provide critical facilities to first responders • Prepare a program for mock exercises 	<ul style="list-style-type: none"> • DMD • Sector Ministries • Disaster committees 	DMD Sector Ministries Disaster committees NGOs Academic institutions Consultants

	Area of focus	Main activities	Beneficiaries	Lead agency
8.	National emergency plan	<ul style="list-style-type: none"> • Prepare National and key sector emergency plans 	<ul style="list-style-type: none"> • DMD • Sector Ministries • Local disaster committees 	DMD Disaster committees NGOs Academic institutions Consultants
9.	Emergency operational centre and warehouse	<ul style="list-style-type: none"> • Establish emergence operational centres ad warehouse in Unguja and Pemba islands 	<ul style="list-style-type: none"> • DMD • Sector Ministries • Disaster committees 	DMD Disaster committees

A description for each focus area, key activities, beneficiaries and lead agencies is given below:

6.1 Policies, legislation and plans:

The main activities to be implemented in this focus area include but not limited to the formulation of the disaster policy for Zanzibar, review of the existing Disaster Management Act of 2003 and the finalisation of disaster strategic plan. The formulation of the disaster policy and review of legislation should take into consideration the new concept of Disaster Risk Reduction as opposed to disaster relief or Disaster management. For inclusion also would be disaster issues for lower level institutions, all key actors including Shehas, religious organizations, private sector and community. The main beneficiary of implementation of these activities is the DMD and the lead agency will be the DMD in collaboration with consultants.

6.2 Institutional strengthening:

Institutional strengthening will involve the DMD itself, the sector ministries, the regional disaster committees and the NGOs. A variety of capacity building activities for the DMD and the other stakeholders will be implemented. Institutional building activities for the DMD include the preparation of operational guidelines for different types of disasters, provision of more office space and furniture to accommodate facilities already possessed by the Department but cannot be used due to inadequate space, putting a mechanism in place for regularly coordinating key disaster stakeholders, demarcating the responsibilities for disaster response between the DMD, Sector Ministries and Regional disaster committees and transforming the department to a Commission as per existing legislation.

Other activities that will cover both the DMD and other stakeholders (as detailed in Table 3) include establishing disaster fund for small disaster events as the current legislation provides for emergency fund only. The establishment of the small disaster fund will enable the DMD and the Regional Disaster Committees to carry out their day-to-day activities and give assistance to those in need during disaster events. In addition, in order to strengthen disaster institutions in Zanzibar, the organization structure for management needs to be fully implemented; the disaster issues should be mainstreamed in sector and regional development activities; and, the appointment of the focal or contact disaster officers at various levels should be done.

6.3 Risk mapping and vulnerability assessment:

There are no detailed scientific studies that have been conducted in Zanzibar on types of disasters, their magnitude, frequency, causes and impacts to property, human health and the environment. Studies on coping strategies at the national or household level are also yet to be carried out. Risk mapping and vulnerability assessment will provide the required scientific information such as elements at risk and their vulnerability levels. Initially, risk assessment can be conducted at the national level and later on at regional or district or urban levels. The main beneficiary and lead agency will be the DMD to be assisted by academic/research institutions and consultancy firms.

6.4 Training, public awareness and sensitization:

In general, capacity building through training is to be done in a number of ways including long term training, short term training, workshops and seminars, awareness raising campaigns and on job training. This focus

area will cover the DMD staff, sector ministries, NGOs and the general public. The initial activities will include identification of the training needs, development of training programmes for various groups of stakeholders and conducting the training. The lead agency will be the DMD assisted by both local and international training institutions and consultants.

For the DMD staff, the focus will be on long term, short term and on job training.

- *Long term courses in core disaster risk reduction and management competencies:*
 - Long term courses at the level of B.Sc. and masters levels in DRR. However, selected individuals can also pursue specialised programmes pertinent to DRR such as environmental engineering, environmental health, and environmental science. The staff can attend these programmes either within the country or abroad.
- *Short term courses:*
 - The short term courses for DMD staff will be organised locally within the country and whenever possible with international consultants. The aim of the short course will not only give knowledge to DMD staff but also prepare them as Trainers in disaster issues.
- *Workshop and conferences*

The DMD staff will be required to attend local and international conferences in order to expose them to the DRR issues from other countries and also share the Zanzibar's experiences on DRR issues with the Global community.
- *On job training*

Initially, not all DMD staff will be able to attend either the long or short courses. Therefore, they will have to be given in house training by their fellow staffs that have been trained in disaster issues.

At the regional and local levels, training will involve community officials/leaders and non-officials as well as urban residents and villagers living in such areas. The training programme will have two main components of short course and creating awareness in DRR. Some of the Regional Officers will be offered short training courses on DRR issues out of which a few will be trained as Trainers. Such trainers shall be responsible for raising awareness in their respective regions and districts. On institutions capacity building, focus will be to mainstream DRR issues at the regional level, to be able to document the occurrences of small disasters, prepare the communities in reducing disaster risks and respond effectively to small disasters.

6.5 Early warning:

Early warning systems are crucial in disaster preparedness. In order for the Government and the communities to be prepared for a disaster event, national and local early warning systems ought to be prepared for at least 5 most frequently occurring disasters. In addition, specialized equipment for early warning pertaining to impending extreme hydro-meteorological events ought to be identified and secured. To enhance disaster activities in the islands it is proposed that a national centre for early warning and risk studies be established. The main direct beneficiaries for this activity include the DMD, Tanzania Meteorological Agency, Ministry of Health, Ministry of Agriculture, Livestock and Environment and Disaster Committees and NGOs. The lead agency will be the DMD, assisted by academic institutions and local consultants.

6.5 Disaster information management system:

Disaster information management involves the collection, processing, storage and dissemination of disaster data to different types of stakeholders. Several activities are involved pertinent to this focus area including recruiting or training of ICT personnel at the DMD's office, securing the necessary ICT facilities, developing disaster information management system and establishing a national disaster information management centre. In addition, the main research areas will be identified for the enhancement of disaster information in the islands. The main beneficiary will be the DMD, sector ministries and regional disaster committees. The lead agencies will be the DMD, academic institutions and consultancy firms.

6.7 Preparedness, response and mitigation:

Disaster preparedness and response will involve the DMD and the sector ministries especially, the first responders. The main activities to be implemented include identifying the five common disasters for contingency planning, followed by developing preparedness strategies including contingency planning, identification and provision of critical facilities especially for the first responders and preparation of the programme for mock exercises. The DMD and the first responders will be the main beneficiaries and the lead implementing agency will be the DMD assisted by sector ministries, NGOs, academic institutions and consultancy firms.

6.8 National emergency plan:

A national response plan to an emergency should be prepared for the five major disasters in the islands. The plan should include human resources, logistics, rescue teams, medical facilities, security

arrangements, funds and the operational guidelines. The national plan must be backed up by the sector and regional emergency plans. The lead agency will be DMD backed by the first responders.

6.9 Emergency operational centre and warehouse:

An operational emergency centre and a warehouse are required to facilitate quick and organised response during emergencies. The centre will accommodate individuals who will be organizing the emergency operations while the warehouse will stock key items such as medicines, food, tents, clothing and other equipments and tools required during an emergency. The DMD, sector ministries and the regional disaster will be the main beneficiaries and lead implementing agencies.

APPENDICES

APPENDIX 1: TERMS OF REFERENCE

1. INTRODUCTION

The Revolutionary Government of Zanzibar for over time has undertaken disaster management initiatives which are geared towards reducing disaster risks (DR) that the country experiences. These efforts are coordinated by the Disaster Management Department (DMD) which was established in June 2006 and spaced within the office of the Chief Minister. The key focus of DMD in its efforts to reduce DR in Zanzibar is to mainstream disaster management programmes and activities within the development sectors across key players of disaster risk at all levels. However, the implementation of this is currently constrained by lack of adequate knowledge on the type and levels of disaster risks facing Zanzibar and capacity of key players around such risks to address them. It is on the basis of this that the Chief Minister's Office, through the DMD is seeking the service of the Consultancy to carryout a study on the disaster risk and capacity needs assessment.

2. INTERPRETATION OF THE TERMS OF REFERENCE

The terms of references for the assignment as provided by the Client can be categorized into four major parts:

2.1 Objectives of the assignment:

- i. To determine the current capacities of DMD and its key stakeholders in addressing disaster risk management issues in Zanzibar;

- ii. To identify necessary infrastructure, human and financial resources required to support disaster risk management in Zanzibar
- iii. To outline the current capacities of selected key institutions responsible for disaster management including local communities as set by the law
- iv. To assess the current disaster specific communication information sharing and propose best communication strategies for disaster management in Zanzibar

2.2 Tasks and responsibilities:

On the basis of the overall purpose and objectives of this assignment, activities which need to be undertaken by the consultant include the following:

- i. To review relevant Government documents including the existing legal and institutional framework pertaining to disaster management in Zanzibar;
- ii. To conduct in-depth consultations with key informants and stakeholders including Government and Non-Government Institutions to identify major disaster and disaster risks being experienced in Zanzibar, their frequency, intensity and socio-economic and environmental impacts and how the institutions responsible deal/have dealt with such disaster/disaster risks. This should also include the resources (human, financial, infrastructure, communication and information sharing) available to facilitate the whole process of disaster management;
- iii. To analyse the Disaster Management Profile of Zanzibar and existing capacities to deal with such disasters; and

- iv. To identify areas of intervention and propose strategies to build capacities of the Disaster Management Department and its key partners to better manage disaster in Zanzibar.

2.3 Deliverables:

A detailed capacity needs assessment report with programmes and activities to enhance capacity of DMD staff and its key partners including Regional Disaster Management Committees. Submission of the report should be in electronic form and five hard copies and should be made to the Director of Disaster Management Department.

2.4 Duration and output:

The duration of the assignment is 20 working days which shall cover consultations, report writing, presentation and final submission of the report to the client.

3. METHODOLOGICAL APPROACH

- 3.1 In order to accomplish this assignment, the consultant shall undertake the following activities:
 - i. Briefing by the DMD management
 - ii. Review relevant Government documents including the existing legal and institutional framework pertaining to disaster management in Zanzibar
 - iii. Conduct in-depth consultations with key informants and stakeholders including Government and Non-Government Institutions to identify major disaster and disaster risks being experienced in Zanzibar, their frequency, intensity and socio-economic and environmental impacts and how the institutions responsible deal/have dealt with such disaster/disaster risks.

Resources (human, financial, infrastructure, communication and information sharing) available to facilitate the whole process of disaster management will also be studied

- iv. In-depth analysis of the Disaster Management Profile of Zanzibar and existing capacities to deal with disaster
- v. Propose intervention strategies to build capacities of the Disaster Management Department and its key partners to better manage disaster in Zanzibar
- vi. Presentation of the draft report to key stakeholders
- vii. Production of the final report and submission to the DMD

APPENDIX 2: LIST OF DOCUMENTS REVIEWED

1. AU-NEPAD, et al; (2004), **Guidelines for Mainstreaming Disaster Risk Assessment in Development.**
2. **Cap. 322-Supp. 58 – Police Force;** Part II – Section 5(1) – Duties of the Police Force.
3. **Draft Strategic Plan (2005 - 2008) –** Disaster Management Department, 2005.
4. International Strategy for Disaster Reduction (ISDR), **World Conference on Disaster Reduction 18-22 January 2005, Kobe, Hyogo, Japan: Hyogo Framework for Action 2005-2015:**
5. Ministry of Health and Social Welfare Zanzibar, **Country Health Profile,** 2007.
6. Ministry of Health and Social Welfare Zanzibar, **Natural History of Cholera outbreaks in Zanzibar 1978-2002,** 2003.
7. Revolutionary Government of Zanzibar, **the Disaster Management Act, 2003.**
8. Revolutionary Government of Zanzibar, **Zanzibar Strategy for Growth and Reduction of Poverty (ZSGRP), 2007 - codenamed in Kiswahili ‘Mkakati wa kukuza Uchumi na Kupunguza Umasikini Zanzibar (MKUZA).**

9. Revolutionary Government of Zanzibar, **Zanzibar's Growth Strategy (2006 – 2015)**, - codenamed in Kiswahili 'Mkakati wa Ukuzaji Uchumi Zanzibar';

10. **The Maritime Transport Act 2006**; Part VIII – Prevention of Collisions and Safety of Navigation (Collision Regulations, Distress and Safety) and, Part IX – Safety of Life at Sea.

APPENDIX 3: LIST OF INSTITUTIONS CONSULTED

S/No	Name of Institution
1.	Disaster Management Department
2.	Chief Minister's Office (Headquarters and Pemba)
3.	Urban West Region (Unguja) Disaster Management Committee
4.	Ministry of Health (Headquarters)
5.	Kikosi Maalum cha Kuzuia Magendo (Anti-Smuggling Unit) – Unguja
6.	Tanzania Red Cross Society
7.	Fire and Rescue Department
8.	Zanzibar Municipal Council
9.	Police Force
10	Department of Survey and Urban Planning
11	Ministry of Agriculture, Livestock and Environment
12	Tanzania Metrological Agency, Zanzibar Office
13	Zanzibar International Airport
14	Department of Construction
15	Department of Environment
16	Zanzibar Tourist Corporation
17	Tanzania People's Defence Force
18	Zanzibar Port Corporation
19	UNICEF
20	SAVE THE CHILDREN
21	South Region (Pemba) Disaster Management Committee
22	North Region (Pemba) Disaster Management Committee
23	Kikosi Maalum cha Kuzuia Magendo (Anti-Smuggling Unit) – Pemba
24	Ministry of Health-Pemba

**APPENDIX 5: LIST OF STAKEHOLDERS WHO ATTENDED A
WORKSHOP TO DISCUSS THE DRAFT REPORT**

S/No	Institution represented
1.	Department of Environment
2.	DMD, Chief Minister's Office
3.	Zanzibar Port Corporation
4.	Fire and Rescue Department
5.	Tanzania Metrological Agency (Zanzibar Office)
6.	K.M.K.M
7.	Department of Construction
8.	UNICEF
9.	Red Cross Society
10.	Zanzibar Municipal Council
11.	MoFEA
12.	Ministry of Health
13.	WN (AR) TMV
14.	K/UTALL
15.	Armed Forces
16.	S.T.C.D.A
17.	Ardhi University
18.	South Region – Unguja
19.	Police Force
20.	Urban West Region – Unguja
21.	Ministry of Agriculture, Livestock and Environment
22.	North Region – Unguja
23.	Food Security

APPENDIX 6: GLOSSARY OF KEY TERMS

Hazards

United Nations Development Programme (UNDP) define hazard as a rare or extreme event in the natural or human-made environment that may adversely affect human life, property or activity to the extent when associated with vulnerable elements.

A potentially damaging physical event, phenomena or human activity that may cause loss of life or injury, property loss/damage, social and economic disruption or environmental degradation. (AU-NEPAD, et al. 2004, as quoted from UN/ISDR, 2002). Hazards are with us everyday (electricity, wind, heavy rain, motor vehicles, crime, flood, earthquakes etc. some hazards are potentials for development). They may be slow onset (drought) or sudden onset (cyclones). Hazards can increase disaster risks but may not necessarily cause disaster).

Vulnerability

A set of conditions and processes resulting from physical, social, economic and environmental factors that increase the susceptibility or defenselessness of a community, property or environment to the impacts of hazards (*ibid...*). Other Authors define this concept as state/condition that limits an individual, a household, community or even an ecosystem's capacity to anticipate, manage, resist or recover from an impact of a hazard.

Disaster Risk

Probability of harmful consequences or expected loss (of people, injuries, property, livelihoods, economic activity disrupted or environment damaged) resulting from interaction between natural or human induced hazards and vulnerable conditions (*ibid...*).

Disaster

A serious disruption of the functioning of a community or society causing widespread human, economic or environmental losses which exceed the ability of the affected community/society to cope using its own resources (*ibid...*). It can also be defined as a remarkable occurrence/phenomena in which a significant number of people, property and environment suffer severe damage, disrupt the livelihood system thus making the affected society/population not to cope by using its own resources.

In the Disasters Management Act, 2003 of Zanzibar a disaster is defined as an occurrence or series of occurrences, natural or man-made causing a catastrophic situation whereby the day to day patterns of life are widely and suddenly disrupted and people are plunged into helplessness and suffering and as a result needed to be provided with protection, food, clothing, shelter, medical and social care and other necessities of life.

Risk

The probability of harmful consequences or expected loss (of lives, people injured, property, livelihoods, economic activity disrupted or environmental damaged) resulting from interaction between natural or human induced hazards and vulnerable/capable conditions (*ibid...*).

Disaster Risk Reduction (DRR)

Systematic development and application of policies, strategies and practices to minimize vulnerabilities and disaster risks throughout a society to avoid (prevention) or to limit (mitigation and preparedness) adverse impacts of hazards with the broad context of sustainable development, (*ibid...*).