Disaster Risk Reduction Country Document,
TRINIDAD AND TOBAGO, 2014

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Office of Disaster Preparedness and Management
A DIVISION OF THE MINISTRY OF NATIONAL SECURITY

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MESSAGE FROM THE CHIEF EXECUTIVE OFFICER

Dr. Stephen Ramroop

Trinidad and Tobago is a twin-island state located in the Southern Caribbean within the hurricane belt and along the boundaries of the Caribbean and South American tectonic plates.

The islands are exposed to a wide range of natural and technological hazards as well as emerging threats. Earthquakes and associated tsunamis, hurricanes, tropical storms, extreme rainfall and landslides constitute the major natural events.

Technological hazards are associated with the oil and gas sector and the large petrochemical industrial estates. New and emerging hazards are linked to global climate change, sea level rise, biological hazards, cyber-security threats and terror attacks. Food security and increases in vector borne diseases are real concerns and *pandemics* such as SARS, bird flu and swine flu have emerged as major health threats.

In Trinidad and Tobago the major population centres are in close proximity to the west coast which itself is adjacent to a major fault system on the plate boundary. Moreover, the islands' coastal and offshore industrial infrastructure and cities are exposed to marine and coastal threats including flooding and sea level rises from global climate changes. Flooding not only disrupts communities and agriculture but also transportation links and accessibility to key installations and government buildings.

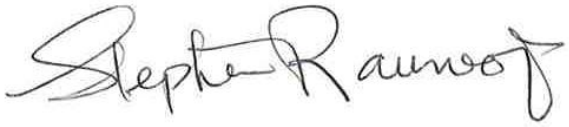
Industrial hazards and cyber threats are also of considerable concern to Trinidad and Tobago because of the significance of the oil and gas sector to the economy; moreover, our exposure to natural and technological hazards is exacerbated by our traditionally weak regulatory framework relating to building codes and land use; further, a lack of proper planning has led to over centralization where essential

government services and buildings, communication networks and emergency services are concentrated in the major population centres which are themselves most prone to disasters. This risk is further deepened by the fact that the country has been experiencing a phase of continued economic growth driven primarily by the expansion of the energy sector, which has led to rapid urbanization along the foothills of the North range in Trinidad, which runs east to west across the island and along the western coastline. Tobago has also experienced notable coastal development along it's south eastern and western coastlines. This has contributed to the high vulnerability of this twin island Republic state.

The quest towards mainstreaming comprehensive disaster management is currently championed by the Office of Disaster Preparedness and Management (ODPM), a division of the Ministry of National Security. As the lead entity for disaster risk management in Trinidad and Tobago, the ODPM has also been given the national mandate for implementing the policies and programmes for the protection of critical facilities.

Over the past four years the country has experienced notable progress in its commitment towards mainstreaming disaster risk management across all sectors. The organisational structure has been established and the building of national and community resilience to natural and anthropogenic hazards is the entity's overarching objective. Operational plans have been developed and are currently under review to reflect alignment with the Hyogo Framework for Action and the Millennium Development Goals. This report offers an insight into our current progress towards our mainstreaming efforts and I am pleased to share some of the notable successes as well as some of our challenges as a Small Island Developing State (SIDS).

I wish to acknowledge and thank our numerous key stakeholders from the public and private sector and civil society who continue to collaborate with us, as we strive to develop Trinidad and Tobago into a more resilient nation.



Dr. Stephen Ramroop
Chief Executive Officer - ODPM

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EXECUTIVE SUMMARY

The Office of Disaster Preparedness and Management (ODPM) is pleased to share this report on the current landscape of disaster risk reduction in Trinidad and Tobago. Over the past four years the Government of the Republic of Trinidad and Tobago (GORTT), through the National Disaster Office, the Office Disaster Preparedness and Management (ODPM) has made significant strides towards building disaster resilience in the country through a number of programmes and initiatives focused on reducing vulnerability.

Having conducted a country risk evaluation and an assessment of the country's institutional capacities to manage risk specifically due to the prevalent natural hazards, the studies revealed earthquakes will have the greatest impact on this country. The exposed value for Trinidad and Tobago is calculated at USD37,902 million, with an estimated average annual loss due to earthquakes valued at USD7,072 million (GORTT/ODPM/IDB- CIMNE, 2013).

Further, the overall findings of the capacity assessment (GORTT/NICA-ATN/OC-12349-TT, 2013) indicated that the system for delivering CDM/DRM ranks 2.3 out of a possible score of 5 points when benchmarked against the Caribbean CDM results framework. Noting that "*achievements have been made but are incomplete, and while improvements are planned, the commitment and capacities are limited.*" The assessment then identified the following areas as having greatest issue and consequently having the highest priority towards improving the capacities in the disaster risk management system in Trinidad and Tobago:

- Making DRM a priority for Parliament and Government Organizations
- Education and awareness building directed to our complacent public
- Development of an integrated legal framework for DRM

Notwithstanding the notable successes towards mainstreaming DRR in Trinidad and Tobago, the current mechanisms to drive the institutionalization of DRR are very weak. To this end, the national disaster office in Trinidad and Tobago has identified the following focus areas for strategic intervention within the next two years:

- Strengthen Knowledge Management Platform using integrated approach
- Encourage the BCM programme in the Private Sector for Small /Medium Enterprises
- Develop CDM Legislation to include International Disaster Response Laws
- Improving the Early Warning System to allow for an integrated approach (National Alert State Protocol and Public Alert / Population Alert System)
- Prioritise discussions with CDEMA regarding the shift of focus towards building resilience
- Continue the work with the Private Sector for more robust Public / Private Sector Partnership and participation
- Mainstreaming / Integrating DRR in all sectors

ACRONYMS

AAL	Average Annual Loss
ADRA	Adventist Development and Relief Agency
ATTIC	Association of Trinidad and Tobago Insurance Companies
CARICOM	Caribbean Community
CBD	Convention on Biological Diversity
CBO	Community Based organization
CBTT	Central Bank of Trinidad and Tobago
CCA	Climate Change Adaptation
CCCCC	Caribbean Community Climate Change Centre
CCRIF	Caribbean Catastrophe Risk Insurance Facility
CDEMA	Caribbean Disaster Emergency Management Agency
CDM	Comprehensive Disaster Management
CDMPF	Comprehensive Disaster Management Policy Framework
CDMS	Caribbean Disaster Emergency Management Authority
CEPEP	Community Based Environmental Protection and Enhancement Programme
CFP	Critical Facilities Protection
CFPP	Critical Facilities Protection Plan
CIA	Central Intelligence Agency
CIMNE	International Center for Numerical Methods in Engineering
CITES	Convention on International Trade in Endangered Species
CSO	Central Statistical Office
DAP	Document Architecture Process
DDI	Disaster Deficit Index
DIPECHO	Disaster Preparedness Program of the European Commission's Humanitarian Aid and Civil Protection Department
DM	Disaster Management
DMU	Disaster Management Unit (Ministry of Local Government)
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EOC	Emergency Operations Centre
ESF	Emergency Support Function
FBO	Faith Based Organization
FP	Financial Protection
GAR	Global Assessment Report
GDP	Gross Domestic Product

GIS	Geographic Information System
GMPE	Ground Motion Prediction Equations
GMRTT	Global Medical Responders of Trinidad and Tobago
GNI	Gross National Income
GORTT	Government of the Republic of Trinidad and Tobago
HFA	Hyogo Framework for Action
ICS	Incident Command System
IDB	Inter-American Development Bank
IDRL	International Disaster Response Laws
IMA	Institute of Marine Affairs
IMF	International Monetary Fund
INDRR	International Decade for Natural Disaster Reduction
IPCC	Intergovernmental Panel on Climate Change
LDI	Local Disaster Index
LDI	Local Disaster Index
LEC	Loss Exceedance Curve
MHUD	Ministry of Housing and Urban Development
MLA	Ministry of Legal Affairs
MNS	Ministry of National Security
MOE	Ministry of Education
MOFE	Ministry of Finance and the Economy
MOH	Ministry of Health
MOLG	Ministry of Local Government
MOPSD	Ministry of the People and Social Development
MOWT	Ministry of Works and Transport
MPSD	Ministry of Planning and Sustainable Development
NCAR	National Center for Atmospheric Research
NDRRC	National Disaster Risk Reduction Committee
NEOC	National Emergency Operations Centre
NGO	Non - governmental organization
NICA	National Institutional Capacity Assessment
NOC	National Operations Centre
NOSCP	National Oil Spill Contingency Plan
NRF	National Response Framework
OCC	Operational Command Centres
ODPM	Office of Disaster Preparedness and Management
OPM	Office of the Prime Minister
OPTT	Office of the President of the Republic of Trinidad and Tobago

PAHO	Pan American Health Organization
PGA	Peak Ground Acceleration
PML	Probable Maximum Loss
POP	Persistent Organic Pollutants
PTSC	Public Transport Service Corporation
PVI	Prevalent Vulnerability Index
PWD	Persons with disabilities
RI	Risk Identification
RMI	Risk Management Index
RR	Risk Reduction
RVAT	Risk Vulnerability Assessment Tool
SIDS	Small Island Developing States
SLC	Survey of Living Conditions
SSID	Social Sector Investment Programme
TEMA	Tobago Emergency Management Agency
THA	Tobago House of Assembly
TSTT	Telecommunications Services of Trinidad and Tobago
TTDF	Trinidad and Tobago Defence Force
TTEC	Trinidad and Tobago Electricity Commission
TTFS	Trinidad and Tobago Fire Service
TTPS	Trinidad and Tobago Police Service
UHS	Uniform Hazard Spectra
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNISDR	United Nations International Strategy for Disaster Reduction
URP	Unemployment Relief Programme
WASA	Water and Sewerage Authority
WRA	Water Resources Agency

1 INTRODUCTION

The Country Report's purpose is to provide a comprehensive overview of the status of DRR in the country, the progress made in reducing risk, the definition of priorities and strategies, the major challenges faced in reducing the loss of lives, as well as the economic, social and environmental impacts that risks generate.

It is expected that the Country Report would be useful to Disaster Risk Reduction (DRR) national systems, HFA focal points, national and local authorities, agencies and actors linked to DRR as a national reference document to guide the formulation of actions and activities, to promote policies and decision making for DRR and to develop sustainably.

The Trinidad and Tobago country report was done through the support of the United Nations International Strategy for Disaster Risk Reduction, Disaster Preparedness and Prevention-European Commission for Humanitarian Aid **(UNISDR-DIPECHO)** Project. It is intended to be a national reference document used by all national and local agencies and key stakeholders linked to Disaster Risk Reduction, the report is expected to be reviewed and updated periodically in accordance with the UNISDR- DIPECHO guidelines.

1.1 General Description of the Process

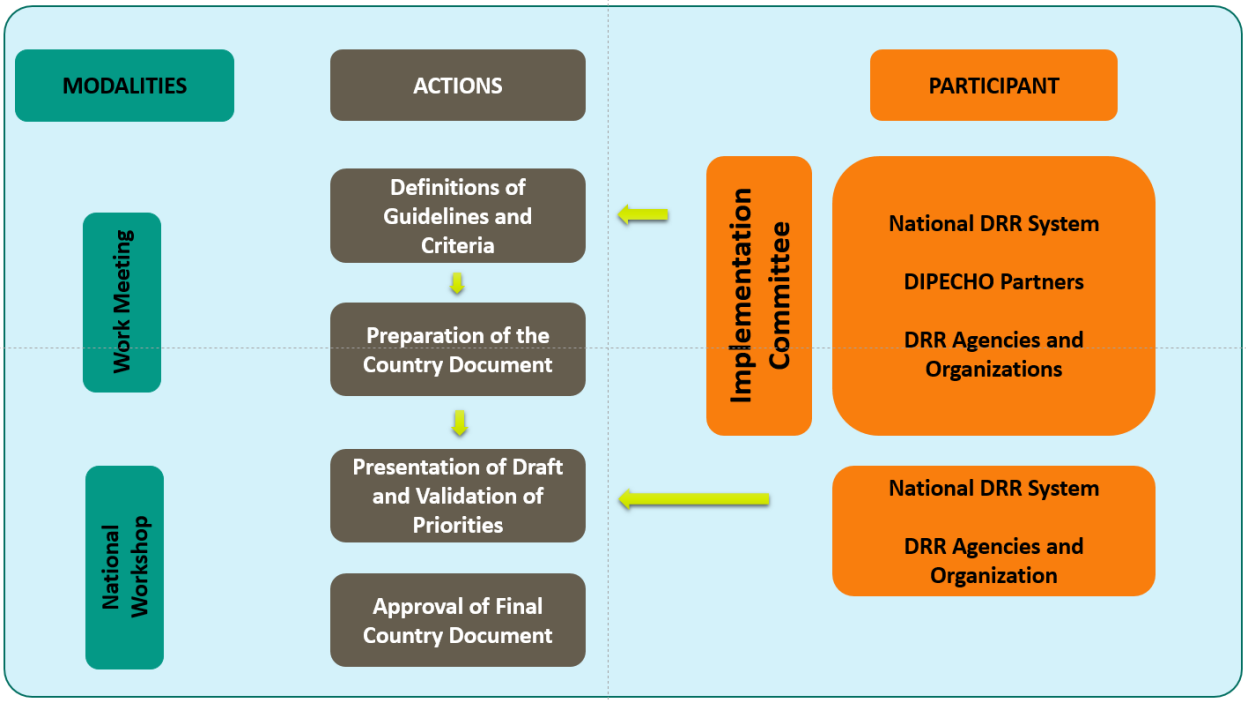

Figure 1: Processes for Preparation of Country Profile for DRR (UNISDR/DIPECHO, 2012)

The preparation of this document was done and coordinated by the Office of Disaster Preparedness and Management (ODPM), the agency responsible for the coordination of the disaster risk management (DRM) system in Trinidad and Tobago. The process for completion followed the guidelines provided by DIPECHO (Figure 1) and commenced April 2014. The process entailed collaboration among all DRR entities as well as all authorities responsible for DRR implementation, key stakeholders, technical and scientific institutions, the private sector, DIPECHO partners and members of existing DRR platforms. Monthly meetings were held with key stakeholders of the National Disaster Risk Reduction Platform, during which rich discussion about the status and strategic directions of disaster risk reduction emerged. Additional information was gathered through desk research, stakeholder-led meetings, focus group discussions, interviews and sectoral workshops.

The information sourced was put together in phases. Firstly a draft was constructed using the guidelines issued by the UNISDR- DIPECHO project. This draft then went through an iterative process of review and revision, to produce a detailed document which was sent out for validation by DRR priority entities.

Notwithstanding, there were a number of assumptions and limitations, inherent in the execution and development of the document.

The assumptions that were made were as follows:

- The historical data and information provided was up to date and accurate.
- There was a certain level of understanding and awareness of DRR and DRM concepts to allow for a clear understanding of the information required.
- Agencies would be willing to share information as well as help gather missing information.

The limitations throughout the preparation of this report were as follows:

- There was a deficiency in the information available.
- Agencies were unwilling to divulge information, making it difficult to obtain particular data.
- Lack of attendance and participation in NDRRC sessions.
- Time constraints.
- High employee turnover at the ODPM.

2 INTERNATIONAL AND REGIONAL DISASTER RISK REDUCTION CONTEXT

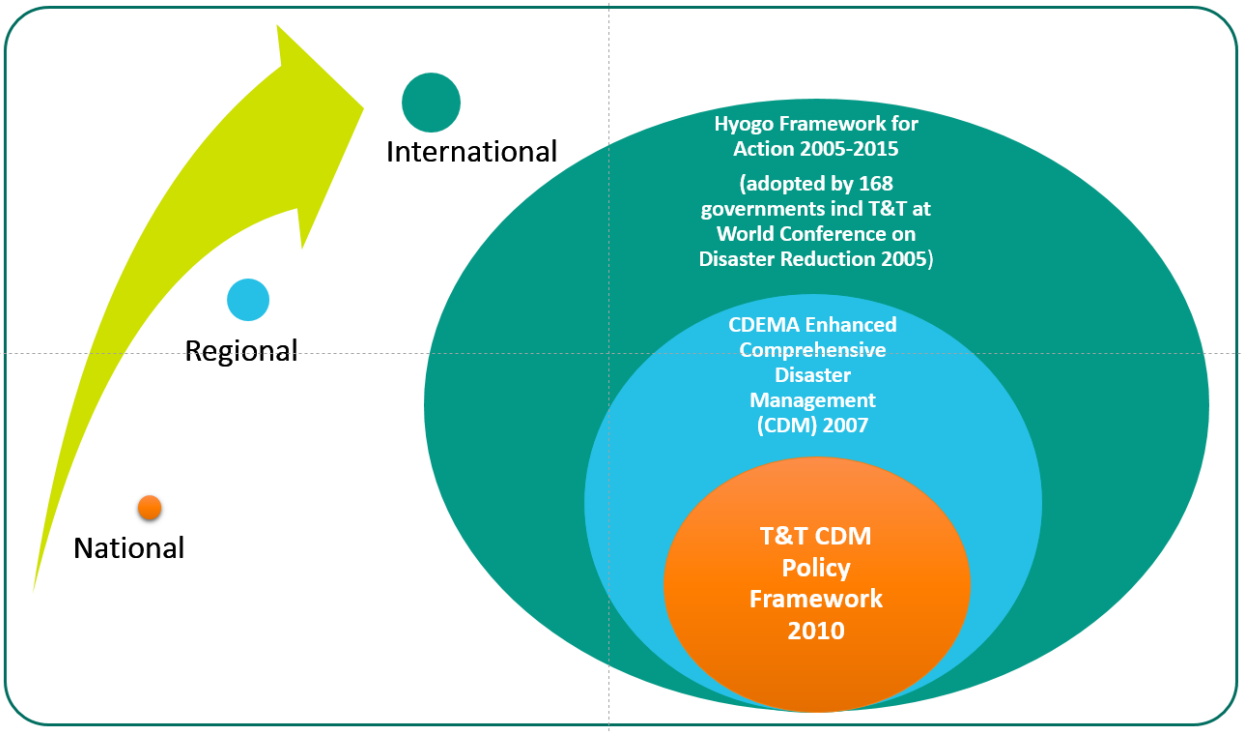

Figure 2: International and Regional Disaster Risk Reduction Context (MNS/ODPM Archives,2014)

The international, regional and national context for DRR (Figure 2) began with the United Nations International Decade for Natural Disaster Reduction (INDDR) during the 1990's which encouraged governments and key stakeholders to highlight the need for mitigation and Disaster Risk Reduction. The UNISDR was adopted by all member states of the UN in 2000.

In recent years, countries and the international community have gathered significant understanding of DRR. However, risk is increasing especially in the Caribbean; this risk is significantly heightened by climate change. Climate change has increased the impact of the hazards on the region (IPCC, 2014).

To reduce the impact of disasters the following international strategies and agreements (Table 1) were put into place:

Table 1:

International and Regional Risk Reduction Context: Main Agreements & Strategies (UNISDR, 2014)

2.1 Regional Framework

In 2008, Trinidad and Tobago became a Participating State of the Caribbean Disaster Emergency Management Agency (CDEMA) under the "Agreement Establishing The Caribbean Disaster Emergency Managment Agency". CDEMA coordinates CARICOM's Enhanced Comprehensive Disaster Management (CDM) Strategy 2007-2012, which has the goal:

"*To strengthen regional, national and community level capacity for mitigation, management, and coordinated response to natural and technological hazards, and the effects of climate change*".

This strategy articulates four outcomes, which are supported by CARICOM Member States.

- Outcome 1 - Enhanced institutional support for CDM Program implementation at national and regional levels.
- Outcome 2 - An effective mechanism and program for management and sharing of CDM knowledge is established and utilized for decision-making.
- Outcome 3 - Disaster risk management to be mainstreamed at national levels and incorporated into key sectors of national economies including tourism, health, agriculture and nutrition.
- Outcome 4 - Enhanced community resilience in CDEMA territories to mitigate and respond to the adverse effects of climate change and disasters.

CARICOM has also established the Caribbean Community Climate Change Centre (CCCCC) in Belize in 2005 to coordinate and direct climate change efforts. In 2009, the Regional Climate Change Strategic Framework for Achieving Development Resilient to Climate Change was endorsed by CARICOM Heads, who decided that the CCCCC should then develop an implementation plan for the strategy across the Region. The implementation plan provides a base for development of projects by governments for funding under climate change initiatives, including the United Nations Framework Convention on Climate Change (UNFCCC).

CDEMA has initiated a number of projects related to DRR. These include production of a video on climate change adaptation under a climate change and disaster risk reduction project, as well as a 'Guidance Tool for Mainstreaming Climate Change Adaptation into National CDM Work Programs'. This Guidance Tool is meant to lead to the development of work programs which include climate change considerations, according to the authors (Walling, Brown and Smith, 2011).

2.2 CDM Policy Framework

This Comprehensive Disaster Management Policy Framework (CDMPF) embraces unequivocally the new internationally favoured approach. Accordingly, Trinidad and Tobago's has adopted a comprehensive strategy which addresses all aspects of disaster management, with a focus on risk management, through response, recovery and rehabilitation.

This CDMPF seeks to address Trinidad and Tobago's strategic intent on disaster management and is guided by our disaster management vision, values, principles and strategic objectives. One of the guiding principles of this policy framework is the 'whole of government' approach which seeks to:

- Improve collaboration among the various stakeholders involved;
- Deliver policies and a programme for CDM in a coordinated manner;
- Engender cooperation among all government ministries and agencies; and
- Ultimately respond effectively to emerging threats.

This Policy Framework will, in turn, guide the implementation of a Comprehensive Disaster Management Programme that will focus the priorities, initiatives and activities involved in disaster management. The CDM Programme will provide effective risk management of all threats within Trinidad and Tobago and will be guided by the HFA and the objectives of CDEMA (CDEMA, 2014).

3 TRINIDAD AND TOBAGO NATIONAL GENERAL CONTEXT

The National General Context of Trinidad and Tobago describes the country's characteristics. This encapsulates factors such as the demographic and population aspects, the geographic location, the physical environment and many others.

3.1 PHYSICAL ENVIRONMENT

Trinidad and Tobago is located in the Lesser Antilles Archipelago, northeast of Venezuela. The country consists of two main islands, Trinidad and Tobago, and also numerous smaller landforms. The Republic of Trinidad and Tobago is a sovereign island state, meaning the government has full right and power to govern itself without any outside influences or bodies interfering. In the following sections under this chapter, the physical environment of Trinidad and Tobago will be shared in a detailed explanation.

3.1.1 Geographic Location

The Republic of Trinidad and Tobago is a twin island state located in the Southern Caribbean at latitude 11^0 00'N 61^0 00'W. It is neighboured by Barbados to the northeast and Venezuela to the South. Trinidad is 60km long and 80km wide and comprises an area of 4828 km^2, while Tobago is 42km long and 13km wide and is made up of an area of 300 km^2.

Trinidad is the most southerly of the Caribbean Islands (See Figure 3), bounded on the north by the Caribbean Sea; on the west by the Gulf of Paria; on the east by the Atlantic Ocean and on the south by the Columbus Channel. Tobago lies approximately 32 km north-east of Trinidad, and is separated from Trinidad by a channel, the Tobago Sound which is nearly 12 km in width.

Figure 3: Map showing location of Trinidad and Tobago in the Caribbean (Island Brides, 2015)

3.1.2 Physiography

Trinidad (Figure 4) has three distinct mountain ranges; the northern range, the central range and the southern range. The northern range is an outlier of the Andes Mountains consisting of rugged hills, the highest point being El Cerro del Aripo measuring 940 meters. The central range is a low lying range with a swampy area rising into rolling hills with a maximum height of 325 meters; the southern range is made up of a line of broken hills. Trinidad is drained by several rivers the Caroni and the Ortoire River being the two main rivers.

Tobago, volcanic in origin has one main central ridge; the Main ridge is 29km long and has a maximum elevation of 640meters. Due to Tobago's mountainous terrain there are a number of small rivers and streams throughout the island, the main river being the Courland River. The south western tip of the island is home to the Buccoo Reef, a coral platform.

Figure 4: Physical Map of Trinidad and Tobago. http://www.maps.com/ref_map.aspx?pid=12407

3.1.3 Climate and Weather

Trinidad and Tobago experiences a tropical climate and weather that is strongly influenced by the northeast trade winds. There are two main seasons: the rainy season and the dry season. The dry season occurs over the period January to May and the rainy season runs from June to December. The influencing winds (the North East Trade winds) bring the most intense rainfall to the highland areas of north east Trinidad and along the main ridge in Tobago.

The annual average rainfall for Trinidad (Figure 5) is 2000mm, whereas in Tobago the average ranges from 3800mm along the main ridge to less than 1250mm in the lowland areas. The average annual minimum nightly temperature varies between 22^0C to 25^0C and a maximum daily temperature between 29^0C and 31^0 C.

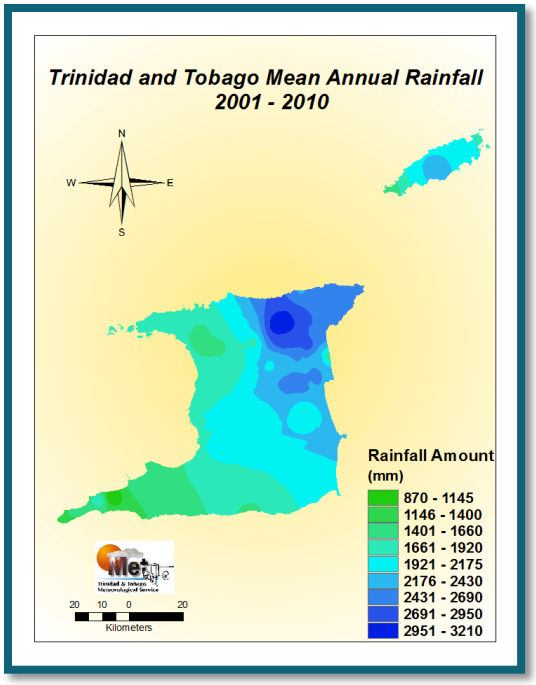

Figure 5: Trinidad and Tobago's Mean Average Rainfall 2000-2014 (Trinidad and Tobago Meteorological Services, 2013)

3.2 SOCIO-ECONOMIC CONTEXT

Trinidad and Tobago is an economically vibrant country within the Caribbean region enjoying a per capita income and a good standard of living with an estimated population of 1.3 million people (Trading Economics, 2014). The society has placed strong emphasis on education, social support for vulnerable groups, commitment to regional solidarity and development and a willingness to engage all countries in the spirit of friendship and mutual respect. The sections held under this chapter will describe the economic status of Trinidad and Tobago, how this status is shaped by social progress.

3.2.1 Population and Demographics

According to Trading Economics (Trading Economics, 2013), Trinidad and Tobago's total population in 2013 stood at 1,340,557 persons.

Trinidad and Tobago is a multi-ethnic, multi-religious country. The ethnic groups comprise of East Indians, Africans, mixed other and mixed African/ Indian. Religions currently practiced are Pentecostal, Evangelical/Full Gospel, Baptist, Anglican, Seventh - day Adventist, Presbyterian, Congregational, Roman Catholic, Hindu, Muslim, Jehovah's Witness and other. Table 2 below highlights the demographic profile of Trinidad and Tobago for 2014.

Table 2: Trinidad and Tobago's Demographic Profile and Socioeconomic Outlook (GORTT/CBTT, 2013| Trading Economics, 2014| CIA, 2014)

CATEGORY	UNIT
Population	1,340,557 (2013)
Median age	**total:** 34.4 years **male:** 34 years **female:** 34.9 years (2014 est.)
Population growth rate	-0.11% (2014 est.)
Birth rate	13.8 births/1,000 population (2014 est.)
Death rate	8.48 deaths/1,000 population (2014 est.)
Net migration rate	-6.42 migrant(s)/1,000 population (2014 est.)
Infant mortality rate	**total:** 24.82 deaths/1,000 live births **male:** 26.05 deaths/1,000 live births **female:** 23.57 deaths/1,000 live births (2014 est.)
Life expectancy at birth	**total population:** 72.29 years **male:** 69.42 years **female:** 75.24 years (2014 est.)
Ethnic groups	East Indian 35.4%, African 34.2%, mixed -

CATEGORY	UNIT
	other 15.3%, mixed African/East Indian 7.7%, other 1.3%, unspecified 6.2% (2011 est.)
Religions	Protestant 32.1% (Pentecostal/Evangelical/Full Gospel 12%, Baptist 6.9%, Anglican 5.7%, Seventh-Day Adventist 4.1%, Presbyterian/Congregational 2.5, other Protestant .9), Roman Catholic 21.6%, Hindu 18.2%, Muslim 5%, Jehovah's Witness 1.5%, other 8.4%, none 2.2%, unspecified 11.1% (2011 est.)
Languages	English (official), Caribbean Hindustani (a dialect of Hindi), French, Spanish, Chinese
Literacy	**definition:** age 15 and over can read and write **total population:** 98.8% **male:** 99.2% **female:** 98.5% (2011 est.)
Headline Inflation Rate	3.0% (2014)
Core Inflation Rate	2.9% (2014)
Per Capita GDP Current Market Prices $TT	$179,842.0 (2014)
Contribution of Petroleum Industry to GDP at Market Prices $TT mn.	$75,794.2 (2014)

3.2.2 The Economy

Trinidad and Tobago is one of the wealthiest countries in the Caribbean, thanks to its large reserves of oil and gas. Although Trinidad and Tobago's economy consists of many different industries, the exploitation of hydrocarbons is by far the most dominant. Trinidad and Tobago has a well-educated society and a stable political climate. The government has attracted foreign investment (with varying degrees of success), particularly into the energy sector, since the late 1980s. The Government now places substantial importance on projects that increase local content and participation.

According to the *Review of the Economy 2014*, generated by the Ministry of Finance, Trinidad and Tobago's economy is expected to expand by 1.9 percent in calendar 2014, which followed a growth of 1.7 percent in 2013. This expected outcome was due to a projected 1.0 percent growth in the Petroleum sector complimented by a 2.5 percent expansion in the non-petroleum sector. The services sub-sector, with 51.8 percent, continues to be the largest contributor to nonpetroleum GDP. Headline inflation continued in a downward ambit in 2014, with some fluctuation earlier in the year; and later settled at 3.0 percent by June, remaining under 5.0 percent.

The economy of Trinidad and Tobago, according to the latest estimates from the Central Statistical Office, is expected to expand in real terms by 1.9 percent in 2014, following expansions of 1.4 percent, and 1.7 percent in 2012 and 2013 respectively. Driving the accelerated growth in 2014 is a 2.5 percent increase in real economic activity in the non-petroleum sector, along with a 1.0 percent expansion in the petroleum sector. In the non-petroleum sector, a 2.5 percent growth is expected in 2014, from 1.6 percent in 2013. This sector's overall contribution to Gross Domestic Product is estimated to increase 60.9 percent in 2014 from 60.5 percent in 2013.

3.2.3 Poverty and Unemployment

Poverty reduction and eradication in Trinidad and Tobago is quintessential to the GORTT. According to the Social Sector Investment Programme (MOFE/SSIP, 2015), this priority has fuelled the government to establish a target of a 2 percent reduction rate per annum. The Central Statistical Office estimated that the population of Trinidad and Tobago will grow by 0.4 percent in 2014 to 1,345,343 persons from 1,340,557 persons in 2013. The provisional birth rate is expected to decline from 13.98 in 2013 to 13.70 in 2014. This measures the number of births per thousand persons. The provisional death rate per thousand persons is expected to increase from 7.74 in 2013 to 7.91 in 2014.

The unemployment rate in Trinidad and Tobago measures the number of people actively looking for a job as a percentage of the labour force. According to the Review of the Economy 2014, the unemployment rate in Trinidad and Tobago rate of edged up to 3.7 percent in the fourth quarter of fiscal 2013, from the previous historical low of 3.5 percent in the third quarter. The number of unemployed persons increased from 22,500 to 24,000 during the period. Figure 6, below, is a graphic representation of the changes in the rates of unemployment from the year 2011- 2013 (GORTT/MOFE, 2014).

Figure 6: Unemployment Rate in Trinidad and Tobago from 2011-2013 (GORTT/MOFE, 2014).

3.3 GOVERNANCE STRUCTURE

Trinidad and Tobago, once under rule by Britain, inherited and upholds the traditions of that parliamentary democracy, thus following the Westminster model of government. A detailed account of the Governance structure of Trinidad and Tobago will be expounded in the subsequent section.

3.3.1 Political Structure and Organisation

Trinidad and Tobago's governance structure is a parliamentary democracy modelled on the English Westminster System (Figure 7). Trinidad and Tobago is a former British colony. It became independent in 1962 and adopted a Constitution in 1976 replacing the British Monarch with a President elected by Parliament as the country's Head of State. The general direction and control of the Government rests with the Cabinet, led by a Prime Minister who is answerable to Parliament.

Parliament serves as the legislative arm of government and consists of two chambers known as the Senate and the House of Representatives. For any piece of legislation to come into effect as law it must receive a majority vote of approval in both the Senate and the House of Representatives and be assented to by the President. Certain pieces of legislation, for instance those which deprive persons of rights guaranteed by the Constitution, must achieve votes of a special majority in both chambers before they can come into force.

Democratic elections for the 41 members of the House of Representatives must be held at least every five (5) years. The Senate's 31 members are appointed by the President: 16 on the advice of the Prime Minister, 6 on the advice of the leader of the opposition, and 9 independents appointed by the President (in his sole discretion) from among outstanding members of the community. There is a system of local government: elected councils administer the nine regional, two city, and three borough corporations in Trinidad.

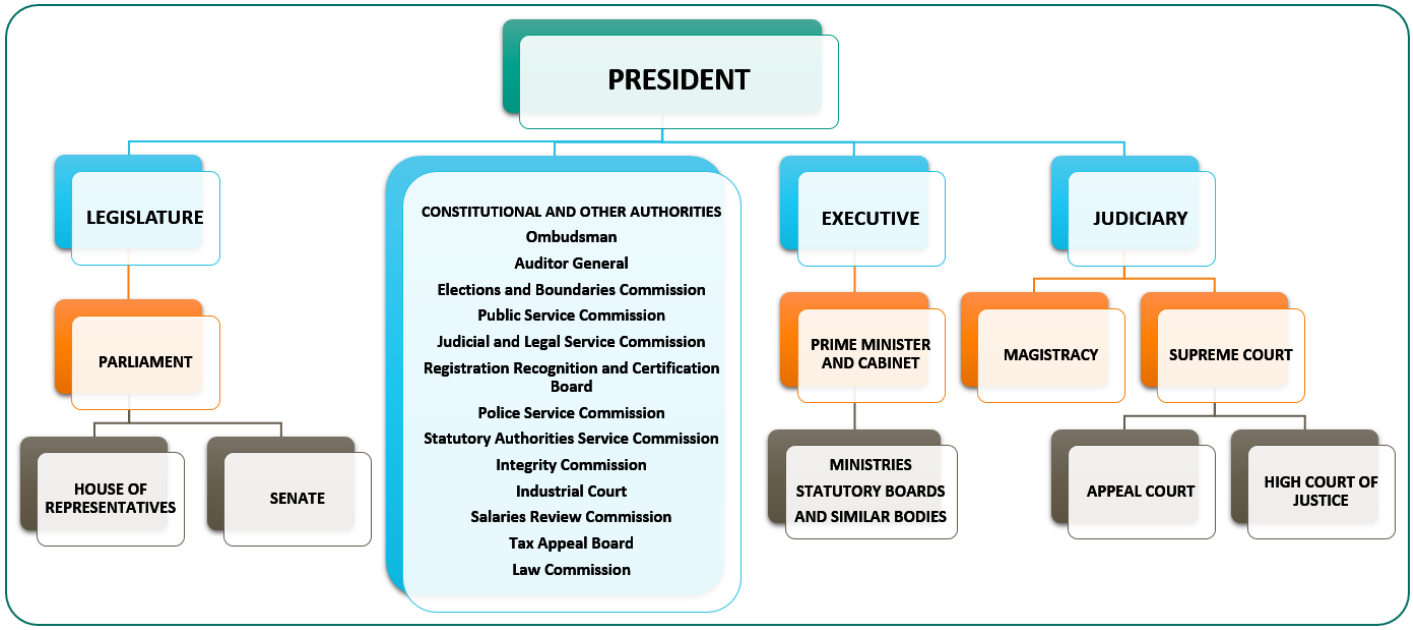

Figure 7: The Governance Structure of Trinidad and Tobago (OPTT, thepresident.tt/trinidad-and-tobago/state-structure/)

Tobago House of Assembly

Since 1980 the Tobago House of Assembly (THA) has governed Tobago and has significant responsibility for local matters. An executive council is responsible for carrying out the functions of the THA. It comprises the Chief Secretary, Deputy Chief Secretary and up to five secretaries drawn from amongst the assembly members and appointed by the President on the advice of the Chief Secretary. The THA can also set up committees; it decides their composition and terms of reference. The responsibilities of the THA are carried out through eight divisions, each under the direction of one of the Secretaries. These 12 divisions are: agriculture, marine affairs and the environment; community development and culture; education; youth affairs, sport and energy; finance and planning; health, infrastructure and public utilities; tourism; transportation; enterprise and settlement.

3.3.2 Local Government and Levels of Decentralisation

Trinidad and Tobago has one of the oldest traditions of local government in the Caribbean. The institution was first introduced to the island in 1596 by the Spanish. However the modern system is dated back to 1768. The present system is established by Act of Parliament, and consists of Municipal and Regional Corporations, and the Tobago House of Assembly (THA) which has special status. These authorities are controlled by democratically elected members, and are funded by Central government grants and locally derived rates, user charges and licence fees; with central government grants making up as high as 80% of the funding of municipalities.

Trinidad is divided into fourteen (14) municipal Corporations (Figure 8). The Disaster Management Unit (DMU) at each Corporation has an estimate of four (4) staff members. Disaster Management in Tobago is managed by the Tobago Emergency Management Agency (TEMA).

All DMUs are managed by the Chief Disaster Management Coordinator appointed by the Ministry of Local Government. The Chief Disaster Management Coordinator is tasked with coordination of emergency operations before, during and after a level 1 emergency affecting the region, borough or city.

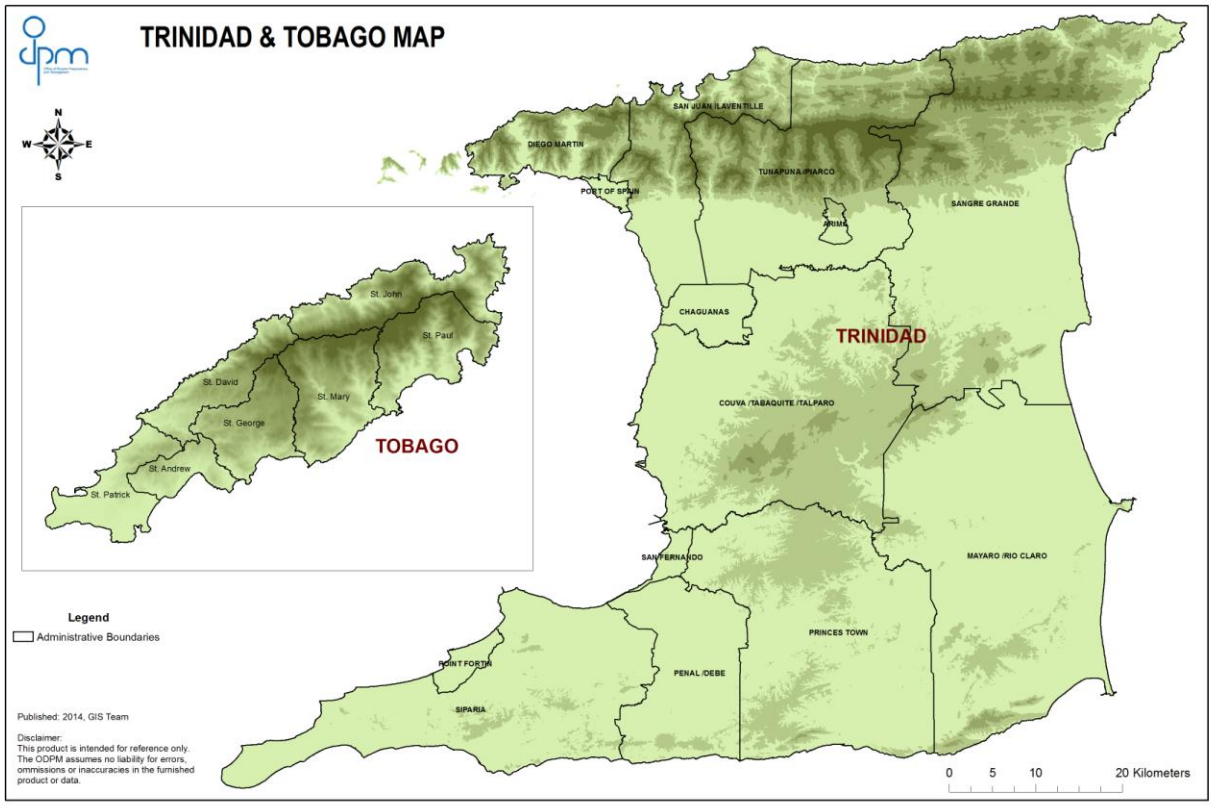

Figure 8: The 15 municipalities in Trinidad and Tobago (MNS/ODPM Archives, 2015)

3.3.3 Coordination Mechanisms Between State and Non- Governmental Agencies

As depicted in the following diagram (Figure 9), the National Response Framework involves several agencies coordinating their efforts to provide a range of services which include early warning, assessment, emergency operations and relief.

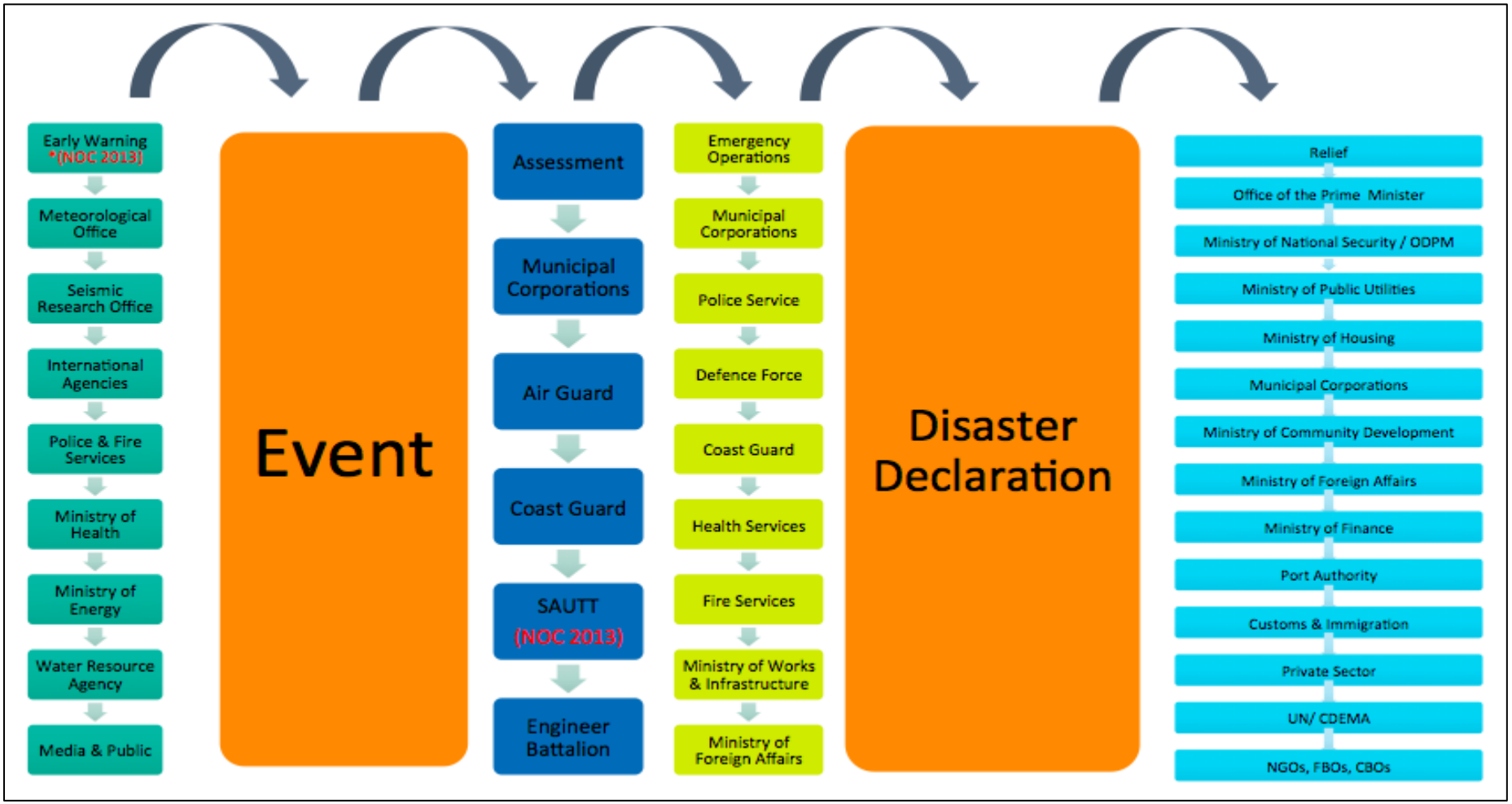

Figure 9: The National Response Framework of Trinidad and Tobago (GORTT/EU, 2010)

***The NOC is a new addition to the National Response Framework. It is a 24hr situational awareness for emergencies and continuously monitors the National Integrative Early Warning system. Although the Ministries may be separated or merged over time, the functional areas as per the NRF 2010 remain the same. ODPM Customer Care Centre (511) provides 24 hour continuous monitoring.**

An effective communications system is the backbone of any emergency operations. The Ministry of National Security Communications Network System will be utilized for intra and inter agency communications within divisions of National Security (Fire Service, Defence Force, Police Service, Cadet Force, Prison Service).

The success of this system is based on functional radios in the hands of essential personnel. In that regard systems are always tested, located on personnel and kept in operation.

3.4 DEVELOPMENT CONTEXT

According to the National Development Strategy 'The Government of Trinidad and Tobago has developed a Policy built on the premise of ‘Prosperity for All’. This development context consists of seven interconnected pillars, which outline the sustainable framework that will enhance Trinidad and Tobago's economic development. Figure 10 below depicts the alignment of the DRR framework with the Seven Pillars for Sustainable Development (GORTT/MPSD, 2011).

3.4.1 National Development Objectives

These objectives are focused on the design of policy actions that meet the needs of the individual in varying aspects (GORTT/MPSD, 2011). The priorities for the medium term are as follows:

- Law and Order and Crime Reduction
- Food Security
- Health and Hospitals
- Job Creation and Economic Transformation
- Human Capital Development

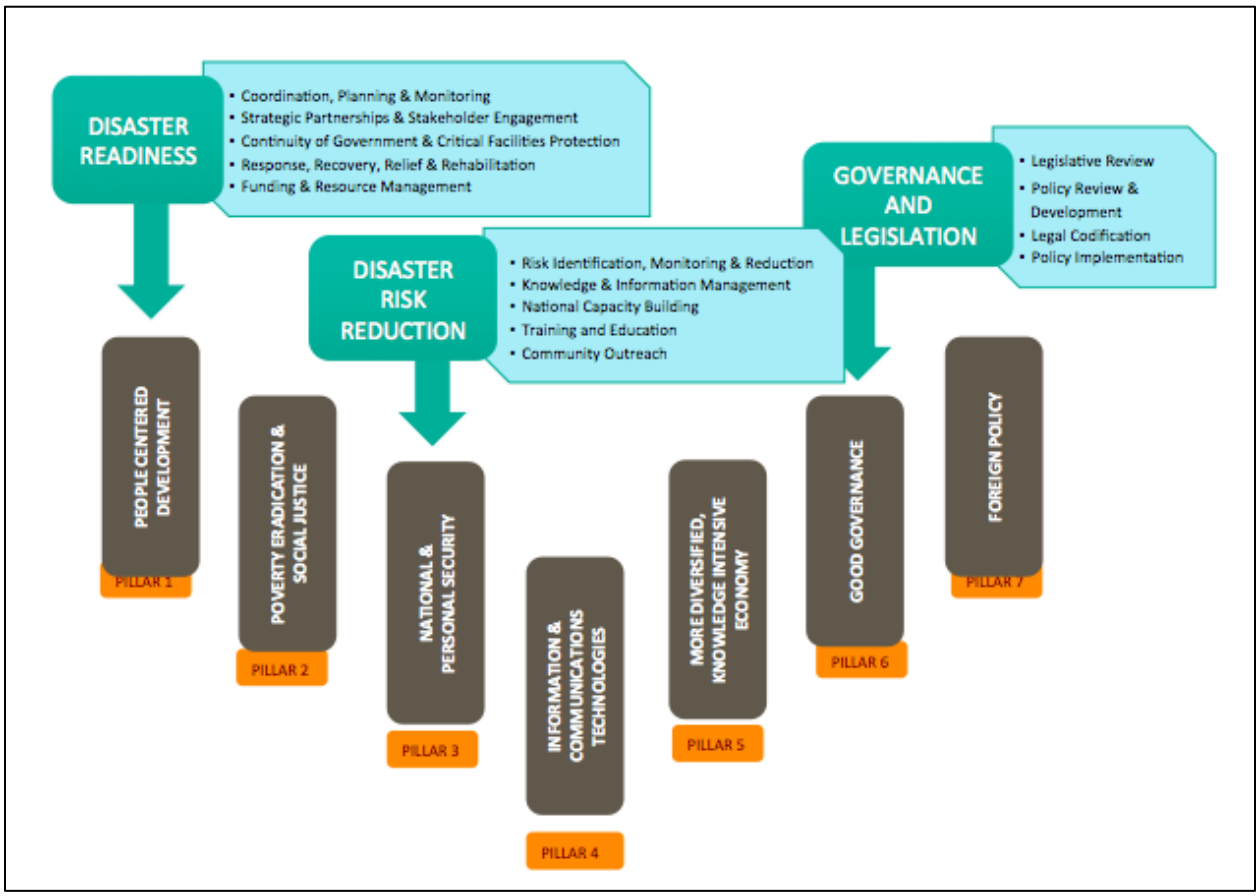

Figure 10: National CDM Framework in the context of the Seven Pillars for Sustainable Development (MPSD, 2011; MNS/ODPM, 2010)

The pillars are designed to enhance sustainable development in Trinidad and Tobago. It is expected that a significant policy shift will occur with a positive result. According to the Strategy, the shift will be evident in terms of the following:

• The implementation of all development initiatives in the context of a sustainable land use and physical planning framework.

• Greater emphasis on people-centered development, with a focus on increasing the levels of participation in education (particularly higher education), coupled with the creation of jobs on a sustainable basis. These efforts will be complemented by a poverty reduction strategy and integrated social welfare support.

4 THE COUNTRY'S DISASTER RISK REDUCTION LEGAL AND INSTITUTIONAL PROFILE

Disaster Risk Reduction strategies can be structural or non - structural. This section will seek to define the non-structural approaches put in place to enhance DRR in Trinidad and Tobago. These will be explained by the existing legal, normative and institutional frameworks.

4.1 LEGAL FRAMEWORK

The importance of the security and well-being of the citizenry may be deduced from the provisions of the Constitution of the Republic of Trinidad and Tobago, which presents the proclamation powers of the President of the Republic. It states that "the President may from time to time make a Proclamation declaring that a state of public emergency exists." In order to be effective, a Proclamation so made must contain a declaration that the President is satisfied, inter alia, that:

A public emergency has arisen as a result of the occurrence of any earthquake, hurricane, flood, fire, outbreak of pestilence or of infectious disease, or other calamity whether similar to the foregoing or not. (Constitution, 2007)

This provision indicates that incidents of this nature should be assigned the highest level of consideration over all issues of national interest. The section sets out the procedures which are to be adopted. Notwithstanding, the existing framework of laws for disaster risk management does not meet the standard for comprehensiveness and effectiveness that should buttress this acknowledgement. A Summary of the Existing Legislative Powers and Responsibilities for Disaster Management is outlined in Appendix 1.

The ODPM has identified national policies that show the structure, function, roles and responsibilities for organizations involved in Disaster Risk Reduction (DRR). These legal and regulatory provisions provide operational guidelines for leading agencies and organizations involved in reducing disaster related risks. The operations of the ODPM, as the coordinating entity for Disaster Management, are supported under the Disaster Measures Act (1978).

The key enabling statutes and regulatory instruments consist of the laws set out in Table3:

Table 3:

Key Statutes and Regulatory Instruments (GORTT /Ministry of Legal Affairs, http://www.legalaffairs.gov.tt/lrcREVISED.html)

Instrument	Description
Disaster Measures Act, Chap. 16:50, Act 47 of 1978	This Act provides for the taking of prompt and expeditious measures for the alleviation of the effects of disaster and for matters connected therewith. The Act authorizes the President to declare by Proclamation that a "disaster area" exists, but requires the Proclamation to define the disaster area and specify the circumstances giving rise to the declaration.
Defence Act, Chap. 14:01, Act 7 of 1962	The Defence Act establishes the authority of the Trinidad and Tobago Defence Force.
Police Service Act, Chap. 15:01, Act 30 of 1965	Section 35 of the Police Service Act outlines the general duties of police officers including the repression of internal disturbances; a duty that becomes relevant at the time of a disaster. The Supplemental Police Act, Chap. 15:02 and Special Reserve Police Act, Chap. 15:03, establishes the supplemental bodies of the Police, which act as an auxiliary to the Police Service as may be found requisite by the Commissioner of Police.

Instrument	Description
Fire Service Act, Chap. 35:50 and Act 10 of 1997	Pursuant to the existing Mass Casualty Management Plan, Earthquake Contingency Response and Recovery Plan and the Severe Weather Contingency Response and Recovery Plan, the Fire Service is a first responder in the event of a disaster or emergency. Initial Search and Rescue is conducted by the Fire Service while the operation of the Disaster/Emergency Standard Operating Procedures and Contingency Plans sees the first line of emergency response lying with the protective services, including the Fire Service, for the activation of Level 2 and 3 events.
Trinidad and Tobago Emergency Mutual Aid Scheme, Act No. 8 of 2000	This Act incorporates the Trinidad and Tobago Emergency Mutual Aid Scheme (TTEMAS) which has its aims and objectives to - *(a)* To establish and develop mutual aid assistance in case of industrial or community emergency situations, natural or man-made; *(b)* To provide timely and organized assistance to cope with an emergency this is beyond the ability of the affected member to handle; *(c)* To sensitize and educate its members as well as the general public to disaster threats and the benefits of pre-incident planning; *(d)* To provide more efficient emergency response services for all members of TTEMAS; *(e)* To establish uniform operations and practices for use by members of TTEMAS; and *(f)* To encourage and promote Loss Control Procedures

Instrument	Description
	as they relate to hazards associated with industry.
Municipal Corporations Act, Chap. 25:04	Local government is provided for by the Municipal Corporations Act 1990 and the Tobago House of Assembly Act 1996. The Ministry with responsibility for local government is responsible for local government in Trinidad, and the Tobago House of Assembly in Tobago. The local authorities are responsible for a broad range of public services, notably primary health care; education; and internal security including disaster preparedness and response measures. The city and borough corporations have revenue-raising powers, and all local authorities receive transfers from national government.
Cadet Force Act, Chap. 14:02 and Regulations	The Cadet Force is auxiliary to the Defence, Police and Fire Service.
Environmental Management Act, Chap. 35:05	This Act is the more recent of the foregoing instruments. It establishes the Environmental Management Authority, which at section 25 of the Act authorizes the Authority, in consultation with the Minister and appropriate government entities, to undertake emergency response activities whenever the release or threat of release of a pollutant or hazardous substance, or any other environmental condition, presents a threat to human health or to the environment.
Water and Sewerage Authority Act, Chap. 54:40	The WASA Act establishes the Authority and vests it with the authority for "*maintaining and developing the waterworks and other property relating thereto … and*

Instrument	Description
	for administering the supply of water thereby established and promoting the conservation and proper use of water resources and the provision of water supplies in Trinidad and Tobago." This is a critical responsibility at times of disaster.
Telecommunications Act, Chap. 47:31	Section 84 of this Act in outlining the powers of the President with respect to telecommunications in Trinidad and Tobago during a state of emergency, authorizes the President, on the advice of the Ministry of National Security to *take control of any telecommunications equipment, installation, service, apparatus or station to be used for Government service".*
Regional Health Authorities Act, Chap. 29:05	The RHA Act has the responsibility to provide efficient systems for the delivery of health care in Trinidad and Tobago. This is a critical responsibility in relation to disaster preparedness and response.

4.1.1 Summary of the Country's Disaster Risk Reduction Legal and Institutional Profile

Draft Comprehensive Disaster Management Legislation has been codified to establish an effective Disaster Management Authority, and is pending Cabinet approval. Legislative reform will reinforce Trinidad and Tobago's existing disaster management infrastructure to effectively and authoritatively achieve the nation's disaster management objectives. Comprehensive Disaster Management legislation will support the ODPM in building a culture of safety and resilience across Trinidad and Tobago by empowering the National Disaster Office to fulfill its mandate for national comprehensive disaster management.

Constraints

Major challenges include:

- Limited resources and human resource capacity of all disaster management stakeholders for policy implementation, with special emphasis on the ODPM (GORTT/NICA-ATN/OC-12349-TT, 2013).
- Several agencies underestimate the importance of their roles in Disaster Risk Reduction. The National Disaster Risk Reduction Committee (NDRRC) provides the platform for regular periodic reviews of National DRR policy documents, but there is a further need to improve the resources available and capacity of DRR stakeholders to implement policy.
- The ODPM has established a Document Architecture Process (DAP) to improve its capacity for policy review and knowledge management to optimize its existing capacity to ensure policy readiness, but further institutional commitment is required to sustain policy initiatives at all levels.
- It is imperative for all existing related legislation to be integrated so that critical gaps in regulatory frameworks can be filled. Current legislation is outdated and does not mandate all relevant authorities to ensure public awareness and resilience.

Recommendations

- Statutorily reinforce the ODPM as a regulatory body responsible for the coordination, monitoring and evaluation of disaster risk management activities across Trinidad and Tobago.
- Establish a clear legislative and policy framework that clarifies 'mandates, responsibilities, protocols, linkages, coordination structure between different actors both horizontally and vertically' to support disaster preparedness planning.
- Accelerate development and implementation of National Policies in Key Areas including the National CDM Policy, National Response Framework, and the National Hazard Mitigation Policy.
- Transition the National Disaster Risk Reduction Committee (NDRRC) to a Cabinet approved body to improve consistency of attendance of member agencies and platform sustainability.
- Convert Inter-Ministerial Committee for Flood Response to Inter-Ministerial Committee for CDM.

4.2 NORMATIVE FRAMEWORK

In Trinidad and Tobago there are existing normative mechanisms in place that guide key agencies and national authorities for disaster risk reduction (DRR) of their roles and responsibilities in this arena. The section below provides a detailed account of the policies and plans that are currently in place to enhance DRR.

4.2.1 Normative instruments for Disaster Risk Reduction

A Normative framework for DRR exists with decentralised responsibilities and capacities at all levels. Substantial achievement has been attained but with recognized limitations in key aspects, such as financial resources and/or operational capacities. The National Policy Framework for DRR has been aligned to international (UNISDR/ HFA, 2005) and regional (CARICOM/CDEMA, 2014) policy frameworks, and the National Strategy (7 Pillars for Sustainable Development). DRR plans and activities across national and local levels require further framework alignment, and improved levels of execution.

A comprehensive review of the Disaster Management Act and related legislation is in process. Draft Comprehensive Disaster Management Legislation has been codified to establish an effective Disaster Management Authority, and is pending Cabinet approval. Legislative reform will reinforce Trinidad and Tobago's existing disaster management infrastructure to effectively and authoritatively achieve the nation's disaster management objectives.

Disaster risk has been considered in public investment decisions via consultation and review of Plans and Policies by the ODPM. The ODPM has provided technical advisory services for national development plans, sector strategies and plans, climate change policy and strategy, poverty reduction strategy papers, civil defense policy & strategy and contingency planning. Disaster Risk has also been incorporated within Trinidad and Tobago's Common Country Assessment under the UN Development Assistance Framework (UNDAF) – Country Programme Outcome 1.3.2: improving disaster preparedness and response systems. Legislative and regulatory provisions have been made for managing disaster risk via the Disaster Measures Act Chapter 16:50 (Act 47 of 1978), and no fewer than 35 other items of related legislation.

International Conventions and Treaties

(GORTT/EMA, http:www.ema.co.tt/new/index.php/legal/conventions-and-treaties)

The normative mechanisms that guide the definition of the responsibilities of national and sub national authorities engaged in DRR are:

- Basel Convention

The Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and Their Disposal, usually known as the Basel Convention, is an international treaty that was designed to reduce the movements of hazardous waste between nations, and specifically to prevent transfer of hazardous waste from developed to less developed countries (LDCs).

- Stockholm Convention

Stockholm Convention on Persistent Organic Pollutants is an international environmental treaty, signed in 2001 and effective from May 2004, that aims to eliminate or restrict the production and use of persistent organic pollutants (POPs).

- Ramsar Convention

The Ramsar Convention (formally, the Convention on Wetlands of International Importance, especially as Waterfowl Habitat) is an international treaty for the conservation and sustainable utilization of wetlands,[1] i.e., to stem the progressive encroachment on and loss of wetlands now and in the future, recognizing the fundamental ecological functions of wetlands and their economic, cultural, scientific, and recreational value.

- Convention on Biological Diversity

The Convention on Biological Diversity (CBD) entered into force on 29 December 1993. It has 3 main objectives:

1. The conservation of biological diversity
2. The sustainable use of the components of biological diversity

3. The fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

- Convention on International Trade in Endangered Species(CITES)

CITES is an international agreement between governments. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival.

- Vienna Convention and Montreal Protocol

The Vienna Convention for the Protection of the Ozone Layer and its Montreal Protocol on Substances that Deplete the Ozone Layer are dedicated to the protection of the earth's ozone layer. With 197 parties, they are the most widely ratified treaties in United Nations history, and have, to date, enabled reductions of over 97% of all global consumption of controlled ozone depleting substances (measured in ODP tones) (UNEP 2013).

- Kyoto Protocol

The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change, which commits its Parties by setting internationally binding emission reduction targets (UNFCCC 2013)

- Inter American Convention Against Terrorism

The Inter American Convention Against Terrorism was signed on October 2, 2002 (OAS 2002).

4.2.2 Public Policies and Plans

There is need for a comprehensive National policy on disaster management in Trinidad and Tobago. Development of a policy framework to guide national action on DRR and its related issues has begun. Most plans and policies are in the draft stage as detailed in Table 4:

Table 4:

DRR-related Plans and Policies in place in Trinidad and Tobago (MNS/ODPM, 2014)

TYPE	NAME	LEVEL	IMPLEMENTING ENTITY	IMPLEMENTATION STATUS
Policy	Cyber Security Agency Bill (2014)	National	GORTT	• Cabinet Approved
Policy	Draft Hazard Mitigation Policy. (2010)	National	ODPM	• Under Stakeholder Review
Policy	Comprehensive Disaster Management Policy Framework. (2010)	National	ODPM	• Cabinet Approved
Policy	Critical Facilities Protection Policy Framework (2010)	National	ODPM	• Cabinet Approved
Policy	National Flood Risk Management Policy. (2013)	National	ODPM	• Under Stakeholder Review
Policy	Draft Volunteer Policy. (2011)	Organisational	ODPM	• Under Stakeholder Review

TYPE	NAME	LEVEL	IMPLEMENTING ENTITY	IMPLEMENTATION STATUS
Policy	Draft National Shelter Policy. (2012)	National	ODPM	• Under Stakeholder Review
Policy	Draft National Relief Policy (2010)	National	ODPM	• Under Stakeholder Review
Policy	Draft Animal Shelter Policy (2011)	National	ODPM	• Under Stakeholder Review
Framework	National Response Framework (2010)	National	ODPM	• Under Stakeholder Review
Guidelines	Disaster Risk Reduction Guidelines for Gender (2013)	Sectoral	ODPM	• Under Stakeholder Review
Policy	Business Continuity Management Policy for Public Service (2014)	National	Ministry of Public Administration	• Under Stakeholder Review
Plan	Crisis Communication Policy (2014)	National	Government Information Services Ltd	• Under Stakeholder Review
Plan	Draft National Hazard Mitigation Plan (2012)	National	ODPM	• Under Stakeholder Review
Plan	Trinidad and Tobago National Earthquake Response Plan (2012)	National	ODPM	• Under Stakeholder Review
Plan	National CERT Training Plan (2014)	Organisational	ODPM	• Under Stakeholder Review

TYPE	NAME	LEVEL	IMPLEMENTING ENTITY	IMPLEMENTATION STATUS
Plan	National Psychological Stress Response Plan (2014)	National	ODPM	• Under Stakeholder Review
Plan	Mass Crowd Events Plan (2014)	National	ODPM	• Under Stakeholder Review
Plan	Pandemic Influenza Preparedness and Response Plan (2009)	National	Ministry of Health	• Cabinet Approved
Plan	National Pandemic Response Plan (2014)	National	ODPM	• Under Stakeholder Review
Plan	Evacuation Procedures (2014)	National	ODPM	• Under Stakeholder Review
Policy	National Environmental Policy (2006)	National	Ministry of Environment and Water	• Cabinet Approved
Policy	Draft Health Disaster Policy (2009)	National	Ministry of Health	• Under Stakeholder Review
Policy	National Tourism Policy (2007)	National	Ministry of Tourism	• Cabinet Approved
Policy	National Protected Areas Policy (2009)	National	Environmental Management Authority	• Cabinet Approved
Policy	National Forest Policy (1981)	National	Ministry of Land and Marine Resources	• Cabinet Approved
Policy	Draft Climate Change Policy (2010)	National	Ministry of Environment & Water	• Cabinet Approved

TYPE	NAME	LEVEL	IMPLEMENTING ENTITY	IMPLEMENTATION STATUS
Policy	National Hillside Development in the Northern Range Policy (2010)	National	Town and Country Planning Division	• Cabinet Approved
Plan	National Oil Spill Contingency Plan (2010)	National	Ministry of Energy and Energy Affairs	• Cabinet Approved

4.3 INSTITUTIONAL FRAMEWORK

The institutional framework consists of the responsibilities of the key institutions that play a role in DRM. Refer to Figure 11 for the hierarchy and linkage between critical institutions involved in DRR .The sections below describe the roles these institutions play in more detail.

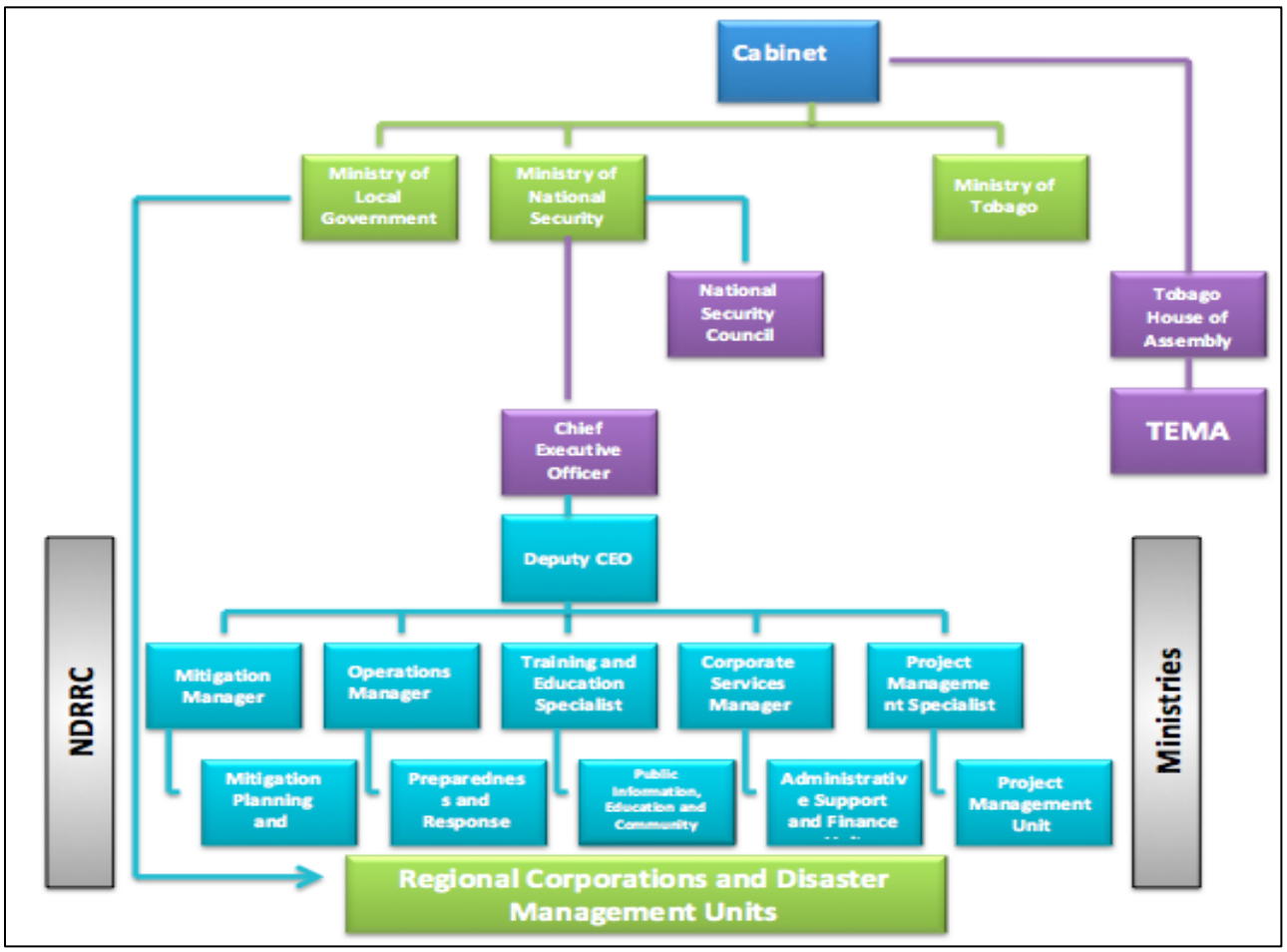

Figure 11: The hierarchy and linkage between critical institutions involved in DRR within Trinidad and Tobago (GORTT/NICA-ATN/OC-12349-TT, 2013)

4.3.1 Organization of the national system and mechanisms

THE NATIONAL LEVEL

Ministry of National Security (MNS)

The MNS is charged with, inter alia, Co-ordination of Disaster Preparedness and Emergency Relief, and the Maintenance of Law and Order, Public Safety and Defence against aggression. The Ministry has the responsibility to: assist the civil authorities in times of crisis or disaster; provide Search and Rescue services in keeping with national requirements and under international agreements; provide emergency response through the Defence Force, the Police Force and the Fire Service.

The Minister of National Security sits on the National Security Council which is chaired by the Honourable Prime Minister (PM). The PM established an Inter -Ministerial Task Force for Flood Response chaired by the Minister of National Security. A complementary Inter-Ministerial Committee was established under the Ministry of Works and Infrastructure to investigate flooding and drainage issues. This committee is not at present directly linked with the ODPM. Following a proposal by the ODPM, the National Security Council in 2011 agreed to the expansion of the mandate of the Task Force to include Comprehensive Disaster Management to assess and address Trinidad and Tobago's preparedness and response to multiple hazards as well as to examine and ensure the implementation of disaster risk reduction strategies.

ODPM

The DRM System for Trinidad and Tobago is currently structured around the ODPM, which serves as coordinating and monitoring body for disaster risk management within the GORTT. In that regard, ODPM serves as the driver and systems coordinator for disaster prevention and mitigation, preparedness and response, and reconstruction and recovery. This lead agency for CDM is required to play a strategic as well as operational role in the discharge of its mandate. ODPM is a division within the Ministry of National Security (MNS), and therefore operates under the authority of the Ministry.

The ODPM is described as being “responsible for public education and community outreach activities, coordinating national mitigation and capacity building efforts to safeguard property and life by working with other government agencies and first responders in protecting public health and safety, restoring essential government services and critical infrastructure, and providing emergency relief to those severely affected by hazard impact”. The ODPM therefore interacts with Ministries and agencies of Government, private sector entities, and civil society in the effort to deliver on its mandate.

Management of Emergencies and Disasters is coordinated by the Emergency Operation Centers (EOCs). At the national level, the National Emergency Operations Centre (NEOC) is located at ODPM headquarters. Representatives of public and private sectors, NGOs and CBOs comprise the teams, which manage impact of hazard events in Trinidad and Tobago.

Employees of the ODPM and other first Responders for Disaster Management

Trinidad and Tobago a sub-regional Focal Point

Under the Caribbean Disaster and Emergency Management Agency agreement (CDEMA, 2008), T&T has been designated as Sub-Regional Focal Point with responsibility for meeting requests

for response operations in Grenada, Guyana and Suriname. The functions of each focal point are stipulated under the Agreement, and the regional response most often triggered by CDEMA at the regional level has been the activation of the military forces to assist in the preservation of law and order and the distribution of relief goods. Among the other requirements is the need to maintain and test on regular basis communications with the CDEMA Coordinating Unit and with critical response agencies under the control of national relief organizations.

Some Ministries and agencies directly linked to the functions of the ODPM for response include Health, Local Government, People and Social Development, Finance, Community Development, Police Force, Fire, Defence Force.

Tobago Emergency Management Agency (TEMA)

The Tobago Emergency Management Agency (TEMA) is the focal point for disaster risk management on the island of Tobago. TEMA reports to the THA, and has a working relationship with ODPM. Like its counterpart in Trinidad, TEMA is charged to handle all aspects of DRM to build resilience on the island. TEMA executes a Level 1 response function.

TEMA was first established as the National Emergency Management Agency, in accordance with the Tobago House of Assembly, Executive Council Minute No.64 of March 09, 1998. By the directive given to TEMA along with the support of the National Disaster Management System, the island of Tobago would benefit from a comprehensive disaster management approach, focused on prevention, preparation and mitigation against disasters, as well as, emergency response, rehabilitation and recovery from disaster events.

In the year, 2005, the cabinet of the Government of Trinidad and Tobago established the Office of Disaster Preparedness and Management (ODPM) with the purported functions being to manage and co-ordinate emergency activities in the country.

After careful consideration and much deliberation, the Executive Council of the Tobago House of Assembly, by Executive Council Minute No. 722 of October 2008 decided on a name change

for NEMA, which would more accurately define the jurisdiction of the agency. The new name given is the Tobago Emergency Management Agency.

Office of the Prime Minister/NOC

The National Operations Centre now serves as the strategic command centre for command and control systems in the event of all emergencies (GORTT/ODPM/NRF, 2014). This allows the NEOC/EOC system to be effectively and efficiently aligned to the operational command centres (OCCs) of all lead response agencies (TTPS, TTDF, TTFS and GMRTT).

The NOC now provides the space that allows the executive arm of government to be informed in a strategic manner, on a timely basis on the status of all emergencies and threats.

National Disaster System

The National Disaster System is not currently led from the highest policy-making level (GORTT/NICA-ATN/OC-12349-TT, 2013). Such leadership is essential to mandate DRM integration within and across sectors. The proposal for strengthening CDM in T&T and expanding the ODPM, submitted as a Cabinet note in April 2012 recommends that such a high level committee be named and chaired by the Prime Minister (MNS/ODPM, 2012).

Employees of the ODPM partaking in NEOC training tabletop exercise

The National Disaster Management Committee (NDMC) will have overall responsibility for disaster management and will comprise, *inter alia:* ministers with responsibilities for national security, energy, local government, health, people and social development, food production, land and marine affairs, community development and the environment as well as the Commissioner of Police, the Chief of Defence Staff, the Chief Fire Officer and the head of the ODPM.

A National Disaster Management Policy (NDMP) is also required to define government's commitment to integrating disaster management nationally and adopting standards and systems that reduce risk and build resiliency. This does not now exist, and was also recommended in the 2012 proposal to the Cabinet.

Critical facilities are integral to the economy of T&T, and the UNDP has supported development of a Critical Facilities Inventory. A Critical Facilities Protection Policy (CFPP) has been drafted and is awaiting adoption. The CFPP will provide the guiding document to preserve and protect the structures, institutions, industries, networks and systems that are essential to the security, economy, health and safety of the society; each Critical Facility will have its own Critical Facilities Protection Plan (CFPP) which documents measures taken before, during and after an emergency. The Cabinet proposal has also requested adoption of the CFPP.

DRM at the local level

A fundamental principle of Disaster Risk Management is that the lowest levels of settlement should be equipped to handle at least the first interventions following an event. Incidents occur at the local level and therefore the capacity to respond must begin there. Further, due to the geography of Trinidad and Tobago, the possibility exists that rural communities may become isolated (accessible only by air) for an extended period of time. Under such circumstances it will be necessary for communities to survive on their own for at least two days. Such situations have been reported especially in the northeast of Trinidad and in parts of Tobago where

landslides and/or broken roads have isolated the respective communities. Further, building community resilience is essential and therefore implementation of risk identification, prevention, mitigation, and recovery planning are important at the community level. Communities form part of the Regional corporations and therefore DRM activity must take place at the levels of community and Regional and Municipal Corporations.

Regional Corporations

A system of Regional Corporations and Disaster Management Units (DMUs) operate at the regional and local levels in T&T. The Regional Corporations are situated under the purview of the Ministry of Local Government (MOLG). Each Regional Corporation has a Disaster Management Unit (DMU), and a post of Chief Disaster Coordinator is established in the Ministry to coordinate and support the work of the DMUs. The coordinator officially shares and reports information from the ODPM or may make requests to the ODPM for assistance with programmes or response activities. The core functions of the DMU are listed as:

- Provide expert Disaster Risk Reduction advice to the Administration of the Corporations.
- Collaborate with other first responders in providing local-level assistance to citizens impacted by hazards. First responder agencies include the Trinidad and Tobago Fire Services (TTFS), the Trinidad and Tobago Defence Force (TTDF), the Trinidad and Tobago Police Service (TTPS) and other Non-Governmental Organizations (NGOs).
- Manage the operations of the Municipal Emergency Operations Centre (MEOC) when activated.
- Educate communities on all phases of the disaster management cycle.
- Carry out activities in accordance with the disaster management policy of the Ministry of Local Government.

In the MOLG, the Chief Disaster Coordinator manages and supervises on a daily basis, the disaster risk reduction programmes of all 14 municipalities and coordinates with the assigned

regional coordinators at the ODPM. The DMUs often report to the Regional Coordinators of the Preparedness and Response Unit (PRU) of the ODPM on a timely basis in close consultation with the Chief Disaster Coordinator. Resources that are applied to DRR programmes within the municipalities remain a challenge.

TEMA serves as the DMU in Tobago under the Tobago House of Assembly's legislation *(GORTT /Ministry of Legal Affairs/THA Act*, http://www.legalaffairs.gov.tt/lrcREVISED.html***)*** which although similar to a regional corporation in terms of its functions, has more legislative powers than the DMUs in the municipalities in Trinidad. TEMA is well resourced and has developed good response capacity to handle the Level 1 emergencies which is its mandate (GORTT/EU/NRF,2010).

Communities

DRM at the community level is the other tier of the local consideration. The capacity assessment indicated that whereas some progress is being made, communities still need guidance for the planning process and for implementation of the respective plans. Hazard mapping and vulnerability assessment, needs assessments, plan preparation, information and warning systems, record keeping, recovery and sustainability planning are needed in several communities on both islands.

Mayaro/Rio Claro Regional Corporation Risk Reduction Management Centre-Testing Drill

The concept of CORE (Communities Organized and Ready for Emergencies) is being promulgated by ODPM. *At risk* communities throughout the country are being targeted to provide and improve the information for decision making with respect to mitigation and response strategies. This program needs to be expanded and strengthened (GORTT/NICA-ATN/OC-12349-TT, 2013). A system of Community Emergency Response Teams (CERTS) was pioneered and developed in Tobago. These are now also being developed in Trinidad. CERTS have proven to be beneficial for response and should continue to be expanded.

Evacuation of Parliament Drill

DRM at the Sectoral Level

The GORTT has thirty-two (32) Ministries (OPM, opm.gov.tt) and several agencies to handle the multiple sectors that form part of the government of the country. Several sectors have strategic roles in sustainable prosperity and people-centred development, and integration of DRM in the relevant aspects of the portfolio is an important consideration. These Ministries and some agencies are represented on the NDRRC and the NDRRC subcommittees.

The ODPM has identified eight of the Ministries for institutional strengthening under the National Institutional Capacity Assessment project (IDB TT-T1017). These institutions are:

- Ministry of National Security
- Ministry of Local Government
- Ministry of the Environment and Water Resources
- Ministry of Finance and the Economy
- Ministry of the People and Social Development
- Ministry of Health

- Ministry of Planning and Sustainable Development
- Ministry of Public Utilities

The areas for strengthening, identified by the NICA project (IDB TT-T1017), were divided into 11 packages which are summarised in Table 5 below:

Table 5:

Areas for Institutional Strengthening across 8 target Ministries (GORTT/NICA-ATN/OC-12349-TT, 2013)

INSTITUTIONAL STRENGTHENING PACKAGE FOCUS	MINISTRY/AGENCY	KEY RESULT(S)
1. ***Foundational Sensitisation and Training to Enhance Mainstreaming of DRM and Climate Change Adaptation Planning Across Selected Ministries***	8 targeted Ministries	Strengthened national and community level capacity for mainstreaming mitigation, preparedness, and coordinated response to and recovery from natural and technological hazards and the effects of climate change
2. ***Ministry of Environment and Water Resources – Integrating HVRA into decision-making for environmental management and resource protection***	Ministry of Water & The Environment	Strengthened national and community level capacity for mitigation, preparedness, and coordinated response to and recovery from natural and technological hazards and the effects of climate change.
3. ***Gender Mainstreaming - Gender Sensitisation***	8 targeted Ministries	Enhanced awareness of the importance of gender-related

Training for All Eight Ministries		issues as a key aspect of disaster risk management
4. *Ministry of Local Government and Ministry of National Security* - Local Level DRM Planning	Ministry of National Security (MNS), Ministry of Local Government (MOLG)	• Local hazard plans developed and used to strengthen community preparedness • CORE strengthened and expanded
5 Ministry of Finance and Economy - Financial Risk Management and Business Continuity	Ministry of Finance & The Economy (MOFE)	• Financial Risk management Procedures Developed • Ministry of Finance and the Economy staff trained in government continuity planning.
6 Integrate DRR into poverty reduction programs of Ministry of People and Social Development	Ministry of the People and Social Development (MPSD)	• Poverty reduction and social development programs strengthened and better linked with disaster risk reduction.
7 Ministry of National Security – Public Safety Arm- Enhancing DRM communication for High level decision-makers and the Public; and Improved Capacity for Urban Search and	Ministry of National Security	• Creative and motivating public campaign developed for public sensitization and education on DRM.

	Rescue		
8	***Ministry of Planning and Sustainable Development – Integration of HVRA into decision-making and improved building infrastructure***	Ministry of Planning and Sustainable Development	• Hazard vulnerability and risk assessment framework and guidelines applied to development and land use projects and decisions • Trained planners and enforcement staff that are more aware of and equipped to apply HVRA guidelines • Policy drafted to reduce exacerbating vulnerability to risks in high risks and better manage growth in these areas. • National Building Code Drafted • Manual on Safe Building Techniques Developed for Builders and Community Members • Building and Infrastructure Monitoring and Inspection Strengthened.
9	***DRM Data Management System for four Key Ministries - MNS, MPSD, MEWR, MLG***	MNS, MPSD, MEWR, MOLG	• Data Management Policy Developed • Robust knowledge and data management platform developed to support national and local disaster risk management efforts.

10	***Preparedness and Response Planning for All Eight Ministries***	8 targeted Ministries	• Contingency and emergency response plans developed and tested in each Ministry.
11	***Ministry of Health-Sector Vulnerability Assessment***	Ministry of Health	• Hazard vulnerability assessment conducted for clinics and other facilities at the community.

5 THE STATE OF DISASTER RISK IN THE COUNTRY

As countries use various approaches and concepts, the definition for reference on disaster risk for the purpose of this exercise is “The potential disaster losses, in lives, health status, livelihoods, assets and services, which could occur to a particular community or a society over some specified future time period.” (UNISDR, 2011).

5.1 HISTORICAL DATA ANALYSIS

In understanding the hazard profile of Trinidad and Tobago it is important to highlight the notions associated with hazard frequency vs. hazard potential. The natural and anthropogenic characteristics of Trinidad and Tobago make it prone to many high impact hazards, meaning that the country does indeed have the potential to experience high magnitude events such as earthquakes and tsunamis, as evidenced by historical data. Fortunately , however in recent years the nation’s most prevalent hazards have been limited to hydro-meteorological events such as flooding , landslides and high wind events , in addition to fires arising from environmental , domestic and industrial causes (IPCC/GAR, 2014).

The perception that the comparably low damage impact of historical events is an indication of a low hazard frequency is a common misconception. This is incorrect, as Trinidad and Tobago is in fact regularly subjected to hazards, but this at times goes unnoticed due to relatively short durations and minimal magnitude and impacts (CCRIF, 2013).

Table 6 shown below illustrates major historical hazards occurring in Trinidad and Tobago between the years 1766 to 2013.

Table 6:

Some of the major historical hazards which have occurred in Trinidad and Tobago (MNS/ODPM Archives, 2014)

Year	Hazard	Brief Description of Impact
1766	7.9 Earthquake	Destroyed Trinidad's then capital San Jose
1888	7.5 Earthquake	Damage occurring from Trinidad to St. Vincent.
1933	Trinidad Hurricane	$ 3 million in damage , 1000 people left homeless
1954	6.5 Earthquake	1 death , multiple injuries
1963	*Hurricane Flora (Category3)*	*7 500 houses were destroyed; 3 500 houses were damaged; 18 people killed in Trinidad; 2 people killed in Tobago; $30 million worth in damages to agricultural sector.*
1968	*7.0 Earthquake*	Significant damage in Venezuela with some damages to Port of Spain, Trinidad.
1974	Tropical Storm Alma	Damage to the Plum Mitan Strip in California; 1 person was killed.
1979	Oil Spill	Super tankers the Atlantic Empress, 288,000-deadweight-ton (dwt) and the Aegean Captain, 207000 dwt collided off Little Tobago. An estimated 90 million gallons (over 2.9 million barrels) were spilled
1981	Flooding	Extensive flooding throughout Trinidad , Caroni divides north from south
1982	5.2 Earthquake	Largest earthquake near Tobago up to that time.
1985	Flooding	Nationwide flooding, TT$15 mill cost incurred. 621 hect. Of agriculture lost.
1988	6.3 Earthquake	Occurred off east Coast Trinidad. No injuries reported.
	Flooding	Destroyed food crops caused extreme property damage. In another event , associated mudslide (secondary hazard) buries a child , while another is swept away

Year	Hazard	Brief Description of Impact
	Tropical Storm Fran	Severe Flooding
1993	Tropical Strom Bret	Severe flooding and damage to property
	Flooding	In the POS region 5 deaths , 10 left homeless , extensive damage to property
1996	5.2 Earthquake	North of Trinidad occurred New Year's Day. No reported injuries.
1997	6.1 Earthquake	6.1 US # 25 million in damages to Tobago, 2 were injured and 15 were left homeless.
2005	Flooding	Severe flooding leaves people marooned and crops and livestock destroyed
2006	5.8 Earthquake	Felt throughout Trinidad with 3 reported injuries in Point Lisas.
2007	7.3 Earthquake	Felt throughout the Eastern Caribbean from Puerto Rico to Guyana; damage reported in Martinique, St. Lucia, St. Vincent and Barbados. This is the fifth earthquake in the magnitude 7 range to occur near Martinique since 1727.
2008	5.6 Earthquake	Located on the East Coast and felt mainly in Galeota, no reported injuries.
	Flooding	Extensive damage to housing, transport. One person died. In another event Extensive damage to housing, transportation, landslides blocks roads, Shelter at Bourg Mulatresse opened (20ppl)
2009	4.8 Earthquake	Occurred on land and felt in Sangre Grande and Penal, no reported injuries.
	Flood	Severe flooding causing damage to property and the disruption of services.
2010	4.7 Earthquake	4.7 felt throughout Trinidad, from Carenage to Moruga to Matura. No reported injuries or damages.

	Landslide	Boulders and debris brought down onto Western Main Road Cutting off access to Chaguaramas
	HAZARD Flooding	**BREIF DESCRIPTION OF IMPACT** Multiple severe flooding events throughout the year causing damage , 1 death , disruption of some services, traffic congestion , and associated secondary hazard impacts as well
2011	Landslides and Flooding	Multiple landslides throughout areas of North Trinidad , impacts included : - Segment of North Coast Road blocked cutting off access to Maracas for a few hours. - Damage to areas of upper La Seiva, Road Maraval.
2012	Landslide (Mudslide) and Flooding	Occurred in Diego Martin, 2 deaths, extensive damage to property. Estimated millions lost in damage.
2013	Oil Spills	A series of spills occurred between December 17th and 29th (2013) due to a rupture in a marine pipeline. Approximately 11 oil spills were confirmed and over 7,453 barrels of oil, spilled into the ocean causing both environmental and social impacts.
*** Please note that this table does not represent a comprehensive listing. Major events were selected to depict the range of hazard impacts to which the country has been subjected in the past.**		

The cost of damages from the impact of high magnitude disasters can run into the billions of dollars, and as mentioned before the impact in small islands states can be more intense. Private and public agencies such as “the Association of Trinidad and Tobago Insurance Companies (ATTIC), Ministry of Food Production, Land and Marine Affairs, Ministry of People and Social Development, the Ministry of Housing and Urban Development (MHUD) and ODPM conducted

analysis for claims made as a result of flooding for the period of 2006 to 2010" (MNS/ODPM, 2013).

The data on the cost of damages is represented in Figure 12 below.

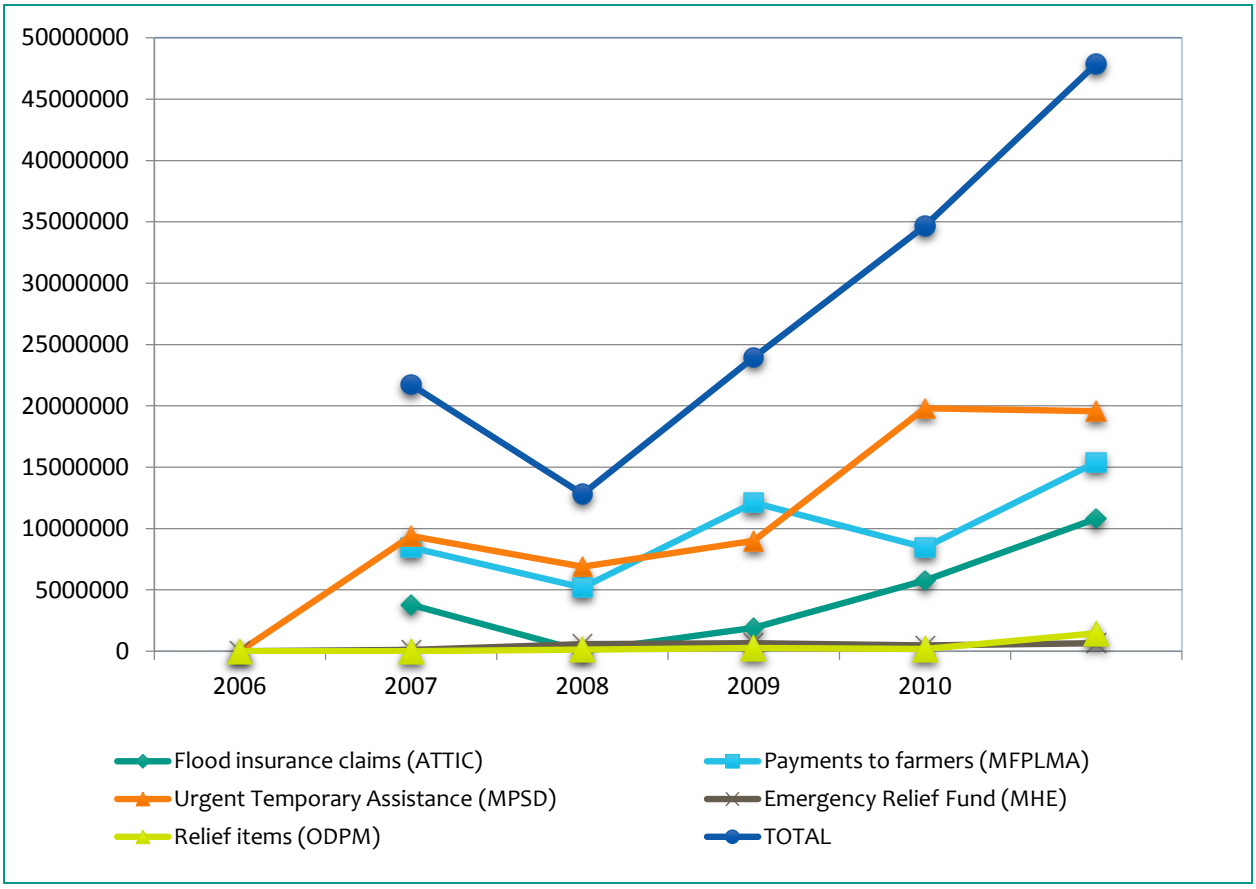

Figure 12: Hazard Losses 2006-2010 in TT Dollars (MNS/ODPM, 2014)

At present the Republic of Trinidad and Tobago has implemented several financial mechanisms to cope with the economic impacts of a major disaster. They are as follows:

1. **The Heritage and Stabilization Fund**

   This fund was established by the Government or the Republic of Trinidad and Tobago (GORTT) in an effort to: cushion the impact or sustain public expenditure and create an alternative stream of income so as to support public expenditure capacity during period of

revenue downturn; and provide a heritage for future generations from savings and investment income derived from excess revenues. The Net Asset Value of the Heritage and Stabilization Fund as at September 30, 2013 is USD 5,154.0 Mn. While this fund speaks specifically to revenue downturns as a result of a decline in crude oil and natural gas prices and the depletion of non-renewable petroleum resources, it is still considered a potential source for disaster relief funding.

2. **The Caribbean Catastrophe Risk Insurance Facility (CCRIF)**

   Operated and owned by Caribbean governments, the Caribbean Catastrophe Risk Insurance Facility (CCRIF) is a risk pooling facility designed to limit the financial impact of catastrophic hurricanes and earthquakes. Trinidad and Tobago is insured with CCRIF for the period 2014-2015 for a value of USD 20, 511 Mn for Hurricanes and USD 120, 091 Mn for Earthquakes (CCRIF, 2014).

3. **The United Nations Emergency Relief Fund**

   Relief by the United Nations requires a damage assessment within 72 hours of the event. However, unlike CCRIF, annual premiums are not required to access the funds in times of disaster (MNS/ODPM, 2012).

4. **The Inter-American Emergency Aid Fund (FONDEM)**

   The Inter-American Emergency Aid Fund, otherwise referred to as FONDEM, is dependent on member state contributions and other donations solicited by the Director General of the Organization of American States (OES). It provides up to USD 25, 000 in the event that Trinidad and Tobago has suffered a natural disaster impact (MNS/ODPM, 2012).

5. **The Caribbean Development Bank (CDB)**

   The Bank has made an Emergency Grant (limit of USD 200, 000), an Emergency Response Load (USD 750,000) and a Rehabilitation Loan (USD 3 Million). Both the Emergency Grant

and the Emergency Response Load can be utilized for infrastructural uses such as, road rehabilitation, restoration of electricity and telephone services. Whereas, the disbursement of the funds obtained from the Rehabilitation Facility is determined by the country's discretion.

While it is commendable that multiple mechanisms are in place to assist in the event of financial need at a national level, the sad reality remains that these funds combined will still not be able to fully cover the cost of rebuilding and rehabilitation, towards a return to normalcy in post disaster scenarios, especially if critical revenue generating sectors such as the energy sector are disabled.

5.2 HAZARDS / THREATS

'Within the past 20 years, the country's landscape has changed dramatically due to increased development, and the intensification of built infrastructure. Presently, much of the nation's population is located along the Trinidad's western coastline, which is also the location of Trinidad's three largest cities, Port of Spain, San - Fernando and Chaguanas.

All of the 14 municipalities of Trinidad in addition to its sister island Tobago, are susceptible to a variety of natural and anthropogenic hazards.' (MNS/ODPM PVA, 2014)

5.2.1 Natural Hazards and Anthropogenic Hazards Affecting Trinidad and Tobago

Hazard Occurrences

A natural hazard is essentially any potentially harmful phenomenon that originates from a natural process or processes. Anthropogenic hazards on the other hand, originate from a man-made source, but possess the same potential for creating negative impacts. One significant point to note when considering the hazard profile of Trinidad and Tobago is the numerous interactions between hazards as such incidents rarely occur alone. In fact the generation of

secondary hazards arising from moderate to severe impact events, is quite common in Trinidad and Tobago. For example, landslide and flood events are often triggered by periods of intense rainfall, in the same way that fires can lead to health concerns arising from smoke inhalation.

There are a variety of natural and anthropogenic hazards which regularly affect Trinidad and Tobago, which are classified under six categories, namely Environmental, Social/Organizational, Industrial/Technological, Biological, Hydro-Meteorological and Seismic.

Figure 13: Listing of potential hazards affecting Trinidad and Tobago (MNS/ODPM Archives, 2014)

This list of potential hazards is displayed in Figure 13. However it is important to note that the hazard listing displayed represents a summary of hazards that have a potential for occurrence in Trinidad and Tobago. Figure 14, on the other hand, represents actual hazard occurrences

over the period 2011-2014 reported to the Office of Disaster Preparedness and Management (ODPM).

While the number of hazards per year has fluctuated within the past four years, as shown in Figure 15, it is the same four hazards: flooding, landslides, fires and high wind events that have continued to dominate with regard to frequency of occurrence. These figures very clearly indicate a higher amount of natural hazard occurrences, over anthropogenic.

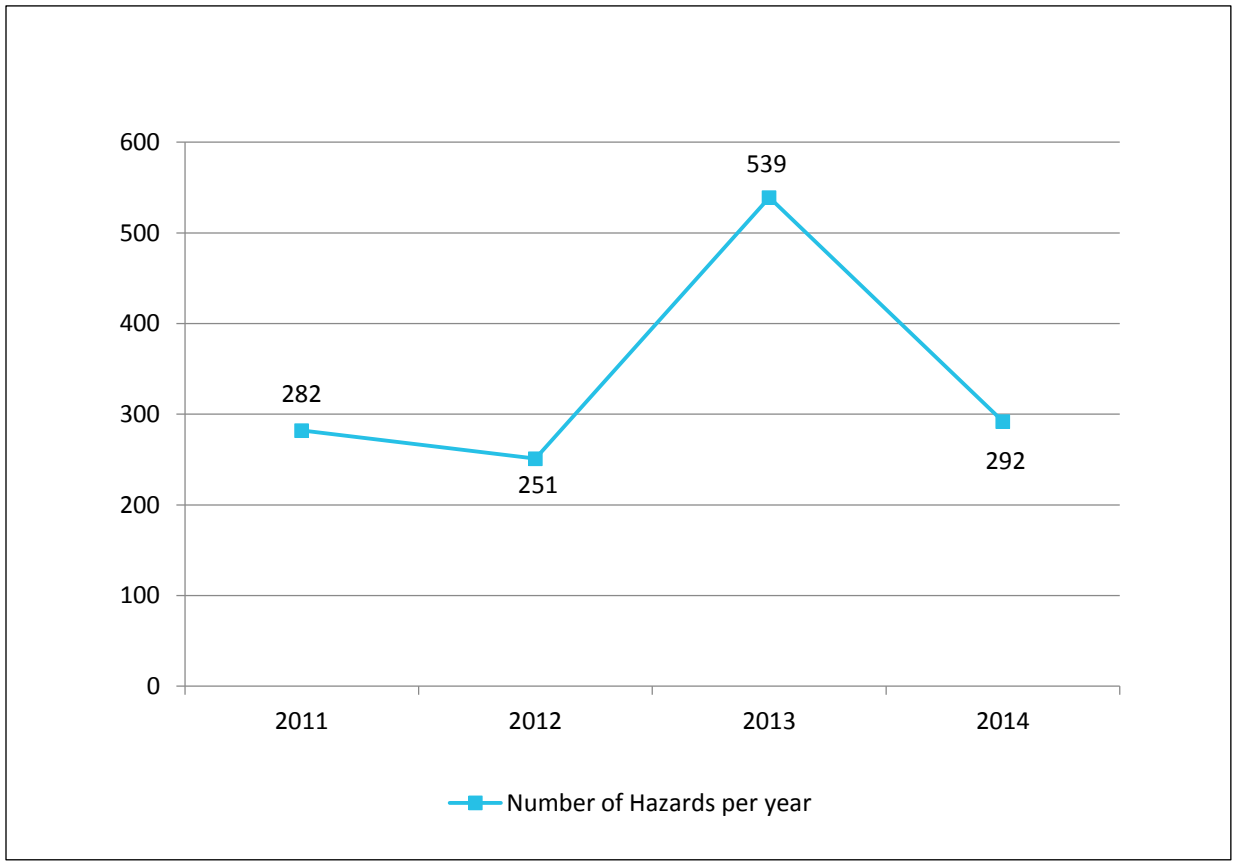

Figure 14: Hazard Occurrences 2011-2014 (MNS/ODPM Archives, 2014)

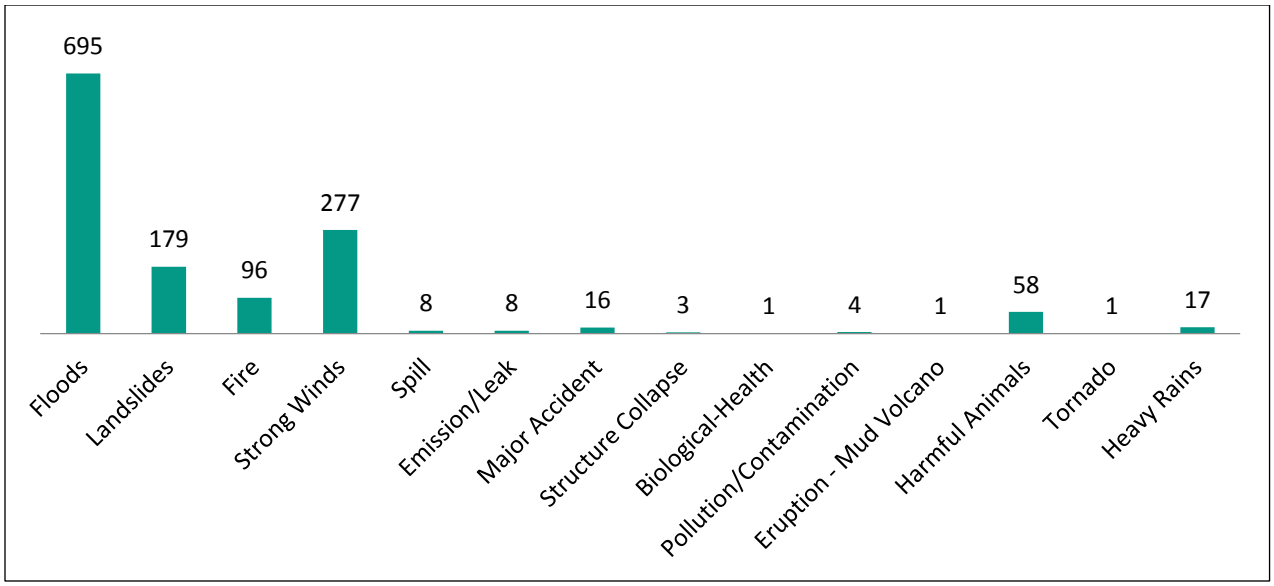

Figure 15: Number of Occurrences by Hazard type over the period 2011-2014 (MNS/ODPM Archives, 2014)

One possible explanation, as to why certain hazards are more prevalent than others is linked to the vulnerabilities of the country. Vulnerability remains the tipping point, which determines whether an event becomes a hazard. This means that hazard severity does not necessarily need to be high, in order to trigger damage, as is the case with high wind events. In fact, the analysis shows that the majority of communities in which these hazards occur are highly vulnerable displaying limited mitigation, and structurally poor buildings.

It is in the same way that Hydro-Meteorological events such as flooding and landslides have been exacerbated by developmental change. For example, urban areas are rapidly expanding; however the drainage infrastructure is not being updated to keep pace with development. Additionally, with an increase in impermeable (concrete) land surfaces, water is less able to infiltrate the soil, resulting in displaced overland flow. These issues coupled with unauthorized and in some cases authorized hillside development has contributed to decreasing slope stability, leaving hillsides weakened, and therefore more likely to fail.

While hazards occur throughout the entire country, some areas are impacted more than others; In the case of Trinidad, illustrated in Figure 16, the map shows areas to the north of Trinidad being most frequently impacted, and of those areas, the Diego Martin Regional

Corporation receiving the highest number of events. These areas are noticeably more developed, and also display moderate to high population densities.

With respect to Tobago, a study of the TEMA Hazard Report of 2010 revealed that out of the six major categories of hazards that impacted Tobago during the period, residential and road landslides are the leading hazards and most costly. Refer to Impact Hazard Map in Figure 17.

It must be pointed out, that over 50% of the population in Tobago resides within 1.5 kilometres of the sea coast. This includes the capital of Scarborough, both air and sea port, hotels, power stations, industrial estates and the list goes on. Of the population which is inland, a huge percentage is located on slopes that are subjected to failure.

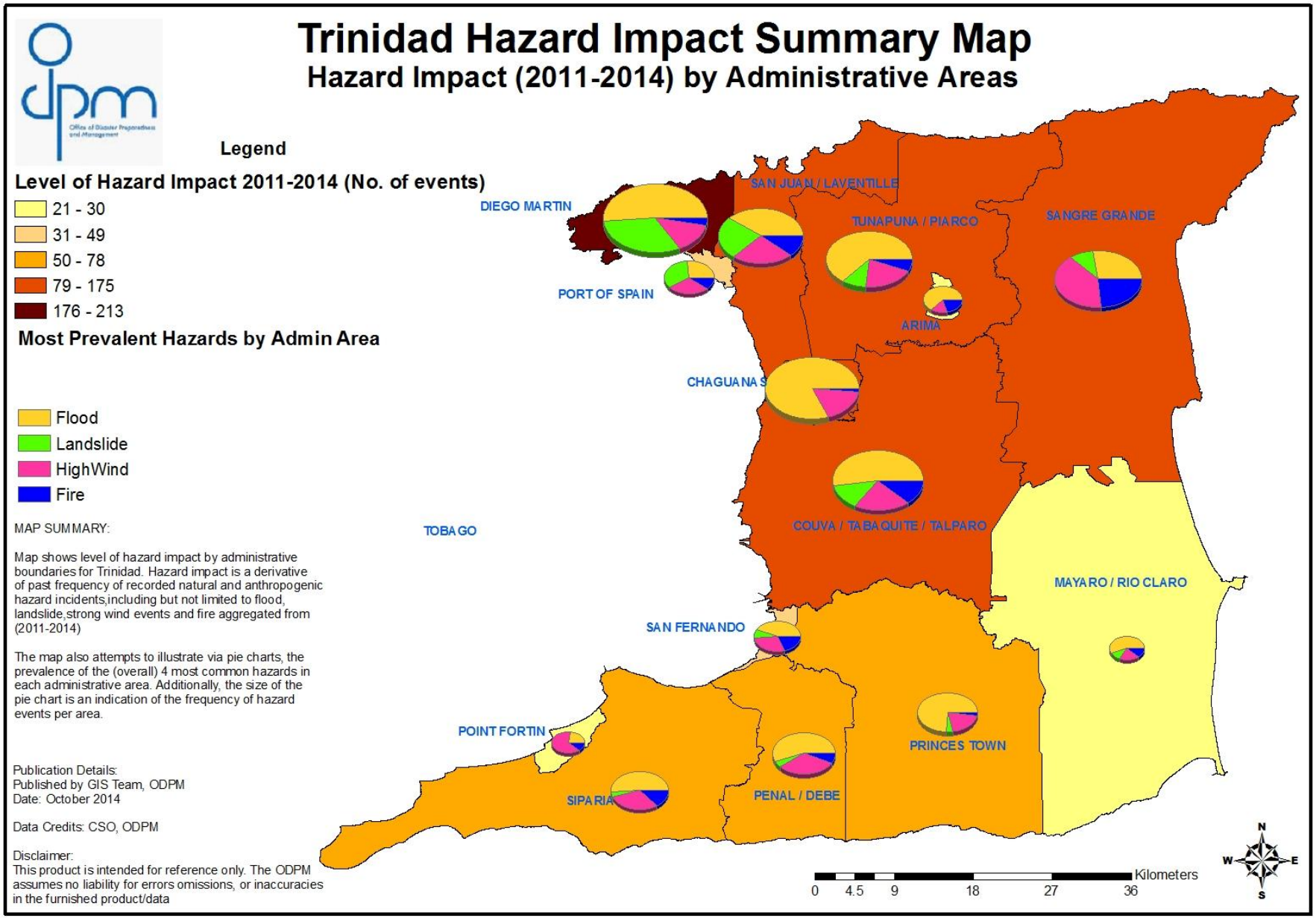

Figure 16: Trinidad Hazard Impact Map 2011-2014(MNS/ODPM Archives, 2014)

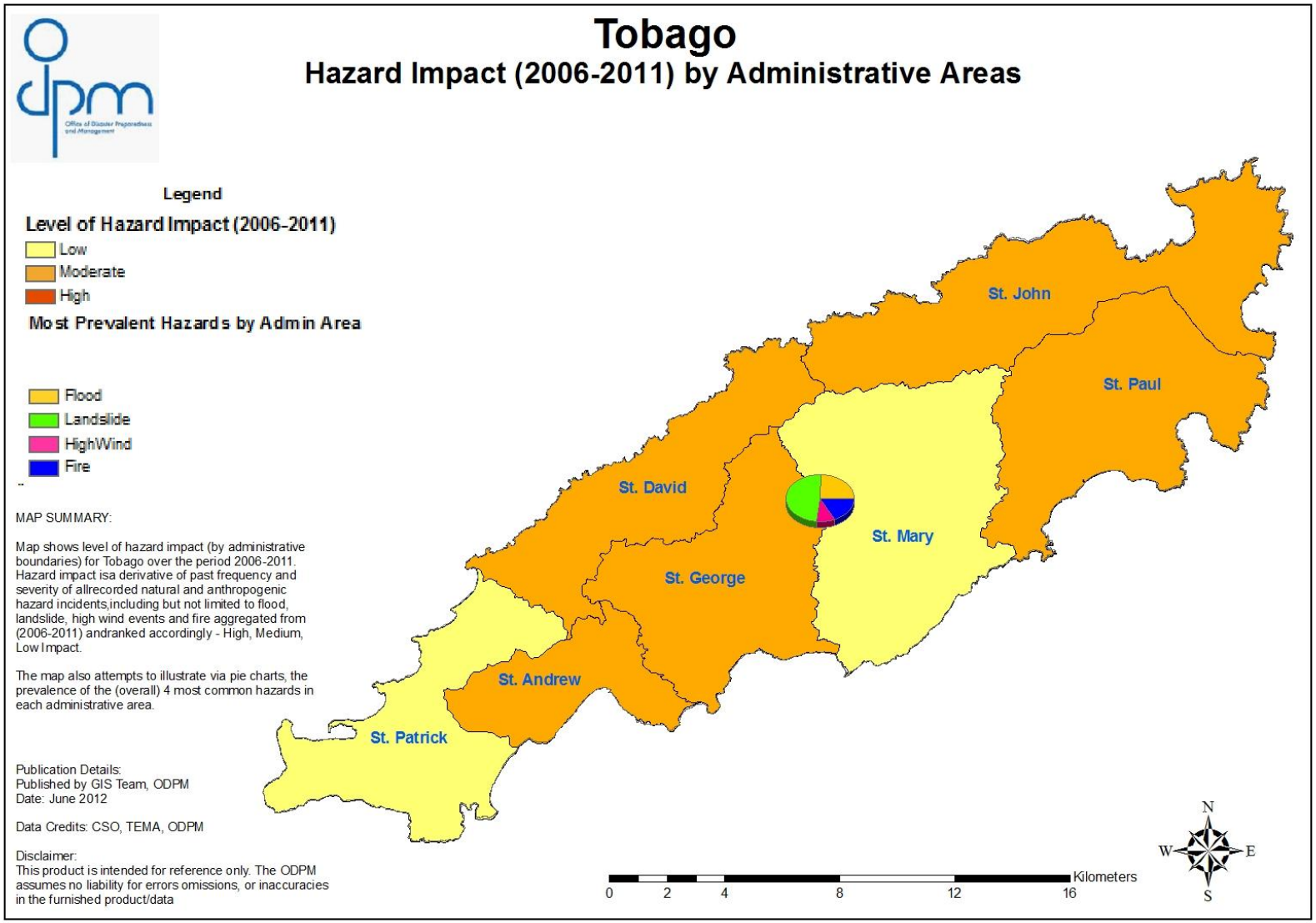

Figure 17: Hazard Impact Map of Tobago 2006-2011 (MNS/ODPM Archives, 2011)

5.2.2 Emergencies affecting Public Health and Safety

Periodically the islands of Trinidad and Tobago are threatened by risks which have the potential to significantly affect citizens of Trinidad and Tobago on a large scale. Aside from major large scale hazards, like high magnitude earthquakes, biological threats such as infectious and non-infectious disease are also a cause for concern. Thus far, Trinidad and Tobago, has been able to manage these threats, and prevent the escalation of risks. The following is a brief description of some of the major threats to public health and safety within the past decade.

Dengue

According to the Pan American Health Organization (PAHO), dengue fever was first reported in Trinidad in the early 1980's, and since then, outbreaks have become a yearly event, varying in severity. In 1996, dengue haemorrhagic fever first appeared creating critical health problem overtime. In 2010, there were 1200 reported cases resulting in a total of four deaths. Trinidad is currently considered to be hyper-endemic for Dengue Fever, this means that there is sustained circulation of the virus within the population at relatively high incidence levels. There is also evidence of more than one subtype in circulation. As a result, many of the nation's citizens would have been exposed to one or more strains of the Dengue virus in the past. However, exposure to one strain does not confer immunity to other strains. This epidemiologic situation increases the risk of nationals developing severe Dengue Fever and its complications, with the risk being higher among the paediatric population.

Chikungunya

Chikungunya is a virus that is transmitted to people by mosquitoes. The most common symptoms of Chikungunya virus infection are fever and joint pain. Other symptoms may include headache, muscle pain, joint swelling, or rash. Outbreaks have occurred in countries in Africa, Asia, Europe, and the Indian and Pacific Oceans. In late 2013, Chikungunya virus was found for the first time in the Americas on islands in the Caribbean. There is a risk that the virus will be imported to new areas by infected travellers. As of September 24th, 2014, there were 42

confirmed cases in Trinidad and one in Tobago. There is currently no vaccine to prevent or medicine to treat Chikungunya virus infection.

H1N1 Influenza A Virus

H1N1 Influenza A Virus is a highly contagious respiratory disease, to which most nationals do not have a resistance/immunity to. In 2009, the World Health Organization (WHO) declared the new strain of swine-origin H1N1 as a pandemic. This strain is often called swine flu by the public media. This novel virus spread worldwide and had caused about 17,000 deaths by the start of 2010. On August 10, 2010, the World Health Organization declared the H1N1 influenza pandemic over, saying worldwide flu activity had returned to typical seasonal patterns.

In 2013, there were six confirmed cases, in both north and south Trinidad. In response to this the country took steps to strengthen its resilience in several ways, including the acquisition of 60,000 H1N1 virus vaccines mainly for front line workers in the health sector and other high risk persons.

Ebola Virus Disease (EVD)

Ebola virus disease (EVD), formerly known as Ebola haemorrhagic fever, is a severe, often fatal illness in humans. The virus is transmitted to people from wild animals and spreads in the human population through human-to-human transmission. The average EVD case fatality rate is around 50%. Case fatality rates have varied from 25% to 90% in past outbreaks (WHO, 2014). As at the date of publication, the country has had no confirmed cases. One major cause for concern is the strong potential for the disease to be brought into the country by infected travellers, particularly during national events such as the Carnival celebrations which attract thousands of tourists from all over the world.

For all of the threats listed above, Trinidad and Tobago has adopted measures to prevent, control and reduce the risk. These measures include the enhancement of training, public education and awareness campaigns and the integration of multiple sectors (including both public and private entities) in the management process.

5.3 VULNERABILITY

The approach to assessing the vulnerability was derived from the IDB system of indicators (IDB, 2013). The Prevalent Vulnerability Index (PVI) is made up from a series of indicators that characterize prevailing vulnerability conditions reflected in exposure in prone areas, socioeconomic fragility and lack of resilience to cope with and absorb the impact of disasters.

The PVI gauges the fragility and exposure of human and economic activity in disaster-prone areas and the social and human capacity to absorb the impacts of disasters.

Figure 18 below depicts the range of levels of vulnerability. An index of 20 or less indicates low vulnerability levels while an index between 20 and 40 indicates a medium level. An indicator between 40 and 80 shows high vulnerability.

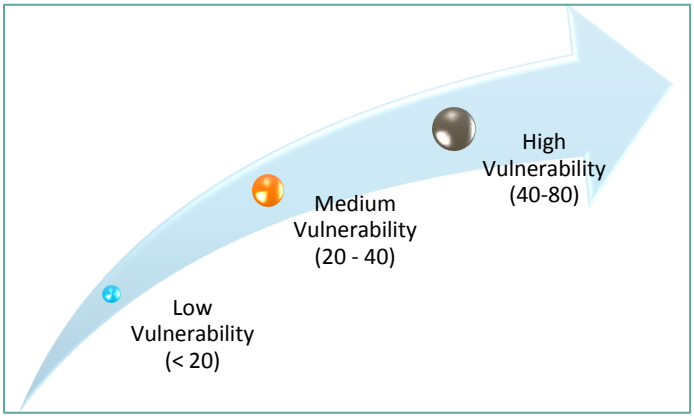

Figure 18: Vulnerability Index (IDB, 2013)

The best indicators of exposure and/or physical susceptibility (**PVI_{ES}**) are the susceptible population, assets, investment, production, livelihoods, historical monuments, and human activities. Other indicators include population growth and density rates, as well as agricultural and urban growth rates. Socioeconomic fragility (**PVI_{SF}**), may be represented by indicators such as poverty, lack of personal safety, dependency, illiteracy, income inequality, unemployment,

inflation, debt and environmental deterioration. These indicators reflect relative weaknesses that increase the direct effects of dangerous phenomena. Even though these effects are not necessarily cumulative (and in some cases may be superfluous or correlated), their influence is especially important at the social and economic levels. Lack of resilience (**PVI_{LR}**), seen as a vulnerability driver, may be represented by means of the inverse[1] relationship of a number of variables that measure human development, human capital, economic redistribution, governance, financial protection, community awareness, the degree of preparedness to face crisis situations, and environmental protection. These indicators are useful to identify and guide actions to improve personal safety.

The total PVI for Trinidad and Tobago and its components related to exposure and susceptibility, socio-economic fragility and lack of resilience is shown in Figure 19 below.

PVI figures illustrate a general reduction in the PVI, due to decreases in the three components of the index. There was an exception though in 2011 when the PVI increases from 2011 levels due to increases in the lack of resilience component.

The indicators of exposure and/or physical susceptibility (**PVI_{ES}**) reveal a modest decline from 1995-2011. The **PVI_{LR}** indicator, which relates to lack of resilience, is the component with the greatest contribution to the country's prevalent vulnerability. Though there is a reduction from 2000 levels, there is much work that needs to be done in addressing this factor, as the level has actually increased marginally since 2005.

The **PVI_{SF}**, which refers to socio-economic fragility, is the component with the best trend.

[1] The symbol [Inv] is used here to indicate an inverse variable ($\neg R = 1- R$).

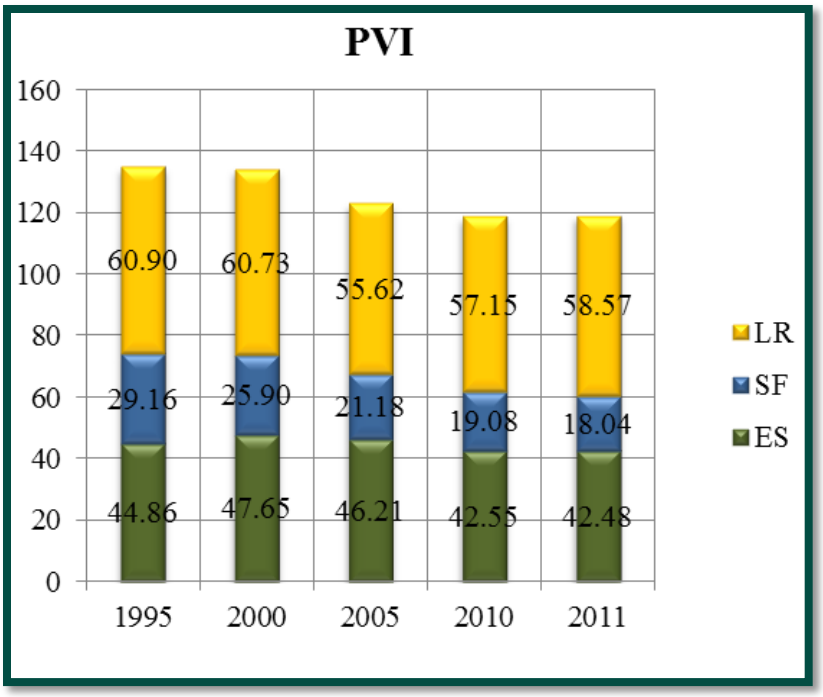

Figure 19: PVI Values for Trinidad and Tobago from 1995-2011

(GORTT/ODPM/IDB- CIMNE, 2013)

5.4 CAPACITIES

In 2011, the Inter-American Development Bank (IDB) entered into a Technical Cooperation Agreement with the GORTT to enhance the delivery of Comprehensive Disaster Management (CDM) in Trinidad and Tobago (T&T) towards improving the delivery of comprehensive disaster management (GORTT/NICA: ATN-OC-12349-TT, 2013). The assistance was provided in recognition of the country's increasing prevalent vulnerability due to exposure to natural and technological hazards and weak capacity to handle the risks. The agreement sought to conduct a country risk evaluation and assess the country's institutional capacity to manage risks associated with natural hazards.

5.4.1 Analytical criteria and methodology

The methodology applied to the assessment utilized UNDP's Capacity Assessment Framework , and the McKinsey Capacity assessment Grid, and selected Issue Tree analysis and benchmarking against the regional framework as the main approach.

The steps taken to discern capacity and to guide capacity building included:

- Review of global regional and national documents
- Stakeholder engagement
- Review of Legal, Policy and Regulatory Framework
- Issue Tree Analysis
- Benchmarking
- Assessment of Gender Mainstreaming
- Gap Analysis
- Summary Recommendations and Prioritisation

The entire process was highly participative involving a wide sample of DRM stakeholders from public, private sector and civil society. Over 30 entities with 60 representatives were interviewed and/or participated in focus group sessions.

The overall finding of the capacity assessment (GORTT/NICA: ATN-OC-12349-TT, 2013) indicates that the system for delivering CDM/DRM ranks 2.3 out of a possible score of 5 points. This ranking, based on benchmarking against the Caribbean CDM results framework, indicates that the DRM system in Trinidad and Tobago, which includes all levels of government, private sector and civil society, may be characterized as follows:

- Achievements have been made but are incomplete, and while improvements are planned, the commitment and capacities are limited.
- The ODPM has made significant strides in its efforts to build awareness of DRM, and have submitted proposals to the Cabinet for institutional changes toward strengthening their ability to deliver on the mandate of the organization.

5.4.2 Institutional and Coordination Mapping

Below, in Table 7, is a list of the Agencies involved in Disaster Risk Reduction in Trinidad and Tobago, and their respective roles.

Table 7:

List of agencies involved in Disaster Risk Reduction in Trinidad and Tobago

Agency	Roles
Ministry of National Security	• To coordinate all agencies, including intelligence and public safety. • To advise the Minister on disaster emergency details. • To provide finance to support ODPM from yearly subsidies.
ODPM	• To build national Disaster Risk Management and Climate Change Adaptation capabilities.
NOC	• To serve as the strategic command centre and control systems in the event of all emergencies.
TTDF	• To defend Trinidad and Tobago against internal and external threats, to secure our national interests and to provide support to state and non-state agencies pursuant to national development. • Cooperate with and assist the civil power in maintaining law and order. • Assist the civil authorities in times of crisis or disaster. • Perform ceremonial functions on behalf of the State. • Provide Search and Rescue services in keeping with national requirements and other international agreements. • Assist in the prevention of trafficking in narcotics and illegal goods. • Monitor the safety of shipping in national waters.

Agency	Roles
	• Assist in the development of the national community.
TTFS	• To provide efficient and effective public fire protection and emergency services to the Republic of Trinidad and Tobago.
TTPS	• The Trinidad and Tobago Police Service is both a civil and quasi-military body which functions in accordance with the Police Service Act Chapter 15:01. Their role is to make every place in Trinidad and Tobago safe.
Customs and Immigration	• To support economic growth and development by facilitating legitimate trade and travel, revenue generation and collection. • To protect our borders and provide increased security to the global trade supply chain by enforcing compliance with all the laws and regulations under which we are empowered to act.
Ministry of Transport	• The Ministry of Transport has under its umbrella responsibility for all aspects of public transportation by land, sea or air.
Port Authority	• The Ports Authority of Trinidad and Tobago - Governing Unit's Mission is to ensure that its internal stakeholders achieve their respective mandates, and become leaders in their respective core areas of competence.
Regional Corporations	• Municipal Corporations assist communities by pooling resources in targeted areas, which include among others Infrastructure Development, Disaster management, Health and Sanitation.

Agency	Roles
	• Note: There are no Municipal Corporations or Regional Corporations in Tobago. However TEMA is the agency with responsibility for DRM within Tobago. Administrative control is exercised by the House of Assembly, which enjoys a measure of autonomy over its affairs under the Tobago House of Assembly Act.
Ministry of Local Government	• To formulate policy, act as a facilitator; coordinate and monitor the timely and efficient delivery of services to our stakeholders in an equitable and transparent manner.
Ministry of Works and Infrastructure	• The Ministry of Works and Infrastructure provides high quality infrastructure development services that enable the growth of safe, healthy communities and globally competitive businesses within a vibrant natural environment. • Essential ministry for government infrastructure.
WASA	• To deliver and sustain water security for every sector.
Meteorological Office	• To improve the quality and expand the variety of services provided: advance the science of meteorology, by acquiring the best of technology and training: and by having a happy and contented staff to meet tomorrow‘s challenges adequately. • To provide meteorological information and advice consistent with international standards towards the pursuit of national, scientific, social, economic and cultural goals and sustainable development.
Ministry of Health	• The Ministry of Health is the national authority charged with oversight of the entire health system in Trinidad

Agency	Roles
	and Tobago. The Ministry plays a central role in the protection of the population's health and in ensuring that all organisations and institutions that produce health goods and services conform to standards of safety.
Ministry of Energy and Energy Affairs	• The Ministry is responsible for the overall management of the oil, gas and minerals sectors in Trinidad and Tobago. These sectors are the largest single contributors to the GDP of the country and the revenues generated provide the resources for the future development objectives of the Government of the Republic of Trinidad and Tobago. • The Ministry of Energy is responsible for monitoring, controlling and regulating the energy and mineral sectors of Trinidad and Tobago. Its early years began in 1904 when the Mines Department was established to manage Manjak production. In 1948 the Mines Department was re-designated the Petroleum Department.
Ministry of Public Utilities	• To facilitate the effective delivery of efficient, affordable and quality public utilities services through a committed, resourceful team of professionals in close collaboration with all stakeholders.
Ministry of People and Social Development	• Ministry of the People and Social Development (MPSD) is described as the core social sector Ministry with responsibility for coordinating the implementation of Government's social and human development objectives. The Ministry is mandated to address the challenges of poverty and particular emphasis is placed on

Agency	Roles
	developing and executing programmes and services that protect and assist vulnerable and marginalized groups in society.
Ministry of Community Development	• To lead in the development of resilient communities by stimulating human and social capital, through collaboration and provision of innovative programmes, projects and services.
Ministry of Foreign Affairs	• The Ministry of Foreign Affairs provides a myriad of services, which include protocol and consular activities, to its diverse clientele.
Ministry of Finance and the Economy	• To efficiently and effectively manage the economy of Trinidad and Tobago through the development and implementation of innovative policies to the benefit of all citizens.
Tobago House of Assembly	• To act as the local government body for the island of Tobago.
Tobago Emergency Management Agency	• To act as the Disaster Management authority for the island of Tobago.
Private Sector	• To support the public sector and civil society by ensuring the delivery of goods and services to the vulnerable and affected sector. • To aid in rapid economic recovery by ensuring the continuity of business activity after a disaster.
Civil Society (NGOs, FBOs, CBOs)	• To support the risk mitigation function through adherence to civil and societal codes, building practices and other legislation.

5.4.3 Mapping of Disaster Risk Reduction Programmes, Initiatives and Plans

ODPM and TEMA have undertaken major Disaster Risk Reduction initiatives in Trinidad and Tobago.

ODPM Key Initiatives

Some key ODPM initiatives are listed below:

1. Disaster Resiliency Centre

   This is to aid in the provision of readiness and response services to Trinidad and Tobago and the Caribbean. The Concept Note and Project Schedule has been developed, and is awaiting Cabinet Approval to proceed.
2. Mausica Project: Construction of NEOC Building (US SouthCOM Funded)

   The National Emergency Operation Center will strengthen the country's coordination capacity in a level 2-3 Emergency. Site construction approvals have been obtained and preparation works completed.
3. Development of Comprehensive Disaster Management Legislation

   A Disaster Management Bill was drafted and a CDM policy document submitted to Cabinet. The goal of this initiative is to give the ODPM legislative authority.
4. Telecommunication Project

   The current communication system infrastructure needs to be upgraded and as such a project charter has been developed with the project plan underway.
5. Integrated Early Warning System Program comprises of:
   - Caroni River Basin Delft-FEWS (Flood Early Warning System

An operational data management system was developed to synchronize data from the Water Resources Agency, Trinidad and Tobago Meteorological Service and ODPM, in order to produce an early flood warning.

- Customer Care Centre (511) Social media monitoring
- EWP system developed in Mayaro for replication in all other municipalities
- Launch of two Apps (adult and juvenile) on IOS and Android to serve as platforms for communication
- An ODPM liaison has been appointed to the NOC to provide 24 hour situational analysis of public safety, civil defence and intelligence issues and/or threats.
- CORE programs within the communities and institutions to develop capacity in CERT teams, schools, differently-abled persons, the elderly and young people.

6. Preliminary Vulnerability Assessment

   Preliminary Vulnerability Assessments were completed in the fourteen (14) municipalities in Trinidad, as well as Tobago, along with Internal Stakeholder Reviews.

7. Safer Schools Program

   This involved the training of school officials and the delivery of Disaster Preparedness presentations. In addition, students were introduced to several interactive DRR tools.

8. Capacity Development for Disaster Risk Management (GORTT/UNDP)

   This initiative has brought about an enhanced level of human security complemented by effective public participation of governance structures at all levels. DRM framework has been improved for at least two (2) sectors of ministries.

9. Mainstreaming DRR into Sectors

   An implementation strategy was developed for proposals made under the National Institutional Capacity Assessment (NICA) and an Implementation Review Report drafted.

10. Risk Information Management System

    The goal of this system is to support effective and efficient hazard/disaster information management throughout the CDM cycle.

11. CORE program:

    Phase 1 – Flood First

Phase 2 – Building Better Program

12. NDRRC Platform

13. Annual National Exercise Day

    This commenced in 2013: Exercise Omega (2013), Dark Wave (2014), Dark Storm (upcoming 2015)

14. Continuously provides coordination and participatory support to other drills.

15. Provides technical support towards plans and testing for other agencies.

16. Training provided: Ebola training, Life-Guard training, capacity building.

TEMA DRR Initiatives

Some key DRR initiatives being undertaken by TEMA are as follows:

1. Special Needs

   Information on all individuals with special needs was collected to ensure safe and tailored evacuation procedures for those individuals. An update to its Special Needs Registry has begun.

2. Community Vulnerability and Engagement Campaign

   This is a Disaster Readiness community education program. Twenty (20) high risk communities were identified with ten (10) being completely geo-mapped.

3. Early Warning System

   A study on the southwestern coast of Tobago led to the acquisition of two (2) sirens, two (2) early warning systems were also upgraded.

4. Rebranding of CERT

   This encompassed the increase of staff with certified professionals in the amount of forty (40) technicians.

5. Mission mode

   Emergency notification software enables rapid alert deployment to emergency responders.

6. Crowd sourcing technology

   Emergency notification software enables rapid alert deployment to public users.

For a detailed and complete listing of the major initiatives in place in Trinidad and in Tobago contributing to Disaster Risk Reduction, please refer to Key DRR Initiatives in Appendix 3.

5.4.1 Tool Inventory

In the recent years, the ODPM has used various tools to assess the readiness of Trinidad and Tobago for disasters. Table 8 below shows a brief representation of these tools.

Table 8:

Tool Listing to Assess the Readiness of Trinidad and Tobago (MNS/ODPM Archives, 2014)

Name	Institution
Disaster Risk Management Benchmarking Tool	ODPM
Health Sector Self-Assessment Tool for Disaster Risk Reduction	MOH
Red Cross Vulnerability and Capacity Assessment	Red Cross
Catastrophic Risk Modelling	IDB
GIS Based Hazard Maps	ODPM
Local Government Assessment Tool	Local Government
National HFA Monitor	ODPM
Booklets	ODPM
Brochures	ODPM
Guides	ODPM
Risk and Vulnerability Assessment Tool (RVAT)	ODPM
School Safety Program	MOE, ODPM

5.5 REDUCTION OF UNDERLYING RISK FACTORS

Disaster risk reduction is an integral objective of environment-related policies and plans, including for land use, natural resource management and adaptation to climate change. Several mechanisms have been put in place to protect and restore regulatory ecosystem services associated with wetlands, mangroves and forests. Protected areas legislation has been signed into law, and four (4) National Polices have been developed including a National Protected Areas Policy (2011), the National Environmental Policy (2010), Draft National Forestry Policy (2012), and the Northern Range Hillside Policy (2007). Environmental Impact Assessments are a requirement for capital and infrastructure projects, as established by the Environmental Management Act Chapter 30:05. Climate Change Adaptation Programmes and Projects are underway; e.g. UWI Geomatics, through several projects in collaboration with the Life Sciences Department to measure climate change.

Despite the fact that Disaster Risk Reduction being an integral objective, the ODPM faces several constraints in the execution of DRR projects, which are summarised in Table 9 below:

Table 9:

Constraints faced by the ODPM in executing DRR projects (GORTT/NICA: ATN-OC-12349-TT, 2013)

CONSTRAINT	RECOMMENDATIONS
Institutional commitment is inconsistent, and varies by geographic area.	• Mainstream disaster risk reduction and sustainable development practices across national development plans and policies. • Work with relevant stakeholders to improve awareness of the linkages between disaster risk reduction and sustainable development practices. • Continue to engage National Disaster Risk Reduction

CONSTRAINT	RECOMMENDATIONS
	Committee (NDRRC) and other national committees which incorporate key stakeholders in the review of key disaster-related plans and policies. • Improve enforcement of existing environmental legislation and regulations to promote disaster risk reduction across Trinidad and Tobago. *Social development policies and plans are being implemented to reduce the vulnerability of populations most at risk.*
Low availability and utilization of micro-finance and micro-insurance facilities. Overdependence on social assistance schemes may reduce preparedness and increase vulnerability when beneficiaries believe that the responsibility	• Social assistance schemes should be supported more closely by community outreach initiatives such as Communities Organized and Ready for Emergencies (CORE) to equip and empower citizens to understand their role in disaster preparedness and promote resilience. • Work with stakeholders to reduce / subsidize the cost of crop and property insurance to increase the resilience of risk prone households and communities. • Collaborate with relevant government agencies to ensure review and currency of existing social development plans and policies; monitor grant programmes to verify improvements in structural mitigation practices at the community level. *Economic and productive sectoral policies and plans have been implemented to reduce the vulnerability of economic activities*
Limited success has been	The National Disaster Office and its stakeholders must work to

CONSTRAINT	RECOMMENDATIONS
achieved in engaging planning and energy sectors in DRR mainstreaming activities. Linkages between disciplines must be understood by all stakeholders in economic and productive sectors to close these gaps and ensure the systematic inclusion of DRR practices in national public sector investment programmes.	further highlight the impact CDM can have on preserving and improving the resilience of national assets to encourage greater consideration of public investment in DRR. e.g. Protection of energy sector critical infrastructure to reduce the likelihood of an earthquake destroying oil refineries or gas pipelines. *Planning and management of human settlements incorporate disaster risk reduction elements, including enforcement of building codes.*
Current legal and regulatory frameworks for land use and planning lack comprehensive disaster risk sensitivity. Notably, a revised Planning and Facilitation of Development Bill, 2013 is currently being debated in Parliament to be made into law.	• Continued engagement with Ministry of Planning and Sustainable Development to support impending revised legislative and regulatory framework for land use planning and development. • Expedite the development and implementation of the National Building Code. • Hazard mitigation should be conducted based on established hazard priorities, and not restricted to structural changes. • Expand non-structural mitigation activities, such as public awareness and education sensitization, and training to improve risk reduction competencies across Trinidad and Tobago.

CONSTRAINT	RECOMMENDATIONS
	Disaster risk reduction measures are integrated into post disaster recovery and rehabilitation processes
Significant limitations in capacities and resources exist. The National Disaster Office and Ministry of Local Government through the Disaster Management Units (DMUs) at the Regional Corporation level are currently understaffed, and require additional funding for the development of Disaster Resource Centres, including response and recovery equipment and supplies.	• Work with GORTT and NGOs to requisition further funds for additional assets and resources. • Improve human resource capacity at the ODPM and DMU levels. • Partner with sectoral agencies to share responsibilities for National Stakeholder Training. *Procedures are in place to assess the disaster risk impacts of major development projects, especially infrastructure.*
Methodologies for the development of these DRR projects differ across the public sector. Projects often occur in silos and remain unshared amongst stakeholder agencies	• Standards for risk assessments need to be aligned to international best practices. • Improve capacities for review of EIAs by DRR experts. • Procedures for ex-ante risk assessments of development projects should include disaster risk assessments through engagement of the National Disaster Office. • Work with stakeholders to develop required MOUs to improve information sharing. • Zoning and building regulations require enforcement.

6 DISASTER RISK ANALYSIS OF TRINIDAD AND TOBAGO

6.1 DEFINITION OF ANALYTICAL CRITERIA AND METHODOLOGY

In 2011, the Government of the Republic of Trinidad and Tobago received grant funding from the Inter-American Development Bank to undertake a project towards improving the delivery of comprehensive disaster management in Trinidad and Tobago to the general public in an effort to reduce vulnerability and increase resilience to natural hazards and disasters. The project included the preparation of (a) country risk profile for Trinidad and Tobago and (b) strengthening institutional risk capacity for disaster risk management, with emphasis on ex ante risk reduction and incorporating climate change adaptation.

The country risk evaluation was conducted using the Inter-American Development Bank's (IDB) four (4) indicators of Disaster Risk and Risk Management to Trinidad and Tobago using data up to the year 2011. These indicators included the Disaster Deficit Index (DDI), Local Disaster Index (LDI), Prevalent Vulnerability Index (PVI) and Risk Management Index (RMI). (IDB, 2013). The indicators also incorporated climate variability and change using the National Center for Atmospheric Research (NCAR) model. The evaluation also identified the geographical areas and economic sectors at risk; and probable maximum losses to public and private assets including economic impacts. The following are the results of the risk evaluation study based on the most prevalent natural hazards affecting Trinidad and Tobago; earthquakes, tropical storms, hurricanes, floods and landslides. It is instructive to note that this is first time a risk assessment study of this nature was ever done for Trinidad and Tobago.

Disaster Deficit Index for Trinidad and Tobago

The Disaster Deficit Index (DDI) measures country risk from a macro-economic and financial perspective when faced with possible catastrophic events. This requires an estimation of critical impacts during a given exposure time and of the capacity of the country to face up to this situation financially. The results provided (Figure 20) were extracted from the final report *Indicators of Disaster Risk and Risk Management* (GORTT/ODPM/IDB- CIMNE, 2013).

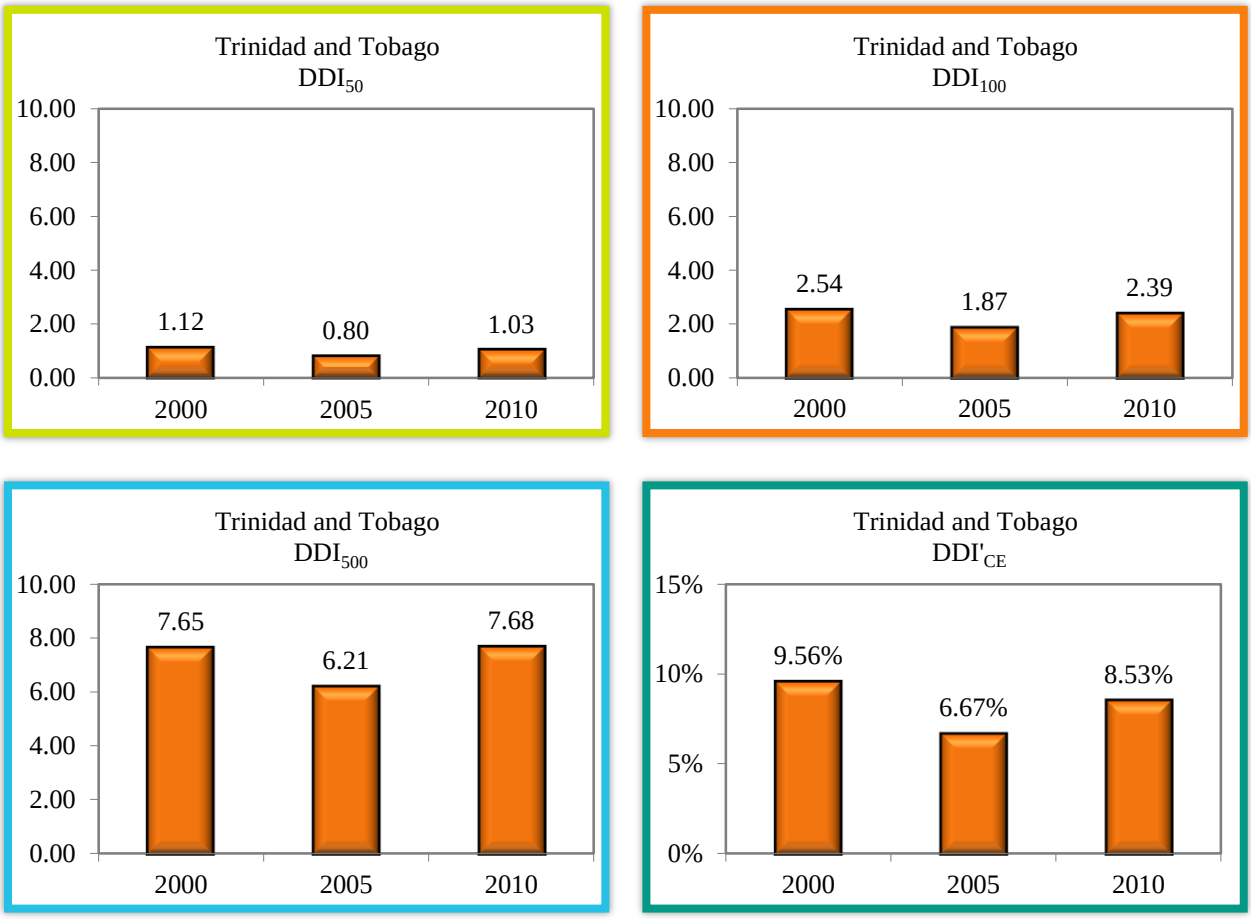

Figure 20: DDI for every 5 years in Trinidad and Tobago (GORTT/ODPM/IDB- CIMNE, 2013)

From these results it is possible to conclude, that in Trinidad and Tobago, for extreme events with return periods of 500, 100 and 50 years, with the exception of the 50-year return period in 2005, the country would not have had enough resources to cover losses and/or feasible financial capacity to face losses and replace the capital stock affected. Regarding the annual expected loss related to capital expenditure (annual investment budget), and related to possible savings due to cash surplus/deficit, the country would have to invest annually 8.53% (2010) to cover the contingent liabilities. Furthermore, in 2010, according to the values, there was a cash deficit, which means that covering the average annual losses in Trinidad and Tobago would increase that deficit. When a better macroeconomic stability exists, it is possible to have access to greater resources when a high impact event takes place. It is also possible, given a surplus there would be more opportunity to invest in disaster risk reduction and protection which will contribute to improved values of the DDI .

The increase of the values of the economic resilience demonstrate that the country improved its economic resilience. The Trinidad and Tobago government still retains the majority of the losses and its financing represents high opportunity-costs. Given other needs of investment and the existence of other budget restrictions in the country, disasters would imply an obligation or non-explicit contingent liability that could have an impact on fiscal sustainability.

Local Disaster Index (LDI) for Trinidad and Tobago

The Local Disaster Index (LDI) identifies the social and environmental risk that derives from more recurrent lower level events which are often chronic at the local and sub national levels. These particularly affect the more socially and economically fragile population and generate a highly damaging impact on the country's development.

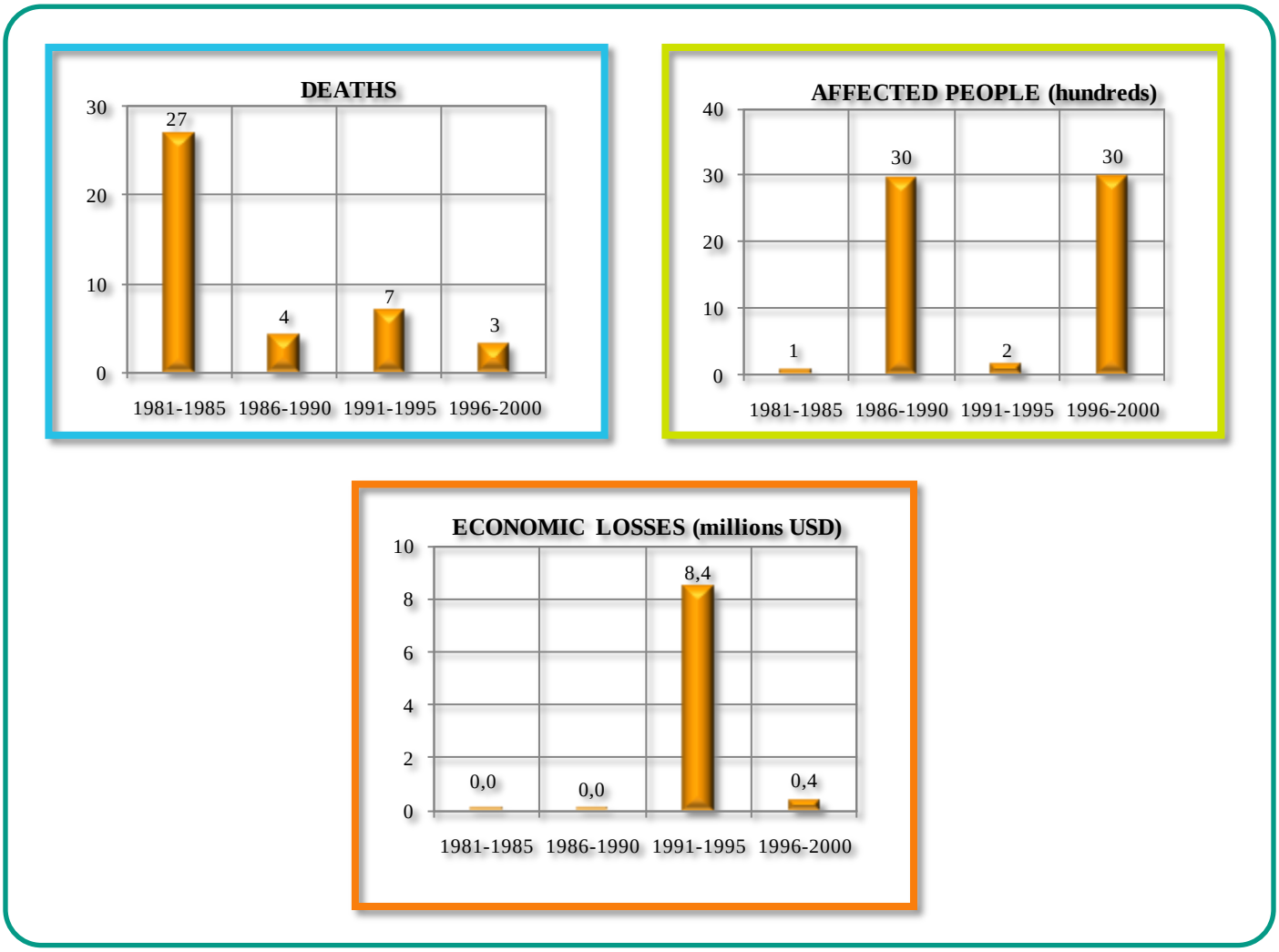

Figure 21: LDI in Trinidad and Tobago from 1981 – 2000 (GORTT/ODPM/IDB- CIMNE, 2013)

The Local Disaster Index (LDI) in Trinidad and Tobago, evaluated until 2000 (Figures 20 and 21), illustrates that the incidence and uniformity of local effects is variable. The index clearly illustrates that the number of deaths has decreased and the values are concentrated in certain areas. This is not the case with affected people and the economic losses that varied significantly in the different period, and though the values were great, they were not uniformly distributed in the country. Although this index is evaluated at the national level, relating those results with the number of effects, can shed light on the concentration or disperse distribution of those effects in the country, while also trying to highlight the municipalities that are more susceptible within the country. It is significant to collect updated data of events that occurred in the

country, so as to have more reliable information that facilitates a better analysis of the country situation.

Prevalent Vulnerability Index (PVI) for Trinidad and Tobago

The Prevalent Vulnerability Index, PVI, is made up of a series of indicators that characterize prevailing vulnerability conditions reflected in exposure in prone areas, socioeconomic fragility and lack of resilience in general. Please refer to **Section 5.3 Vulnerability** where the results of these indicators are revealed in detail.

As indicated in Section 6.3, the prevalent vulnerability had decreased slightly since 1995, as such can be deemed a positive issue for the country. Nevertheless, it is important to point out that the values are still great and these factors of vulnerability, although they are independent of the hazard, contribute significantly in the negative impacts when a natural phenomenon occurs. The PVI illustrates the relationship between risk and development, either because the development model adopted reduces it or increases it. This aspect makes evident the necessity of explicit risk reduction measures, because development actions do not reduce vulnerability automatically.

Risk Management Index (RMI) for Trinidad and Tobago

The Risk Management Index (RMI) measures a country's risk management performance. It combines several measures to evaluate the capacity to identify and reduce risks, respond and recover from catastrophes as well as to provide financial protection and risk transfer. These measures include: $\mathbf{RMI_{RI}}$-risk identification, $\mathbf{RMI_{RR}}$-risk reduction $\mathbf{RMI_{DM}}$-disaster management, $\mathbf{RMI_{FP}}$-governance and financial protection. An index below 50 is considered unsatisfactory; a number between 50 and 75 is considered satisfactory and an index above 75 is considered outstanding.

This index was designed to assess risk management performance. It provides a qualitative measure of management based on predefined targets or benchmarks that risk management

efforts should aim to achieve. Each indicator was estimated based on five performance levels (*low, incipient, significant, outstanding*, and *optimal*) that correspond to a range from 1 (low) to 5 (optimal). Table 10 summarises the RMI values and Figure 22 highlights the RMI in aggregate and by component indicator.

Table 10:

Summary of the RMI values obtained for Trinidad and Tobago(GORTT/ODPM/IDB- CIMNE, 2013)

Year	1995	2000	2005	2010	2013
RMI_{RI}	11.82	11.82	25.11	31.85	39.71
RMI_{RR}	13.53	13.53	13.53	24.37	31.28
RMI_{DM}	8.46	8.46	13.84	26.75	36.35
RMI_{FP}	7.92	7.92	7.92	7.92	7.92
RMI	10.43	10.43	15.10	22.72	28.81

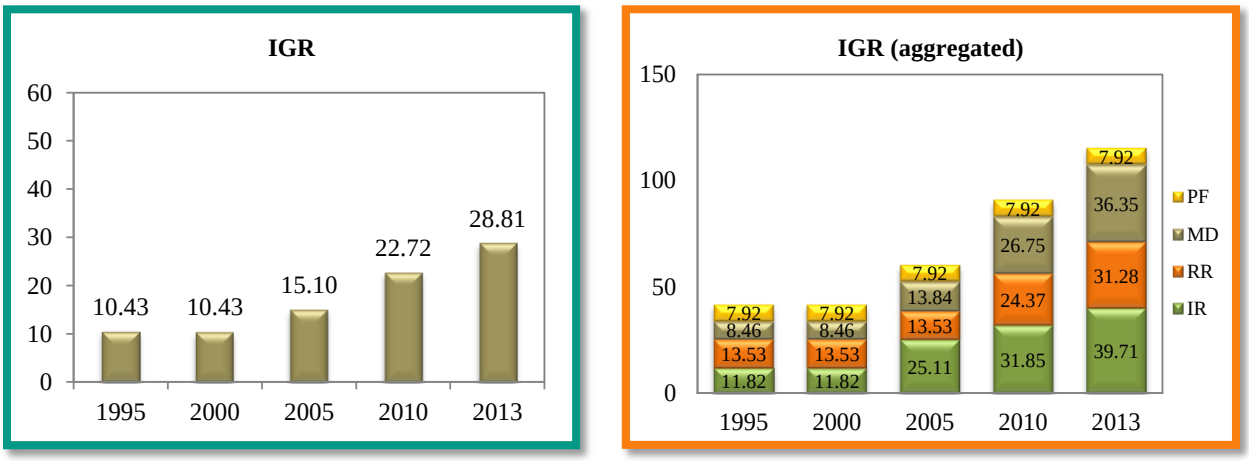

Figure 22: The total RMI value obtained from the average of the component indicators and the aggregated version which illustrates the contribution of each indicator. (GORTT/ODPM/IDB- CIMNE, 2013)

Table 11:

Differences between first and last evaluated period for RMI sub-indicator function performance(GORTT/ODPM/IDB- CIMNE, 2013)

1995	**RI.1**	17	**RR.1**	17	**DM.1**	5	**FP.1**	5
	RI.2	17	**RR.2**	17	**DM.2**	5	**FP.2**	5
	RI.3	5	**RR.3**	5	**DM.3**	17	**FP.3**	5
	RI.4	5	**RR.4**	5	**DM.4**	17	**FP.4**	5
	RI.5	5	**RR.5**	17	**DM.5**	5	**FP.5**	5
	RI.6	5	**RR.6**	5	**DM.6**	5	**FP.6**	17
	RMI_{RI}	11.82	**RMI_{RR}**	13.53	**RMI_{DM}**	8.46	**RMI_{FP}**	7.92
	RMI	10.43						
2013	**RI.1**	17	**RR.1**	17	**DM.1**	17	**FP.1**	5
	RI.2	45	**RR.2**	45	**DM.2**	17	**FP.2**	5
	RI.3	17	**RR.3**	17	**DM.3**	45	**FP.3**	5
	RI.4	17	**RR.4**	17	**DM.4**	45	**FP.4**	5
	RI.5	45	**RR.5**	17	**DM.5**	45	**FP.5**	5
	RI.6	45	**RR.6**	5	**DM.6**	5	**FP.6**	17
	RMI_{RI}	39.71	**RMI_{RR}**	31.28	**RMI_{DM}**	36.35	**RMI_{FP}**	7.92
	RMI	28.81						
Change	**RI.1**	0	**RR.1**	0	**DM.1**	12	**FP.1**	0
	RI.2	28	**RR.2**	28	**DM.2**	12	**FP.2**	0
	RI.3	12	**RR.3**	12	**DM.3**	28	**FP.3**	0
	RI.4	12	**RR.4**	12	**DM.4**	28	**FP.4**	0
	RI.5	40	**RR.5**	0	**DM.5**	40	**FP.5**	0
	RI.6	40	**RR.6**	0	**DM.6**	0	**FP.6**	0
	RMI_{RI}	27.89	**RMI_{RR}**	17.75	**RMI_{DM}**	27.88	**RMI_{FP}**	0
	RMI	18.38						

In summary, the Table 11 shows that during the period 1995-2013 there was incipient progress in terms of disaster management (RMI_{DM}), risk identification (RMI_{RI}) and risk reduction (RMI_{RR}) in Trinidad and Tobago. The indicators that presented a more notable positive change (40 marks) were the public information and community participation (RI5), the training and education in risk management (RI6) and the community preparedness and training (DM5). The hazard monitoring and forecasting (RI2), the hydrographic basin intervention and environmental protection (RR2), the endowment of equipment, tools and infrastructure (DM3) and the simulation, updating and testing of inter-institutional response (DM4) also presented

an important positive change (28 marks). Other indicators with a significant change, but at a lower degree (12 marks), were the hazard evaluation and mapping (RI3), the vulnerability and risk assessment (RI4), the implementation of hazard-event control and protection techniques (RR3), the housing improvement and human settlement relocation from prone-areas (RR4), the organization and coordination of emergency operations (DM1) and the emergency response planning and implementation of warning systems (DM2).

From these results it can be concluded, that in Trinidad and Tobago, there was a positive decrease in the DDI from 2000 to 2010 for the different return periods evaluated (50, 100 and 500). The prevalent vulnerability, PVI, had slightly decreased since 1995. In the case of the RMI, the country had improvement that can be clearly observed from 2005 to 2013, especially due to activities on disaster management, risk reduction and risk identification. Nevertheless, this improvement is still below international standards and there is need for enhanced efforts. It is also noteworthy that the financial protection and governance remained at the same level and there have not been any material contributions in this area towards risk management in the country. This is indeed cause for concern and greater efforts need to be made to ensuring these items become one of the priorities on the national level.

6.2 DEFINITION OF RISK SCENARIOS

The risk scenarios developed for Trinidad and Tobago were applied based on a probabilistic approach to evaluate catastrophic risk at a national and local level (the capital city of Port-of-Spain). The catastrophic events refer to extreme and non-frequent events such as earthquakes, hurricanes and floods associated to extreme rainfall. These events have characteristics that can affect different regions of the country at the same time. In the case of the local level analyses (Port-of-Spain), the risk scenarios were informed by storm surge and flood events due to hurricane rainfall.

Each risk scenario is described briefly in the following paragraphs.

Seismic Hazard

Trinidad and Tobago lies in the Lesser Antilles Arc where the interaction between the Caribbean and South American Plates occur and consequently, it is susceptible to seismic hazard. Several faults exist within the country. The risk scenarios used in the seismic modelling used a total of seismogenetic zones. The approach is summarised below:

- A seismic catalogue with a total of 1344 events was compiled for the selected zones.
- Seismicity parameters were calculated using a maximum likelihood method.
- Spectral ground motion prediction equations (GMPEs) were used to obtain hazard intensities for different spectral ordinates.
- A set of stochastic scenarios to calculate risk in a fully probabilistic way was generated. Each event comprised by 23 spectral intensities (for 5% damping).
- Using this approach, uniform hazard spectra (UHS) for different return periods were obtained. The UHS was calculated for Port of Spain and San Fernando for 250, 500, 1,000, 2,000 and 2,500.
- Hazard maps at country level for different return periods and spectral ordinates were obtained. The resulting maps for two events (Figures 23 and 24) show peak ground acceleration (PGA) and for 0.2 seconds for 475 years return period respectively. (GORTT/ODPM/IDB- CIMNE, 2013)

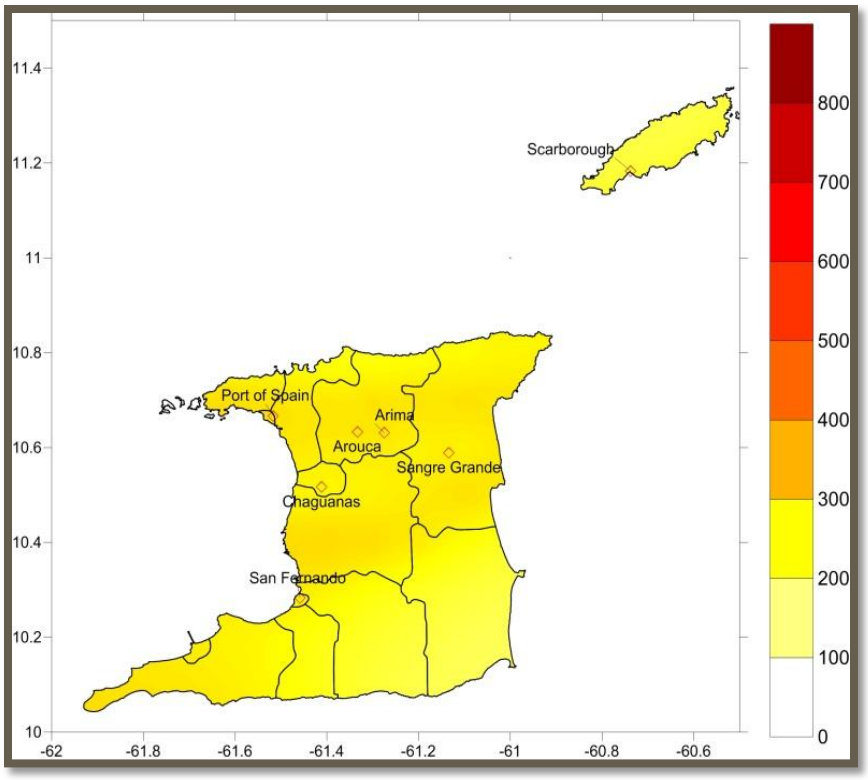

Figure 23: Peak ground acceleration for a return period of 475 (cm/s^2) (GORTT/ODPM/IDB- CIMNE, 2013)

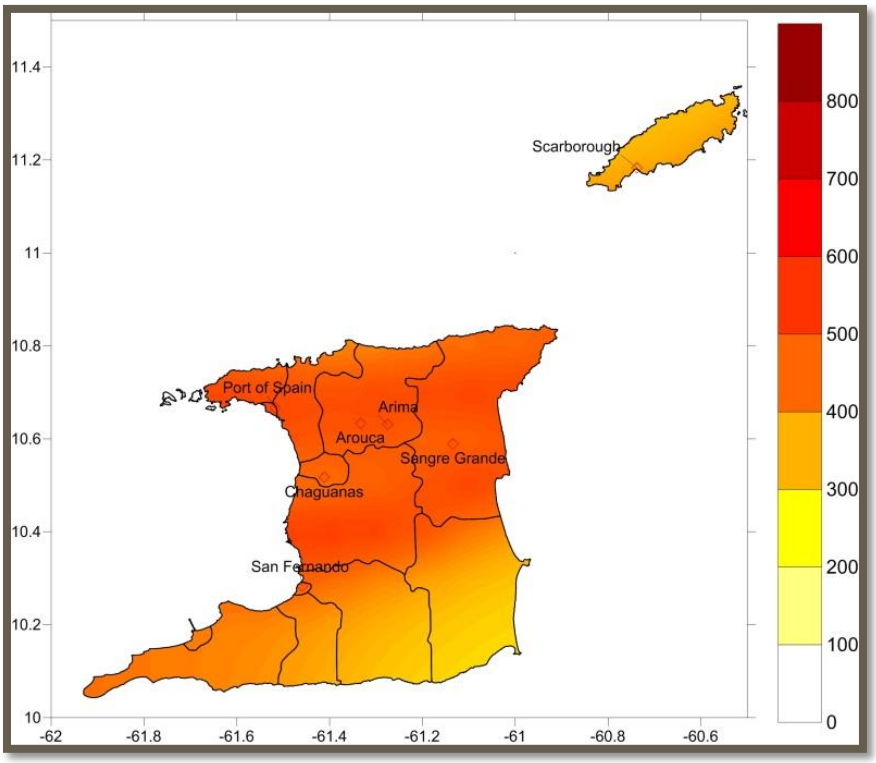

Figure 24: 0.2 sec for 475 years return period (GORTT/ODPM/IDB- CIMNE, 2013)

Hurricane Hazards

Hurricanes can be considered as extreme events that can generate highly destructive disasters which can be characterized by their frequency of occurrence. The hurricane modelling approach is summarised below:

- Hazard modelling for the hurricane case took into account the effects related to the wind speed, storm surge and hurricane rainfall.
- Catalogue of historical events containing information about the location of the storm every 6 hours, the wind speed and central pressure information at those locations were noted.
- A random walk technique was used to generate a family of child tracks after generating 100 simulations
- A completeness analysis was conducted to define the cut off year of the basin.
- The hurricane modelling also utilised information about topography, bathymetry and land use to define the roughness of the ground.
- A set of stochastic scenarios in terms of the three associated intensities to the hurricane hazard was generated to produce the hurricane hazard maps shown below.
- The hazard maps (Figures 25, 26, and 27) depict strong winds (5 second gusts), storm surge and rainfall flooding for 50 years respectively.

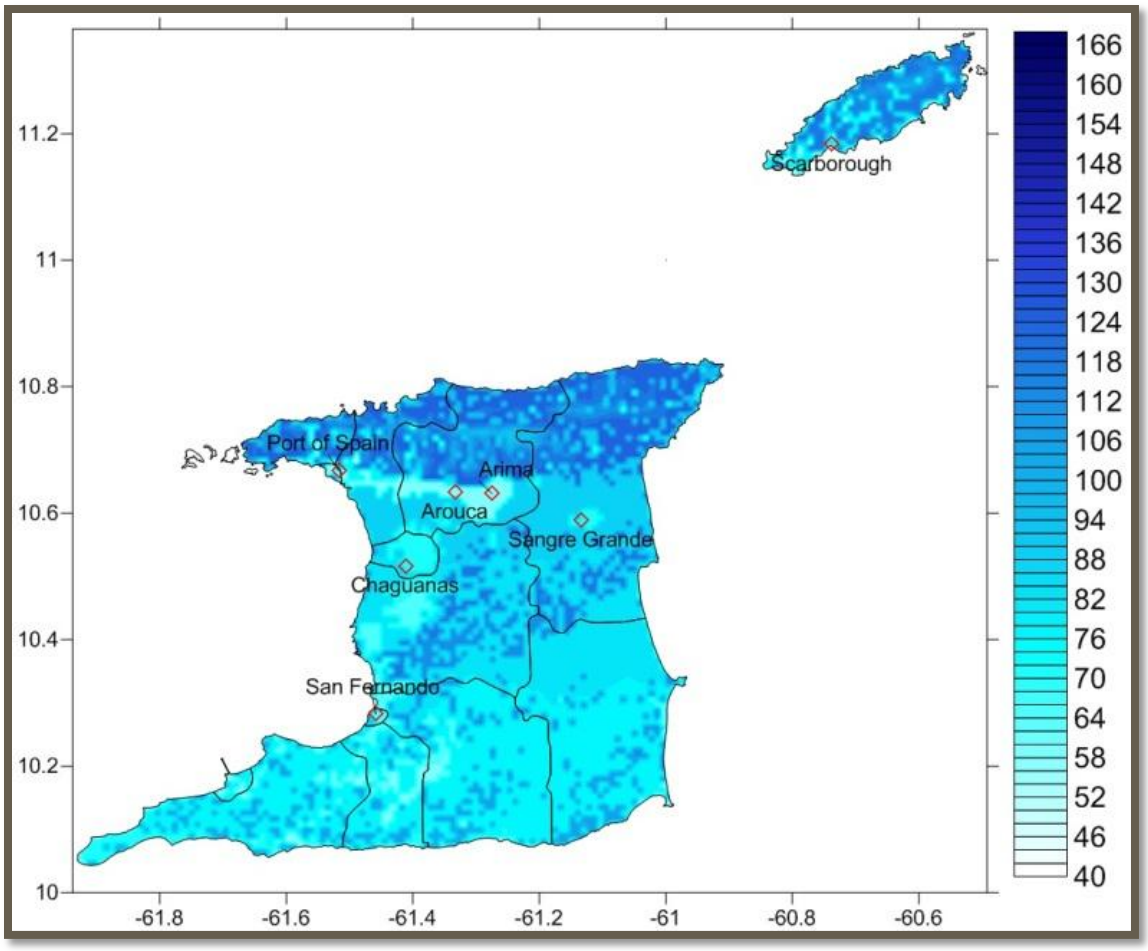

Figure 25: Cyclonic winds hazard map. Wind speed (Km/h) for 5 seconds gusts. 50 years return period (GORTT/ODPM/IDB- CIMNE, 2013)

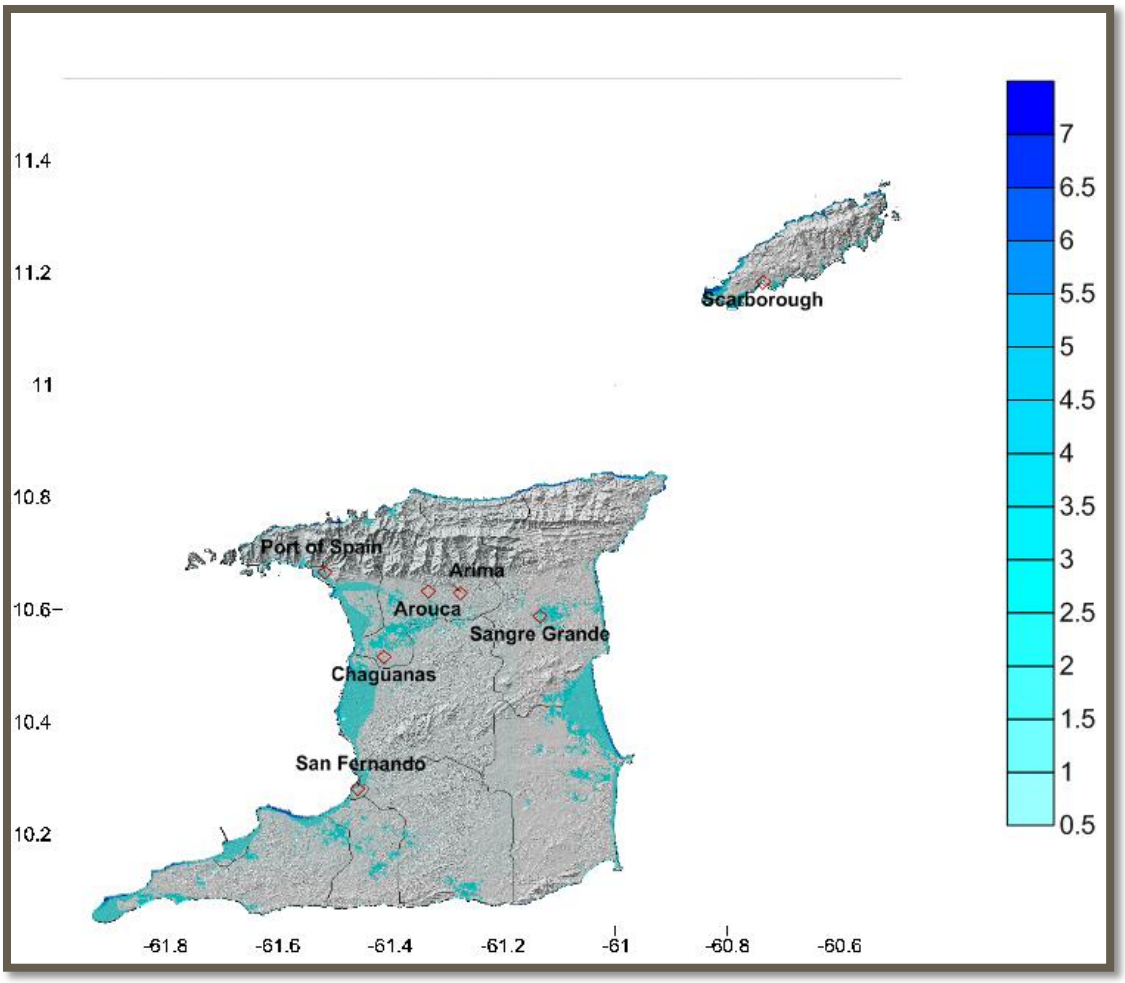

Figure 26: Storm surge hazard map for Trinidad and Tobago islands.

Inundation depth in meters. 50 years return period (GORTT/ODPM/IDB- CIMNE, 2013)

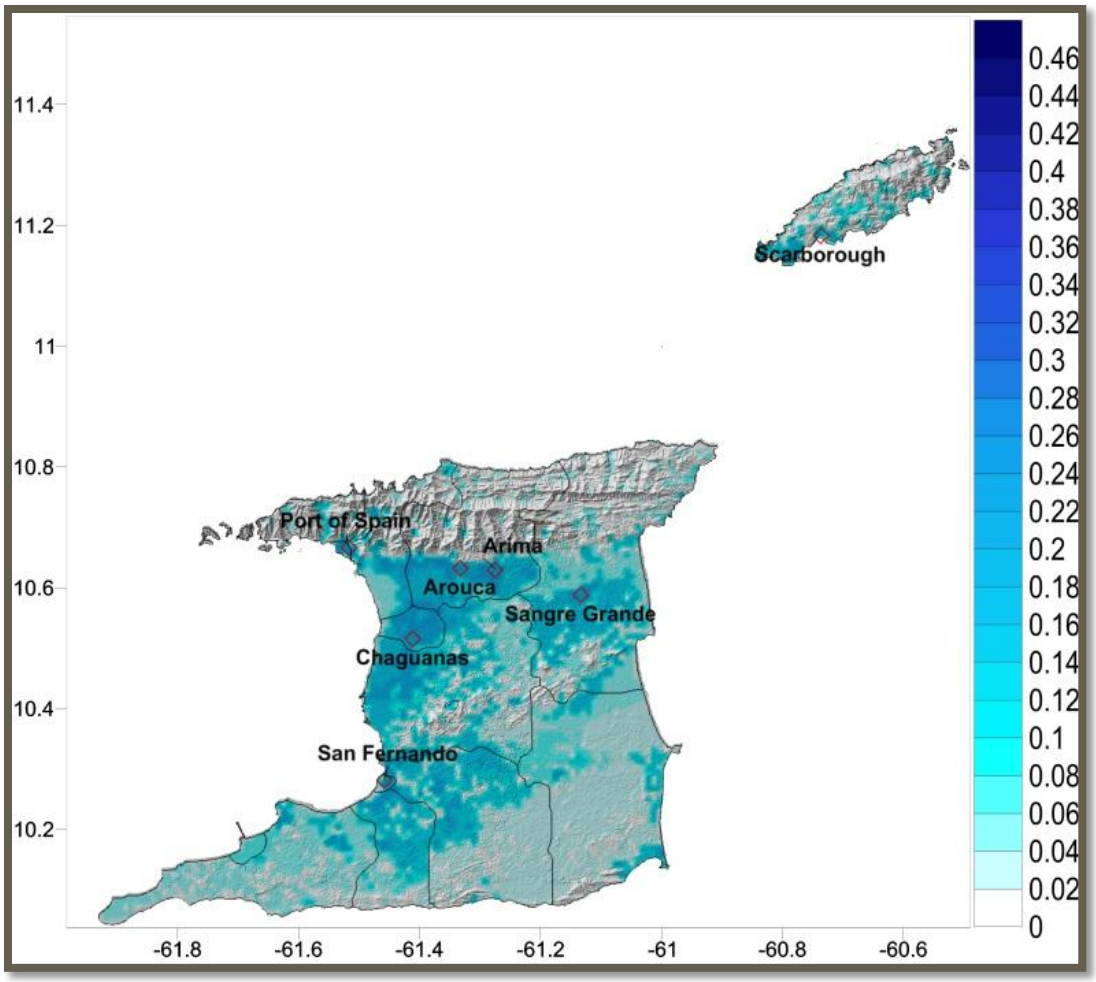

Figure 27: Cyclonic rainfall flooding (m) map for intermediate moisture soil condition 50 years return period (GORTT/ODPM/IDB- CIMNE, 2013)

FLOOD HAZARD

In this flood risk scenario, intense non-cyclonic rainfall hazard is represented by means of a set of stochastically generated storms. The storm models were consistent with the country's rainfall regime and provided a spatial representation of rainfall as well as temporal and spatial probabilities.

- The basic approach to characterise rainfall included (a) duration of the storms (b) mean precipitation and (c) the time between successive storms.

- The highly utilised IDF (Intensity-Duration-Frequency) curves were applied to characterise the rainfall regimes at specific locations.

- A set of stochastic rainfalls was generated to use it for the subsequent flood hazard analysis from PADF curves.

- A controlled random procedure was performed to define the preferred location, shape and size of the rainfall events; thus producing a set of stochastically generated storms which held the same rainfall regime that the real recorded events.

- Hazard curves and maps were generated for non-hurricane rainfall flood for 25 years return period See Figure 28.

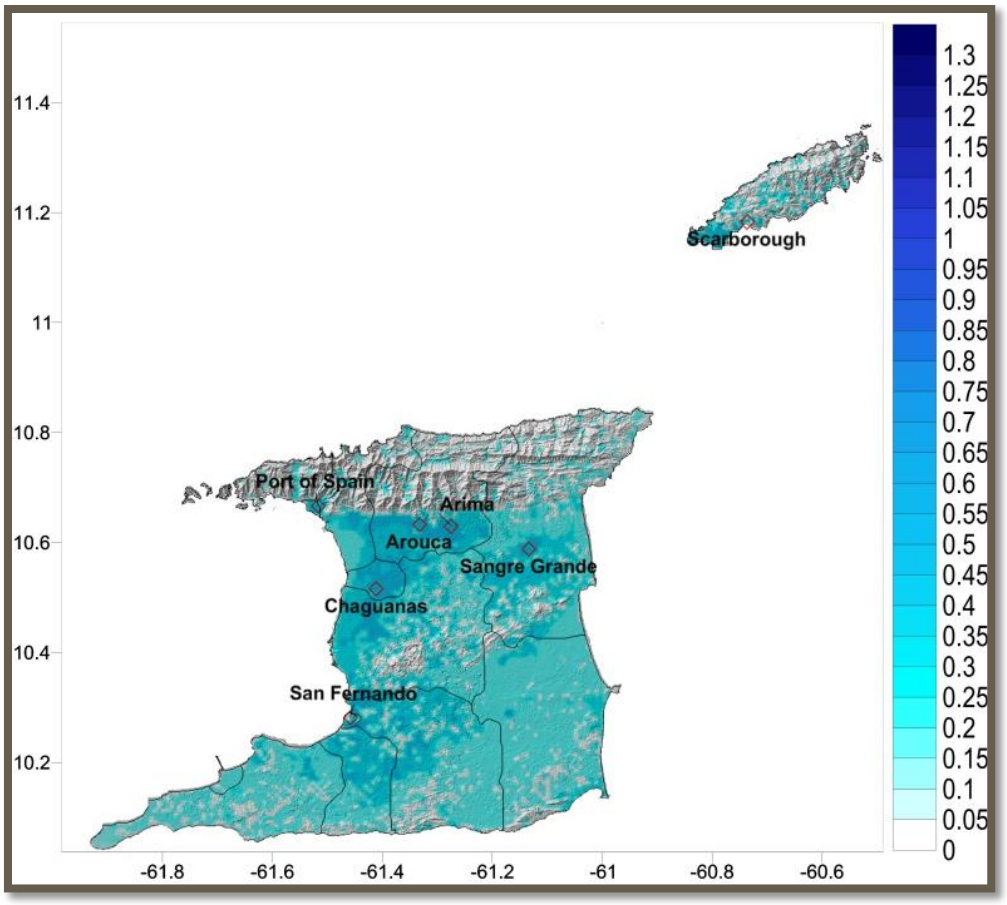

Figure 28: Non-cyclonic intense rainfall flooding (m) map. Intermediate moisture condition. 3 days duration storms. 25 years return period (GORTT/ODPM/IDB- CIMNE, 2013)

6.3 PRIORITISATION OF RISK SCENARIOS AND AREAS OF INTERVENTION

The results of the probabilistic risk analysis for Trinidad and Tobago involved: an appraisal of the exposed assets in which an exposed assets inventory was prepared, probabilistic hazard models (earthquake, wind, floods) and vulnerability functions for earthquake, wind and floods were generated. This results in the determination of the Probable Maximum Loss (PML).

The risk results for earthquake and hurricane are shown in Tables 12 and 13. Notably, from the results, the Average Annual Losses (AAL) is higher for the earthquake, however for large return periods, strong winds (hurricane) contribute the most to the risk level.

Table 12:

Summary of Risk results for Earthquakes for Trinidad and Tobago (GORTT/ODPM/IDB- CIMNE, 2013)

Results		
Exposure Value	US$ x10^6	$37,902
Average Annual Loss	US$ x10^6	$70.73
	‰	1.87
PML		
Return Period	**Loss**	
Years	**US$ x10^6**	**%**
50	$639	1.7%
100	$1,016	2.7%
250	$1,625	4.3%
500	$2,171	5.7%
1000	$2,765	7.3%

Table 13:

Summary of Risk results for Hurricane Winds for Trinidad and Tobago (GORTT/ODPM/IDB- CIMNE, 2013)

Results		
Exposure Value	US$ x10^6	$37,902
Average Annual Loss	US$ x10^6	$55.73
	‰	1.47
PML		
Return Period	Loss	
Years	US$ x10^6	%
50	$537	1.4%
100	$1,182	3.1%
250	$2,526	6.7%
500	$3,840	10.1%
1000	$5,411	14.3%

Risk Analysis for Port-of-Spain

The study revealed that seismic risk is the prevailing risk in the capital city of Port-of-Spain and accounts for 70% of the Average Annual Loss (AAL). This can be attributed mainly to the fact that hazard conditions can be considered medium-high due to the intensities that can be expected for large return periods as well as the vulnerability conditions. The risk map (Figure 29) produced for Port-of-Spain was represented based on pure premium due to earthquake risk.

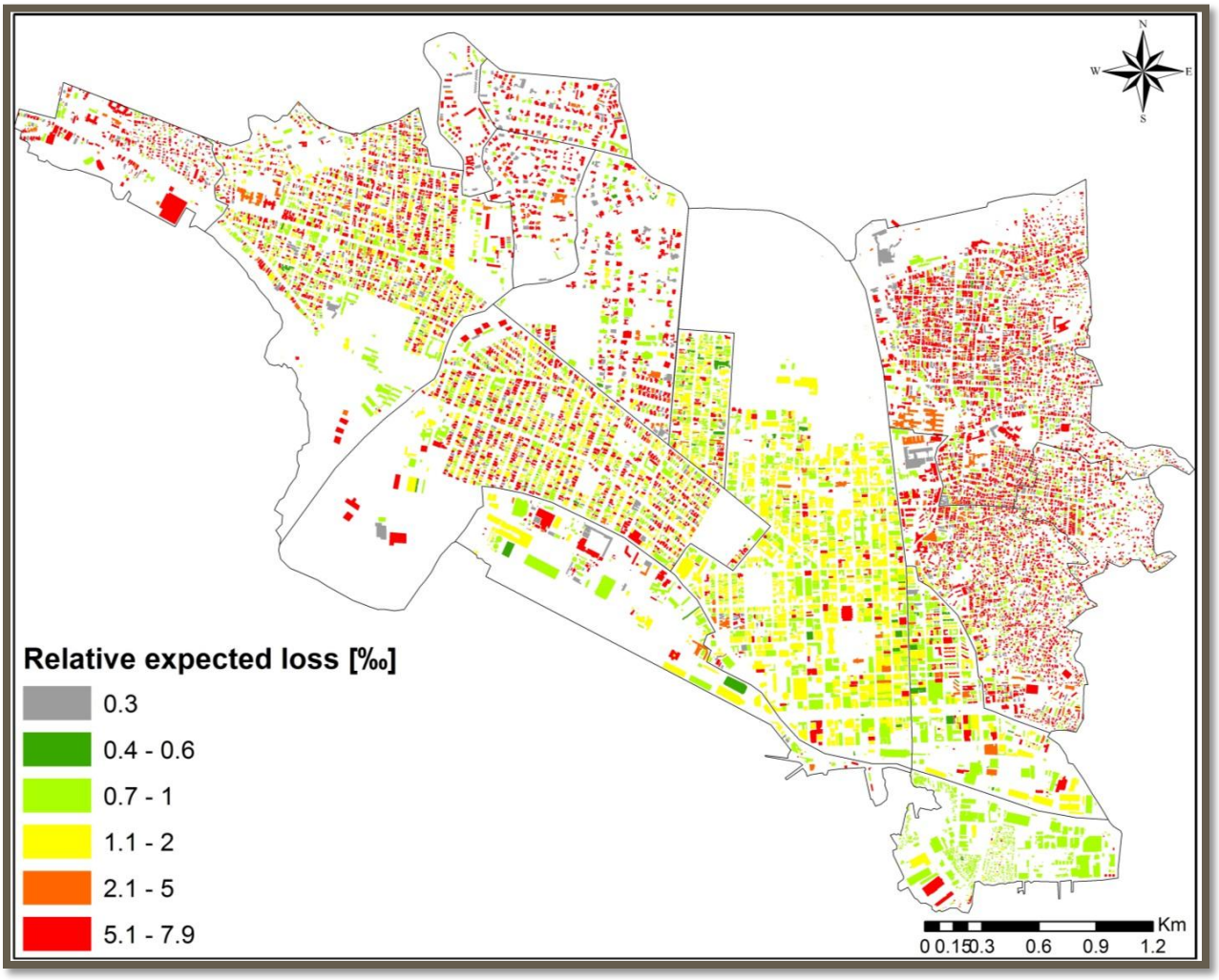

Figure 29: Risk map in terms of the pure premium for Port of Spain (seismic risk)

(GORTT/ODPM/IDB- CIMNE, 2013)

Further, the Average Annual Loss (AAL) and the Probable Maximum Loss (PML) for Port-of-Spain were calculated using two scenarios: without and with climate change. The risk comparisons are shown in Table 14 and Table 15 below:

Table 14:

AAL and PML comparisons without climate change (GORTT/ODPM/IDB- CIMNE, 2013)

Results		
Exposed value	USD$ x10^6	16,573.60
Average annual loss	USD$ x10^6	46.155
	‰	2.785
PML		
Return period	Loss	
Years	USD$ x10^6	%
100	$741.02	4.47
250	$1,143.61	6.90
500	$1,496.38	9.03
1000	$1,907.12	11.51

Table 15:

AAL and PML comparisons with climate change (GORTT/ODPM/IDB- CIMNE, 2013)

Results		
Exposed value	USD$ x10^6	16,573.60
Average annual loss	USD$ x10^6	46.622
	‰	2.813
PML		
Return period	Loss	
Years	USD$ x10^6	%
100	$741.38	4.47
250	$1,143.61	6.90
500	$1,496.38	9.03
1000	$1,907.12	11.51

Noting that the results indicate only minor changes in the AAL and no change in the PML, suggests that actions related to disaster risk management should be taken as a matter of urgency as the risk levels are considerable. It is also recommended that in adapting to climate change, vulnerability mitigation strategies should be implemented in the short and medium term.

Summary

Based on the results of this probabilistic multi-hazard risk assessment study, the facts emerging are summarised below:

- Hazard controlling risk for Trinidad and Tobago based on the AAL values is earthquake, while the Probable Maximum Loss (PML) for large return periods is associated with hurricane strong winds. Notably, for 500 and 1000 year return periods, the losses associated with strong winds account for almost twice that of earthquakes.
- The hazard that threatens the city most is that of seismic events, given the location of the city and the surrounding tectonic environment. The PML for a return period of 500 years is equal to USD 1,174 Million, approximately 7% of the total exposed value.
- The grouped pure premium for Port-of-Spain is equal to 2.79% and is mainly associated with the impact of earthquake events given their intensities and also their frequency of occurrence.
- The risk results for tropical cyclones with climate change considerations, show only a small increase on the AAL. This suggests that the risk levels associated with tropical cyclones (hurricanes) are significant and as such the strategy to cope with climate change adaptation should be focused on the implementation of efficient and prompt disaster risk measures such as; land use planning and vulnerability mitigation through building retrofitting schemes.

7 STRATEGIC DIRECTION FOR DISASTER RISK REDUCTION IN THE COUNTRY OF TRINIDAD AND TOBAGO

Over the past four (4) years the National Disaster Office the Office of Disaster Preparedness and Management (ODPM) has worked with stakeholders to mainstream the national disaster risk reduction agenda through a number of mechanisms; notably the establishment of a National Disaster Risk Reduction Platform and advocacy programmes at sectoral levels and communities.

In 2011, a Strategic Plan 2011 – 2016 for the organisation was also developed to provide a roadmap to guide the organisation towards the execution of its mandate a five (5) year period. This was followed with the development of a Country Work Programme 2011 – 2016, aligned to the Enhanced Caribbean Disaster Emergency Management Authority (CDMS) Strategy (CDMS, 2014) which is reflected under Appendix 4-Country Work Programme.

Acknowledging the fact that the organisation has struggled to fulfil its mandate for comprehensive disaster management in spite of several successful initiatives, the Government of Trinidad and Tobago with support from the IADB conducted a National Institutional Capacity Assessment to assess the country's ability to manage risk posed by the most prevalent natural hazards. The process was a highly consultative process involving DRM stakeholders and policy makers and the executives from public sector, private sector and civil society.

In summary, the major issues emerging from the National Institutional Capacity Assessment (GORTT/NICA-ATN/OC-12349-TT, 2013) based on an issue analysis is reflected in Figure 30 below:

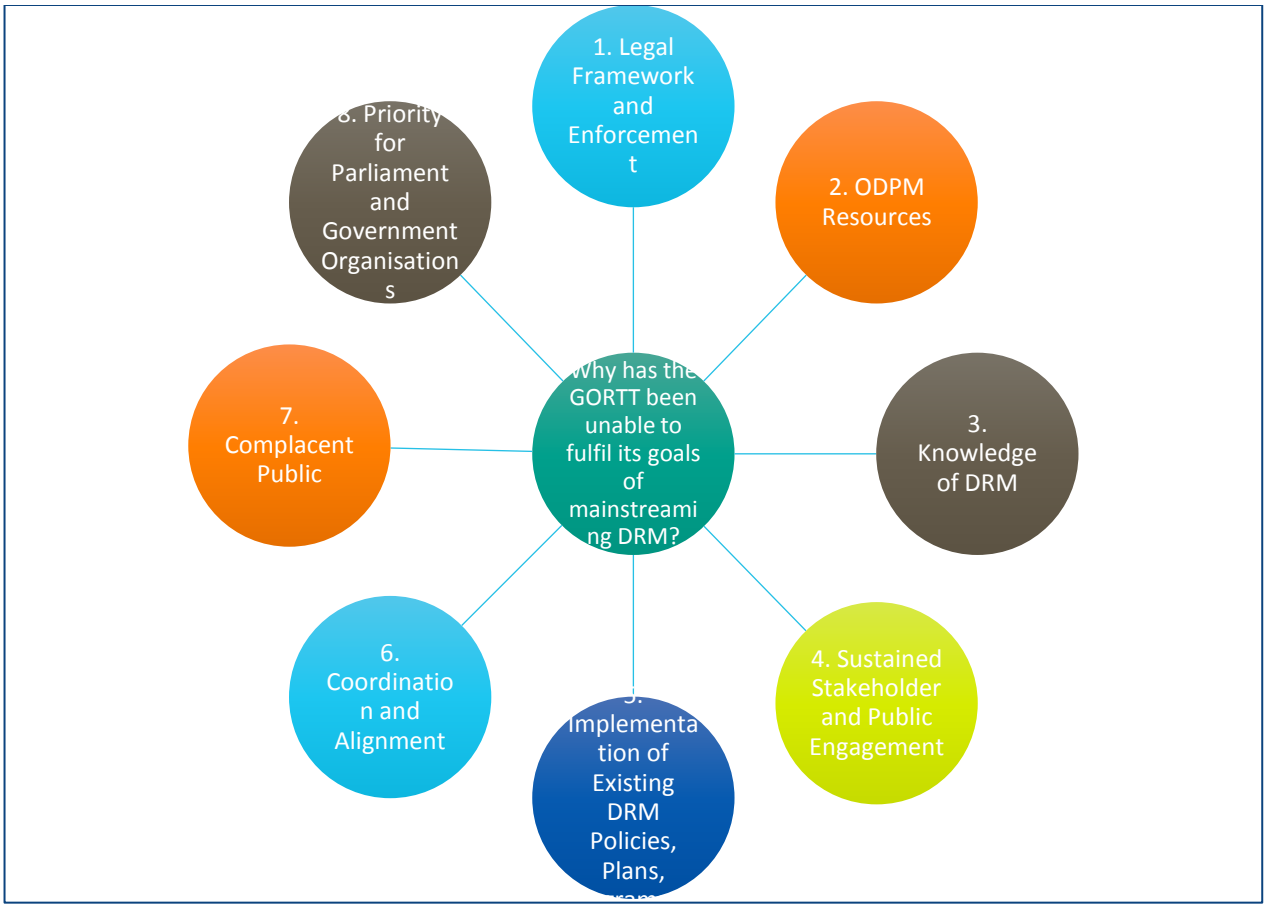

Figure 30: Major issues emerging from the National Institutional Capacity Assessment (GORTT/NICA-ATN/OC-12349-TT, 2013)

These eight (8) high level issues were extracted based on focus group sessions, document reviews and one-on-one interviews. A questionnaire was then administered to a number of policy makers and DRM stakeholders in Trinidad and Tobago. The following diagram in Figure 31 highlights the results of the survey, where the issues were prioritised as being important to DRM landscape in Trinidad and Tobago:

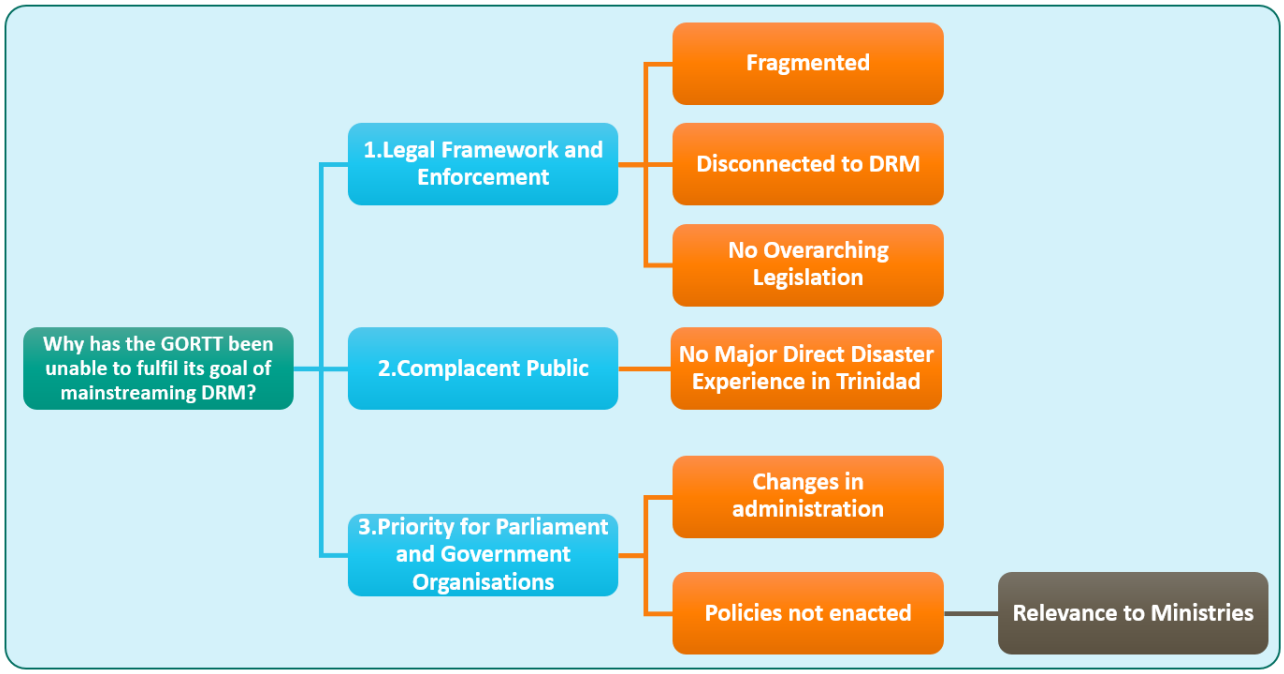

Figure 31: High priority/high importance issues emerging from the National Institutional Capacity Assessment (GORTT/NICA-ATN/OC-12349-TT, 2013)

<u>High Priority/High Importance Issues</u>

- Issue 8.0 Priority for Parliament and Government Organizations

  The NICA 2013 study offered a number of recommendations for addressing the capacity needs/gaps as it relates to Issue 8.0 "Priority for Parliament and Government Organisations" which included:

  - Knowledge and skills training to effectively engage Cabinet on DRM issues and transform DRM from being a low priority issue to a high priority one.
  - Knowledge and skills training to effectively sensitize high-level decision-makers and policy-makers on the connections between DRM and development.
  - Translation of hazard and risk information into easily understandable formats by Cabinet and Ministries that can be used to inform policy, planning and decision-making and planning.

- Training and sensitization on DRM principles and activities. Build awareness of DRM principles and activities across all of government to demonstrate relevancy and reinforce importance.
- Demonstrate relevancy of DRM to different Ministries by pinpointing specific ways in which DRM connects with their work and identify key entry points for mainstreaming within each public sector agency.
- Develop champions for DRM in Cabinet and within Ministries.

- Issue 7.0 Complacent Public

  Recommendations for addressing capacity needs/gaps regarding Issue 7.0 "Complacent Public" included:

  - More effective public education and awareness building program.
  - Education and engagement strategy for high-level decision-makers that is underpinned by sound science that is translated into understandable and arresting formats.
  - Use of creative multimedia platforms and simulations to communicate about Trinidad and Tobago's vulnerability to hazards and help transform public attitude about DRM.
  - Develop a public campaign about DRM. Utilize partnerships between the ODPM and entities that are strong in communication and messaging techniques such as the Government Information Services Limited.
  - Strengthen local DMUs to continue and expand on community-level public awareness efforts.

- Issue 1.0 Legal Framework

  Recommendations for addressing the capacity need / gap regarding Issue 1.0 "Legal Framework" suggested:

  - Delays in passage of legislation have stymied the strengthening of ODPM into a statutory body, and development of the vehicles for mainstreaming DRM. Given

the high levels of vulnerability and the imperative to mainstream DRM into all sectors of society , it is imperative that ODPM as the focal point for DRM in Trinidad and Tobago be given the authority to deliver on its mandate. The internal technical capacity that needs to be developed in ODPM and all government agencies and private entities will be facilitated by the appropriate legal framework.

- The Draft Disaster management bill needs to be reviewed to ensure that it covers governance, powers, roles and functions. The recommendations submitted by MNS/ODPM to Cabinet need to be approved for immediate implementation.

Other Key Issues

- Issue 2.0 ODPM Resources
- Issue 3.0 Knowledge of DRM
- Issue 4.0 Sustained Public Engagement
- Issue 6.0 Coordination
- Issue 5.0 Implementation of Existing DRM Policies, Plans and Studies

The overall finding of the capacity assessment indicates that the system for delivering CDM/DRM ranks 2.3 out of a possible score of 5 points. This ranking based on benchmarking against the Caribbean CDM results framework indicates that the DRM system in T&T, which includes all levels of government, private sector and civil society may be characterized as follows:

Achievements have been made but are incomplete, and while improvements are planned, the commitment and capacities are limited.

The ODPM, as the entity in Trinidad and Tobago charged with coordinating DRM System in Trinidad and Tobago, has made significant strides in efforts to build awareness of DRM, and

have submitted proposals to the Cabinet for institutional changes toward strengthening their ability to deliver on the mandate of the organisation.

The main features of the capacity assessment are articulated in the five (5) areas listed below.

1. SWOT Analysis

2. Gaps and Recommendations by components of the DRM cycle

3. Suggested Staffing for ODPM Technical Services

4. NDRRC Subcommittee development for Mainstreaming

5. Prioritised Action by Core Findings

It is instructive to note the results SWOT Analysis conducted, which summaries the position of the disaster risk management landscape in Trinidad and Tobago in Table 16 and Table 17 below.

Table 16:

Strengths and Weaknesses of the disaster risk management landscape in Trinidad and Tobago.

(GORTT/NICA-ATN/OC-12349-TT, 2013)

STRENGTHS	WEAKNESSES
• There has been growth and development in DRM in T&T - at community-level, and improved inter - agency collaboration with preparedness and response functions • ODPM has fully embraced a CDM approach in concept, evidenced by the drafting of a national CDM Policy Framework • CDM principles have been integrated into the strategic guiding documents created for ODPM • ODPM is working to sensitize the public • Resources (e.g. technology, technical capability and financial capacity) exist to guide DRM processes. • There is a greater accessibility by population to information	• A culture of complacency exists among the populace • Lack of political will to advance DRM and prioritize disaster prevention and mitigation activities and lack of high-level champions to drive DRM • Lack of supporting legislation for DRM • Lack of agency coordination especially at executive level, Inadequate interagency training • ODPM's lack of authority (based on its current structure and placement) • Lack of standards with respect to mitigation, e.g. absence of a national building code • Absence of disaster preparedness and response plans for some government Ministries • Insufficient private sector involvement • Insufficient incorporation of gender-related issues and concerns • Deficient data and knowledge management platform to support informed decision- making • Inadequate use of lessons learnt and previously developed plans, lack of follow through

Table 17:

Opportunities and Threats of the disaster risk management landscape in Trinidad and Tobago.

(GORTT/NICA-ATN/OC-12349-TT, 2013)

OPPORTUNITIES	THREATS
• Legislation needs to be improved and enforced • Greater use of NGOs • Use and building on of existing cooperation between agencies e.g. industries working with NGOs and communities to assist in building capacity • Greater use of social media to improve public awareness • A systematic integration of private sector resources into DRM planning • Use of clear command system-standardized • Merger of Corporate Citizenry with communities - Making it mandatory for industries/private sector to give back in the form of emergency response and preparedness • Assignment of an overarching entity to supervise and handle administration for data collection	• There is a disconnect about who should lead • Different enabling environments exist especially between Trinidad and Tobago leading different levels of preparedness • Political buy in is needed • Disaster Risk is not seen as critical • Cultural norm • Dynamism between formal emergency managers and informal emergency managers leads to issues in response • Fear in relinquishing command leads to everyone doing their own thing • Lack of standards for response e.g. incident command system utilized

Following the national institutional capacity assessment (GORTT/NICA-ATN/OC-12349-TT, 2013), a key criteria questionnaire was administered to stakeholders in September 2014, to ascertain their current perception of key areas for DRR intervention. The following Table 18 highlights the collated results of the "key criteria questionnaire" to identify key actions for DRR planning in Latin America and the Caribbean.

A Roadmap of Priorities were then developed which highlighted the priority areas for intervention.

Having applied all the prioritization criteria to the Trinidad and Tobago context, the areas for intervention were consolidated based on issue and category:

- Red (highly relevant or priority level): implies a determining state or condition for programmatic intervention for this area or criterion in the territory under review.
- Yellow (relevant or observable): represents a condition that must be carefully observed and compared with other inputs in order to make a final decision on whether to intervene.
- Green (low relevance or non-priority): implies an ideal or acceptable condition for the criteria evaluated in the territory, i.e. there is not a priority condition for programmatic intervention in the medium term.

Please refer to Appendix 2 for UNISDR-DIPECHO Questionnaire, notes and results.

Table 18:

Results of the application of the DRR priorities for planning and programming (shown in different colour-coded categories) (MNS/ODPM, 2014)

CATEGORY	HIGHLY RELEVANT TOPICS FOR PROGRAMMATIC INTERVENTION IN TRINIDAD AND TOBAGO (RED)
1.Historical records of hazards, exposure and disasters	Historical information and hazard studies show the existence of multi-hazard zones or areas, but integrated scenarios and studies are not conducted for multi-hazard, trans-border hazards and/or impacts of climate change. There are no action plans.
2. Drivers of risk	There is a high and increasing occupation of urban areas at risk (over 30% of the population of the analysis area) without planning processes or control over the implementation of the urban and rural land use planning regulations. Lack of physical control mechanisms for the occupation, use and transformation of urban landscape.
3. Enabling regulations	Non-existent regulations and legal instruments for DRM or their validity is not consistent with national and international legal frameworks. Legal frameworks may exist in the said conditions, but they are not implemented.

CATEGORY	RELEVANT TOPICS MONITORING FOR FUTURE PROGRAMMATIC INTERVENTIONS IN TRINIDAD & TOBAGO (YELLOW)
1.Historical records of hazards, exposure and disasters	There are areas with recurring events, and there are records of previous impacts that have caused damages and losses. There is a mapping of hazards and multi-hazards (and/or danger) or forecasts based on probabilistic criteria, but this information is outdated. An expert assessment is required to determine current conditions.
	There is existing information but without territorially disaggregated information on the impact of disasters. The existence of this type of information is essential to improve the quality of decision-making.
2. Drivers of risk	Environmental degradation (*) can be severe but management measures are applied that reduce the negative impacts and interaction with hazards (decreased exposure and vulnerability), or environmental degradation is not severe and its interaction does not generate increased exposure and vulnerability.
	The socio economic indicators selected (**) are low for 20 % to 50 % of exposed populations.
3.Current risk management capacities	Institutional response structures are present but lack plans, their capacity is limited to certain institutions but not integrated into the system. Community and institutional preparedness for emergencies and/or disasters exist in some institutions and communities.
	There are legal frameworks in place that enable the allocation or reallocation of resources once a disaster or emergency has occurred; access to resources is not streamlined or administrative processes are ineffective.
	There are early warning and hazard monitoring system(s) in place, but they lack a multi-hazard approach and/or they are not linked to the National Early Warning System, if any; no clear criteria for management and territorial prioritization for proper and timely dissemination of warning or appropriate

CATEGORY	RELEVANT TOPICS MONITORING FOR FUTURE PROGRAMMATIC INTERVENTIONS IN TRINIDAD & TOBAGO (YELLOW)
	and timely information.
4. Enabling regulations	There are inter-agency structures linked to form a coordination and participation system, platform or entities, but its activation, capacity and work are limited and temporary (often activated only in case of emergency)
	There are some sectoral institutions with internally assigned Risk Management responsibilities and specific planning but limited in terms of DRM as an comprehensive process of territorial development or focused primarily on disasters or emergencies.
5.Trends and future prospects	There are scenarios about the impacts of climate change, but they are not coordinated or integrated into the risk management strategies.
	There are mechanisms for risk trend analysis, but they are not linked to the development analysis and observatories

Summary

Notwithstanding the notable successes towards mainstreaming DRR in Trinidad and Tobago, the current mechanisms to drive the institutionalisation of DRR are very weak. To this end, the national disaster office in Trinidad and Tobago has identified the following focus areas for strategic intervention within the next two years:

- Strengthen Knowledge Management Platform using integrated approach.
- Encourage the BCM programme in the Private Sector for Small /Medium Enterprises.
- Develop CDM Legislation to include IDRL.
- Improving the Early Warning System to allow for an integrated approach (National Alert State Protocol and Public Alert / Population Alert System).
- Prioritise discussions with CDEMA regarding the shift of focus towards building resilience.
- Continue the work with the Private Sector for more robust Public / Private Sector Partnership and participation.
- Mainstreaming / Integrating DRR in all sectors.

8 CONCLUSIONS AND RECOMMENDATIONS

The disaster office of Trinidad and Tobago, ODPM, has made noteworthy strides in enhancing the Country's risk management capabilities. During 2014, the ODPM was able to execute on many significant initiatives, highlighted in Table 19 which sought to further advance the state of Trinidad and Tobago's disaster readiness.

Table 19:

DRM Accomplishments 2014 (MNS/ODPM Archives, 2015)

Project	Activity	Level	Accomplishments	Date Completed
Implementation of Risk Reduction Management Centre – Pilot : Mayaro-Rio Claro Regional Corporation	Adaptation of the Cuban RRMC Model towards strengthening local capacity for Early Warning and GIS to support disaster risk reduction	Community	GIS Capacity augmented 1 GIS training workshop held, 30 person benefiting 1 Early Warning workshop held, 30 person benefitting 2 Early Warning Points established and outfitted	March 2014
Preliminary Vulnerability Assessment for Trinidad and Tobago	Review and preliminary assessment of Trinidad and Tobago's vulnerabilities	National	Report completed and published on ODPM's website	April 2014
Integrating Climate Change Adaptation in Disaster Risk Reduction	Climate Smart Trinidad and Tobago's Country Work Programme for DRR	National	2-day Workshop delivered Over 20 entities participated (Public & Private Sector and Civil society)	September 2014
Tsunami Protocol Workshop	Review of the National Tsunami Protocol for Trinidad and Tobago	National	1-day consultation delivered Over 37 stakeholders	November 2014

Project	Activity	Level	Accomplishments	Date Completed
			(participated in the review exercise	
Certificate of Environmental Clearance (CEC)	Review and providing technical guidance on the DRR aspects of CECs	Sectoral	5 CECs were reviewed and comments offered to Environmental Management Authority	Ongoing
ISO Standards for Societal Security	Contributing to the review of ISO standards and supporting the implementation of ISO standards in Trinidad and Tobago	National	ISO 22315:2014 Societal security -- Mass evacuation ISO 22397:2014 Societal security -- Guidelines to set up partnership agreements ISO/DIS 22398:2013 Societal security -- Guidelines for exercises	Ongoing
Strategic Alliances and Partnership Programme	Partnered with UWI – Electrical Engineering for the development of operational tools to support Disaster risk reduction activities	Sectoral	8 concepts / tools were developed 4 identified for further enhancement/ development	December 2014
Request for Information	Facilitate the public requests for hazard and disaster related data and maps	Sectoral	Addressed 9 requests from the academia and civil society	Ongoing
Business Continuity Management Capacity for Public Sector Project	Establish BCM capacity in 5 Pilot ministries; Develop BCM policy and implementation strategy for Public Sector	Sectoral	Launched 16th April 2014	Ongoing
Review and update of DRR Polices and Plans Project	Review of existing DRR policies and plans	National	Over 30 plans and policies prepared	Started 2011 Ongoing
Development of	Evaluate existing policies/	National	Draft CDM Bill	Ongoing

Project	Activity	Level	Accomplishments	Date Completed
CDM Legislation Project	legislation/ acts; design appropriate regulatory framework for T&T.		prepared and circulated for to internal staff for review and comment	
Hazard Incident Geo-Mapping Project	Update and maintain ODPM's hazard incident database for Trinidad and Tobago	National	Currently 14 years (2000- 2014) of hazard incidents have captured, collated and geo-tagged into a single repository	Ongoing
Communities Organised and Ready for Emergencies (CORE) Phase 4 "Assisting Communities through Initiative Vulnerability Exposed"	Building resilience of the Special Needs Population GIS Mapping of Vulnerable communities Testing levels of preparedness through follow up visits to communities who were already given the preparedness survey.	National	Distribution of Medical Beds to Mentally disabled populations Distribution of 25 wheel chairs to elderly differently abled persons and 95 to Moruga's DMU and to the Red Cross. Visit to Elderly Homes and distribution of relief supplies for over 100 elderly persons and 60 hearing impaired students on IDRR Day 2014	Continuing in 2015, an ongoing initiative.
Safer Schools Programme	Training of teachers and principals in Emergency/Evacuation Planning Promotion of safer schools ODPM's Annual National Primary School Quiz.	National	The mainstreaming of DRM in the school community, Increase of 13 participating schools during 2011-2013 to 35 in 2014. Distribution of over 20,000 Kid's Activity Books in primary schools. 35 hours of community outreach in lecturing for schools	Continuing in 2015, an ongoing initiative.

Project	Activity	Level	Accomplishments	Date Completed
			150 Drills Completed, 200 teachers trained in Emergency/Evacuation Training	
National Volunteer Programme	Build a culture of resiliency by allowing volunteers to transfer knowledge learnt by the ODPM to community leaders after certification.	National	Over 300 individuals trained as skilled ODPM volunteers Conducting DRM training with existing volunteers in this Ministry. Creation of Junior Volunteers by issuing training to existing Youth Groups in this ministry, guided by the nation's Youth Policy.	Continuing in 2015, an ongoing initiative.
Let's Get Ready – Public Awareness Multimedia Campaign	Improve ODPM's organizational imaging and a brand of cultural resiliency Support a mechanism to improve crisis communication outflows through innovative and technological methods in the realm of social media.	National/Regional and International due to social media platforms	Creation of the CORE TV Series featuring hazard preparedness and building a culture of resiliency Promotion of a Customer Care number 511 Call Centre Development of Social Media Platforms for Early Warning and public awareness. Creation of an ODPM App	Continuing in 2015, an ongoing initiative.
Exercise Dark Wave 2014	Test the nation's capacity to respond to a national emergency (level three).	National	Successfully executed with 452 participants from 33 agencies across the nation and region.	
DRM	Building DRM awareness	National	104 Lifeguards	September

Project	Activity	Level	Accomplishments	Date Completed
Workshop-Lifeguards	among Lifeguards		trained.	– December 2014
EOC Management Training	ICS, WebEOC, EOC Management	National	Trained over 600 first and second responders as well as 100% of ODPM staff	Ongoing
Ebola Sensitization	Planned, Prepared and executed Ebola sensitisation training		234 First and Second responders trained	July 2014
Real world simulations	Evacuation of parliament	Sectoral	Tested the Parliament's readiness for a disaster. Highlighted areas for improvement	July 2014
Stakeholder cooperation	Engagement of Diplomatic Corps	National	Providing the diplomatic corps with emergency operations consultations to ensure their plans are in sync with the national response framework.	Ongoing
TEMA				
Proposed Tobago Emergency Operations Centre	The erection of a purpose-built structure to accommodate the activities and emergency coordination of the agency	Tobago	Acquisition of lands at Signal Hill Engagement of a Project Manager Drafting of plans	Ongoing
Erection of TEMA Warehouse	Partnering with the United States Southern Command to aid in the construction of a warehouse to store emergency items	Tobago	Assignment of area to erect building at TEOC site Construction carded to begin in March 2015	Ongoing
Acquisition of two (2) additional Early Warning Systems	The procurement of two additional Early Warning Systems to place strategically on the island (Crown Point	Tobago	Partnering with the United States Southern Command to procure two (2) Early Warning	Ongoing

Project	Activity	Level	Accomplishments	Date Completed
	and Scarborough)		Systems	
Exercise Dark Wave	National Emergency Exercise	National and Regional	Successful partnership with various agencies and organizations to exercise their sectoral emergency plans with the scenario of a Tsunami triggered by an earthquake	March 25th, 2014
Training	- CERT Recertification - Driver Education Program - Incident Command System (ICS) - Emergency Report Writing Refresher for Dive Team - Preceptor Training Programme	Tobago	CERT Technicians and various members of the TEMA were trained in these various disciplines to ensure efficient service delivery	Ongoing
World GIS Day	GIS Day provides an international forum for users of geographic information systems (GIS) technology to demonstrate real-world applications that are making a difference in our society.	National, Regional and Global	TEMA was able to showcase applications of GIS in TEMA's everyday operations including the use of it in mapping Special Needs individuals	November 19th, 2014
Diamond Standard Certification Programme	Partnering with the Ministry of Public Administration to improve service delivery	National	Successful achievement of being one of three (3) Tobago organizations to gain certification	Third quarter 2014
UWI Earth Science Week	Table top exercise Tsunami Drill Series of workshops and activities surrounding the general theme of Tsunami awareness and	Tobago	Successful participation and facilitation of Event Successful execution of Tsunami Drill Successful execution	October 2014

Project	Activity	Level	Accomplishments	Date Completed
	preparedness		of Table-top exercise	
Upgrading of Emergency Responders to EMTs	To upgrade the status of Emergency Responders to Emergency Medical Technicians	Tobago	Training of CERT technicians and twenty-one (21) Fire Men to become Emergency Medical Technicians	March – May 2014
Carnival Joint Command Operations	- Establishment of Joint Command Operation Post (with protective and medical arms) in areas of Tobago (Scarborough and Roxborough) to better coordinate emergencies during the Carnival season	Tobago	Successful partnership with stakeholders to better coordinate emergencies during the Carnival season	March 2014
Special Needs Geo-Mapping	- Registering of Special Needs individuals in Tobago Plotting of the coordinates onto a comprehensive map	Tobago	Partnership with the Moriah Police Youth Group and Trinidad and Tobago Cadet Force 3rd Battalion to garner geographical locations, and demarcate locations of differently-abled individuals on the island to build a comprehensive map to be used in times of emergency.	July - August 2014
Establishment of Tobago Rapid Response Team	- Establishment of the TRRT to ensure rapid response to EVD-related incidents	Tobago	Training involving building of the Advanced Medical Post and Portable Isolation Post Training in disciplines to augment an effective response in the event of a suspected EVD case	Ongoing

It is evident that the Disaster Management offices in Trinidad and Tobago have significantly progressed the state of DRM in the country, with special emphasis on education, public awareness and specialised training. There has been an improvement in the country's systems; with special mention being made to Tobago, where there are established warning systems and more developed disaster communication systems. It is also noteworthy that the drive towards an Authority is still high on the ODPM's agenda.

These successes are even more impactful as the initiatives are all aligned to ODPM's strategic Goals, the Country Work Programme, Appendix 4, which are all aligned to the regional CDEMA Strategy, thereby ensuring the ODPM is in a positive position of delivering on its mandate.

While there is much to celebrate in the cited accomplishments, the ODPM also recognises the short-comings that need to be addressed in pursuance of the country's goals. These are summarised in Table 20 below.

Table 20: Implementation Gaps (MNS/ODPM Archives, 2015)

Project	Activity	Level	Constraints	Proposed Mitigants
Development of CDM Legislation	Obtain cabinet approval to restructure ODPM to strengthen its coordination mechanism; develop CDM Bill for public consultation	National	Request for cabinet approval to support the organizational restructuring was reneged	Establish intra-ministerial committee / task force to develop and execute action plan to support the development of CDM legislation.
Review and update of DRR Polices and Plans Project	Over 30 plans and policies directly related to DRR have been prepared	National	Need for further stakeholder consultation	Establish working committee to address all policies and plans. Obtain cabinet approval
Hazard Atlas for Trinidad and Tobago	Preparation of an eAtlas	National	Departure of Project Lead	Complete project design

Project	Activity	Level	Constraints	Proposed Mitigants
Project	towards Improving the accessibility and resources for natural hazard information for Trinidad and Tobago; Creating an easily maintained platform for hazard information sharing with all stakeholders		Lack of appropriate resource	Outsource the execution of the deliverables
Critical Facilities Protection Programme	Implement a national programme for the identification and management of critical facilities in Trinidad and Tobago	National	Preparation of Scope of Service to support procurement to be completed	Procure suitable consultant to develop and implement programme
CORE	As described earlier	National	Human Resource Capacity for Community Visits Internal Staffing	Action taken to build relations with Key stakeholders and volunteers to assist of outreach visits. Utilisation of OJT Programme to assist PIECO's activities.

Project	Activity	Level	Constraints	Proposed Mitigants
Safer Schools	As described earlier	National	Unavailability of the Trinidad and Tobago Fire Service to effectively complete drills in high risk areas. Limited internal Staffing to do presentations and school lectures. Budget Constraints for promotion of Kid's Activity Books and limited	Partnership being made with Red Cross's safer schools Drill Programme Outsourcing being explored for some activities. Human resources efforts also being made to enhance ODPM's current human resource capacity. Creation of an E-book version of the Kid's Book
ODPM's National Volunteer Programme	As described earlier	As described earlier	Lack of Proper scheduling due to difficulty in acquiring facilitators for training.	Local Subject Matter Experts being researched to facilitate ICS, Shelter training.

Project	Activity	Level	Constraints	Proposed Mitigants
Let's Get Ready – Public Awareness Multimedia Campaign	As described earlier	National	Decrease in Advertising Budget for both Print, Radio and TV. Delays in procuring Advertising Agency to be contracted by Legal/Ministry of National Security our lead Ministry. Delays in communication of ODPM's efforts due to administrative delays in processing POs etc..	Increased use of less costly social media platforms. Deepening of Partnership with Government Information Services Limited Media appreciation event to improve media relations.

The Gaps identified above suggest that there is a great deal of work still to be done for Trinidad and Tobago to meet the regional and International Standards for DRR. As previously discussed in **Section 7.0**, the following focus areas have been identified: Priority for Parliament and Government Organizations, Complacent Public and Legal Framework.

Complementary actions should also encompass the embracement of the roles within DRM by the wider public at large as many persons still conduct their daily functions oblivious to the alignment to DRM. This in turn contributes to the under scoring of DRM activities/efforts within the country. This is prevalent in several ministries, agencies and institutions. A prime example exists in the MOWT where a great deal of work is being done in flood alleviation, landslide prevention. The work conducted in these areas are treated as operational projects. As such,

opportunities are missed to link these projects to the overall wider DRM priorities which in turn can assist in improved accuracy of the reporting of DRM activities, as well as the opportunity to adequately resource and plan for these activities in the context of DRM. Focus should continue to be placed on expanding the role of and deepening the communication within the NDRRC as a vehicle for mainstreaming DRR.

Risk information is fundamental to strategies and plans to reduce risk. Natural hazard data is collected and analysed by several agencies, and data may be supplied to the ODPM as requested. However this approach does not produce the data that is necessary for a country to effectively engage in DRM. It is no surprise that the data held by the ODPM is insufficient and even dated. The collection of data must be deliberate, widely communicated and must meet specific objectives.

Findings of the capacity assessment also revealed that the time and resources dedicated to producing local risk information is also inadequate, and there is a lack of capacity / technical expertise to produce local level risk maps. These gaps in knowledge and know-how must be addressed as a matter of urgency.

Other matters related to the DRM knowledge base include, climate change, gender mainstreaming, natural hazard vulnerability, critical facilities and the expertise to generate and interpret the relevant data. Generation of risk information and all the relevant data necessary to build awareness and to drive action is essential to building resilience and reducing disaster risk. Educating the public on DRM will be a transformational activity within Trinidad and Tobago. A key aspect would be making knowledge available at all levels - the general public, stakeholders, private sector and government.

Stakeholder discussions emphasized the need for increased coordination within and among agencies in the area of DRM. The Tobago Emergency Management Agency (TEMA), for example, is operated independently for the most part from the ODPM, although there is a working relationship. TEMA reports directly to the Tobago House of Assembly and receives resources from them, although it is considered a DMU under the Ministry of Local

government's Regional Corporations. Without the statutory independence that it needs, the ODPM will find it difficult to champion joined-up DRM across government agencies.

In the new thrust toward building national and community resilience, and the pursuit of sustainable development through enhanced comprehensive disaster risk management, and sustainable prosperity, ODPM needs to strengthen its internal capability while leading a significant shift in the wider national environment. This includes the state, its agencies, public and private institutions, and civil society organizations. In order to deliver on this imperative, ODPM's organizational structure and modus operandi must change substantially within the short to medium term. The required knowledge base, skill sets, and technological resources must be accessed and/or developed as the organization seeks to build the partnerships and alliances at the regional, international, national and local levels for disaster risk management.

Based on the preceding discussions, it is therefore imperative that the ODPM continues to focus on the recommended key activities to bolster their efforts in ensuring that DRR obtains the high priority it deserves on the national agenda. Several initiatives have been developed towards this end and the ODPM needs to make use of all available resources, both domestically and internationally to further streamline their activities into making Trinidad and Tobago a truly resilient nation.

APPENDICES

Appendix 1: Summary of Existing Legislative Powers and Responsibilities for Disaster Management

Government Body/Entity	Legislative Authority	Responsibilities
Office of the President	• Section 7 of the Constitution (Emergency Power) • Section 8 of the Constitution (Proclamation Power) • Section 12 of the Constitution (Publication) • Section 9 of the Constitution • Disaster Measures Act, Chap. 16:50	"The President may, due regard being had to the circumstances of any situation likely to arise or exist during [a period of public emergency] issue orders and instructions for the purpose of the exercise of any powers conferred on him."
Office of the President	Defence Act, Chap. 14:01	Authorizes the President to order any unit of the Defence Force outside of Trinidad and Tobago.
Office of the President	Telecommunications Act, Chap. 47:31	This Act empowers the President, on the advice of the Ministry of National Security, to

Government Body/Entity	Legislative Authority	Responsibilities
		authorize the taking of possession and control by the Government of any telecommunications equipment, installations, service, apparatus or station to be used for Government service.
House of Representatives	Section 10 of the Constitution (Extension of the Proclamation)	A Proclamation may be extended from time to time by resolution supported by a simple majority vote of the House of Representatives. However, no extension granted may exceed 3 months and the extensions in aggregate do not exceed 6 months. The Proclamation may be revoked at any time by a resolution supported by a simple majority vote of the House of Representatives.
Parliament	Section 10 of the Constitution	The Proclamation may be further extended for not more than 3 months at any one time by a resolution passed by both Houses of Parliament and supported by three-fifths of the members of each House.
ODPM	Disaster/Emergency Standard Operating Procedures and Contingency	The ODPM monitors the alert states of events and executes the required procedures in their capacity of coordinating

Government Body/Entity	Legislative Authority	Responsibilities
	Plans	DRR agency.
ODPM	National Recovery Plan	Upon notification of an impending hazardous event, the CEO, ODPM will activate the Recovery process by alerting the Chairperson of the Mitigation and Recovery Task Group.
ODPM	Earthquake Contingency Response and Recovery Plan	The CEO, ODPM activates the Plan at his discretion upon notification by the Seismic Research Unit, University of the West Indies. The ODPM must then contact the Fire and Police Services, public utilities, Ministry of Works and local government emergency coordinators and determine the level of emergency. In the event of an earthquake of at least a 5.0 magnitude in the sub-regional focal area, ODPM must contact Grenada and Guyana for a DANA, and call for regional relief assistance, if necessary. In the event that additional personnel are required, ODPM must secure resources through Task Groups. The contingency plan is stood down when the Director, ODPM declares that the event has moved into the recovery phase.

Government Body/Entity	Legislative Authority	Responsibilities
ODPM	Severe Weather Contingency Response and Recovery Plan	The CEO, ODPM is responsible for activating this Plan upon issue of a Severe Weather Advisory by the Meteorological Services if a Level 2 event or higher. In the event that additional personnel are required, ODPM must secure resources through Task Groups. The contingency plan is stood down when the Director, ODPM declares that the event has moved into the recovery phase.
ODPM	Tropical Storm/Hurricane Contingency Response and Recovery Plan	The Plan is activated by the Director, ODPM upon issue of a Hurricane Watch by the Meteorological Services; the ODPM must call an Emergency Task Force Meeting, secure the Information Officer from the Information Division and issue coordinated informational release and activate the EOC. In the event that additional personnel are required, ODPM must secure resources through Task Groups. The contingency plan is stood down when the Director, ODPM declares that the event has moved into the recovery phase.

Government Body/Entity	Legislative Authority	Responsibilities
Fire Services	Fire Services Act and Disaster/Emergency Standard Operating Procedures and Contingency Plan	The Fire Services are first responders to any event of disaster or emergency, regardless of the level of the event. Personnel from the Fire Service must staff the Field Command Post. For hazardous incidents, the most senior Fire Officer on duty is the Incident Manager in the Incident Manager System.
Fire Services	National Land Search and Rescue Plan; Earthquake Contingency Response and Recovery Plan; Severe Weather Contingency Response and Recovery Plan	Under each of these Plans, the Fire Service is responsible for initial SAR, pursuant to the Fire Services Act, Chap. 35:50 and Act 10 of 1997.
Fire Services	Mass Casualty Management Plan	The Fire Services, as a member of the protective services must inform the Police Service of the alert, and subsequently put the nearest hospital or rural Accident and Emergency centre on "local standby." The Service must then confirm whether the situation is truly a mass casualty event or whether the agencies should "stand down." The coordination of activities within the Command Post is the responsibility of the Chief Fire Officer.

Government Body/Entity	Legislative Authority	Responsibilities
		Where the event involves conflict, the protective services, including Fire and Police, will be in command, and the Defence Force will assist on request.
Police Services	Police Services Act and Mass Casualty Management Plan	The Police Services are first responders for all levels of emergencies and personnel from the Police Service must staff the Field Command Post. The Police Services, as a member of the protective services must inform the Police Service of the alert, and subsequently put the nearest hospital or rural Accident and Emergency centre on "local standby." The Service must then confirm whether the situation is truly a mass casualty event or whether the agencies should "stand down." Where the event involves conflict, the protective services, including Fire and Police, will be in command, and the Defence Force will assist on request.
Defence Force	Defence Act	The Defence Force supplements the protective services as needed during a state of emergency. Where the event involves conflict, the

Government Body/Entity	Legislative Authority	Responsibilities
		protective services, including Fire and Police, will be in command, and the Defence Force will assist on request.
Cadet Force	Cadet Force Act	The Cadet Force supplements the protective Services as needed during a state of emergency.
Environment Management Authority	Section 25 of the Environment Management Act	The EMA is empowered to undertake such emergency response activities, in consultation with the Minister of the Environment, to protect human health and the environment, whenever the Authority reasonably believes that a release or threat of a release of a pollutant or hazardous substance, or any other environmental condition, presents a threat to human health or the environment.
Water and Sewerage Authority (WASA)	Water and Sewerage Authority Act	WASA is responsible for monitoring and developing the waterworks, and administering the supply of water.
Trinidad and Tobago Electricity Commission	Trinidad and Tobago Electricity Commission Act	The T&TEC is responsible for the management and Operation of the works and for advising the Government on all matters relating to the

Government Body/Entity	Legislative Authority	Responsibilities
(T&TEC)		generation, transmission, distributed and use of energy.
Trinidad and Tobago Emergency Mutual Aid Scheme	Trinidad and Tobago Emergency Mutual Aid Scheme, Act No. 8 of 2000	The aims and objectives of this Act are: *(a)* to establish and develop mutual aid assistance in case of industrial or community emergency situations, natural or man- made; *(b)* to provide timely and organized assistance to cope with an emergency which is beyond the ability of the affected member to handle; *(c)* to sensitize and educate its members as well as the general public to disaster threats and the benefits of pre-incident planning; *(d)* to provide more efficient emergency response services for all members of TTEMAS; *(e)* to establish uniform operations and practices for use by members of TTEMAS; and

Government Body/Entity	Legislative Authority	Responsibilities
		(f) To encourage and promote Loss Control Procedures as they relate to hazards associated with industry.
Regional Health Authorities	Regional Health Authorities Act	The RHA has responsibility to provide efficient Systems for the delivery of healthcare in Trinidad and Tobago, in collaboration with relevant agencies, e.g. UWI and municipalities.
Ministry of Works and Transport		The MOWT is responsible for providing the Infrastructure and transportation services necessary for the social and economic development of the country. Its responsibilities include construction and maintenance of major highways and waterways, as well as management of traffic.
Ministry of Energy and Energy Affairs	National Oil Spill Contingency Plan	The MEEI is the initiating and coordinating agency responsible for spill prevention and emergency response planning in Trinidad and Tobago.

Government Body/Entity	Legislative Authority	Responsibilities
Energy Industries		Operating through the NOSCP. The National Controller is responsible for the proper implementation of the contingency plan based on initial and supplementary information on oil spill observations. The National Controller will evaluate the situation and take the necessary actions to activate key personnel in the Ministry and any of the response organizations to the proper state of alert. He will be in charge of the overall command and coordination of any oil combating operation and in particular, his responsibility will include; inter alia: a) Coordinating the overall supervision of the clean-up operation and the actions of various agencies in regard to the additional supplies of manpower, equipment and material. b) Periodically updating the NOSCP list of stock-piles resources so as to ensure that adequate protection is continually available.

Government Body/Entity	Legislative Authority	Responsibilities
		c) Commandeering, if necessary, the available resources from any group within the plan for the purpose of combating an oil spill. d) Assisting in expediting immigration passes for key personnel and custom clearances for other material resources arriving from external sources to be used for combating major oil spills. This activity however, is to be performed in liaison with, and under the direction of the Minister.
Seismic Research Centre, University of the West Indies	Earthquake Contingency Response and Recovery Plan	The Seismic Research Centre is the official source of information for earthquakes and volcanoes in the English-speaking Eastern Caribbean.
Meteorological Office	Severe Weather Contingency Response and Recovery Plan; Tropical Storm/Hurricane Contingency Response and Recovery Plan	The Trinidad and Tobago Meteorological Services is a Division of the Ministry of Public Utilities and Environment. Under both these Plans, the Meteorological Office issues notification of the relevant event to the ODPM, upon which the respective Plan becomes operational.

Government Body/Entity	Legislative Authority	Responsibilities
Tobago Emergency Management Agency	Tobago House of Assembly Executive Council Minute No. 64 of March 09, 1998 and Executive Council Minute No. 722 of October 2008	TEMA is responsible for coordinating the network of agencies and individuals within the island of Tobago to maximize efforts to preserve life and protect property in times of disaster. To this end, TEMA has as its aims: a) To establish and fully equip the Tobago Emergency Operations Centre, with the support of the Cadet Force 6th Battalion. b) To conduct educational programs in all aspects of Disaster Management throughout Tobago continuously. c) To conduct and facilitate annual training for all Task Force groups within the island of Tobago. d) To acquire and maintain a state of the art telecommunications network and information management system.

Appendix 2: UNISDR-DIPECHO Questionnaire

2a. UNISDR-DIPECHO Questionnaire indicating relevant sections

The guiding questions below include the options selected that are relevant to Trinidad and Tobago

Guiding Question	Variables	Criteria to be considered for decision making	Relevance
1. In the selected geographical areas, where there is a potential for destructive impact and/or a record of impacts, what are conditions that best describe the hazard and their monitoring?	a. Hazard/danger b. Record of impacts c. Monitoring of the hazard/danger	a. There are areas with recurring events, and there are records of previous impacts that have caused damages and losses, but do not have a map of the hazard (and/or danger) or forecasts based on probabilistic criteria.	
		b. There are areas with recurring events, and there are records of previous impacts that have caused damages and losses, there is a mapping of hazards and multi-hazards (and/or danger) or forecasts based on probabilistic criteria, but this information is outdated. An expert assessment is required to determine current conditions.	✓
		b. The historical and instrumental records do not show potentially destructive events, corroborated by the hazard (and/or danger) studies. There are zones with recurring	

Guiding Question	Variables	Criteria to be considered for decision making	Relevance
		events, and there are records of previous impacts that have caused damages and losses. There is a mapping of the hazard (and/or danger) or forecasts based on probabilistic criteria and with updated information.	
2. In the territorial areas selected, are there geo-referenced and territorially disaggregated records of frequent impacts of hazards related to seasonal events (droughts, floods or landslides)?	a. Geo-referenced records of impacts associated with seasonal events	a. There are zones without records of recurring impacts from seasonal phenomena. Recurring impacts are considered critical and high priority, although still without detailed studies.	
		b. Existing information but without territorially disaggregated information on the impact of disasters. The existence of this type of information is essential to improve the quality of decision-making.	✓

Guiding Question	Variables	Criteria to be considered for decision making	Relevance
		There is territorially disaggregated data, and work is being carried out with risk management scenari. os	
3. In selected territorial areas, are there studies and action plans on multi-hazard or trans-border hazard conditions, including extreme climate variability events such as the impacts of climate change?	a. Exposure to trans-border hazards, multi-hazards and impacts of climate change b. Impact scenarios c. Action Plans	a. Historical information and hazard studies show the existence of multi-hazard zones or areas, but integrated scenarios and studies are not conducted for multi-hazard, trans-border hazards and/or impacts of climate change. There are no action plans.	✓
		b. There are clearly identified trans-border hazards (hurricanes, floods in major basins, droughts, volcanoes, and others), as well as risk scenarios and impacts of climate change, but has no actions plans that respond to the identified hazards and studies.	

Guiding Question	Variables	Criteria to be considered for decision making	Relevance
		c. The multi-hazard, trans-border hazards and impacts of climate change are well identified both at trans-boundary and national and local levels, with corresponding scenarios and action plans.	
4. In the selected areas, what are the characteristics of environmental degradation in areas with historical impacts or influenced by hazards?	a. Interaction of environmental degradation (*) and hazards (*) For the purposes of these Guidelines, environmental degradation will be understood as the actions that produce impacts such as deforestation; inadequate watershed, wetland and slope management; water	a. Environmental degradation (*) presents high indicators of impairment that generate severe impacts and can interact with the hazards, increasing the exposure and vulnerability of the population.	
		b. Environmental degradation (*) can be severe but management measures are applied that reduce the negative impacts and interaction with hazards (decreased exposure and vulnerability), or environmental degradation is not severe and its interaction does not generate increased exposure and vulnerability.	✓

Guiding Question	Variables	Criteria to be considered for decision making	Relevance
	stress (including water for irrigation and livestock); soil erosion, poor waste and pollution management.	c. Environmental degradation (*) produces low impacts, indicators are below national/regional averages. There is no interaction between the impacts of environmental degradation and the hazards. There is a significant investment to improve environmental conditions, producing a decrease in exposure and vulnerability.	
5. What is the composition of the population in terms of their socio-economic conditions and their exposure to hazards in the selected area?	a. Socio-economic situation of the exposed population	a. Socio-economic indicators (**) are predominantly low in exposed populations (over 50 % of the population in the selected area). (**) Indicators will be selected based on those identified in the Development Plan in force in each country, considering at least some indicators of poverty, health and education.	
		b. The socio economic indicators selected (**) are low for 20 % to 50 % of exposed populations.	✓

Guiding Question	Variables	Criteria to be considered for decision making	Relevance
		c. The socio-economic indicators (**) are low for less than 20 % of the exposed population.	
6. In the selected territorial area, what are the essential conditions and access to services, and which are exposed to hazards?	a. Access to basic services (***) b. Exposure of essential services (***) (***For the methodological purposes of these Guidelines, the essential services will be defined by consensus of the participants in the evaluation, however the following should be considered: water, health, sanitation, communication and road network)	a. The population without access to essential services (***) exceeds 50 % in areas exposed to hazards from the selected areas. Essential services are highly vulnerable and have high exposure to identified hazards.	
		b. The population without access to essential services (***) Is between 20% and 50% of the population in areas exposed to hazards from the selected areas. Essential services are vulnerable and exposed to the identified hazards, but actions are being developed for their management. The percentage of the population without access to improved sanitation infrastructure, to improved water sources and communication channels is equal to or less than the national/regional average.	

Guiding Question	Variables	Criteria to be considered for decision making	Relevance
		c. The population without access to essential services (***) is less than 20% of the population in areas exposed to hazards from the selected areas. Essential services are less vulnerable and exposure to the identified hazards is less.	✓
7. In the selected territorial area, what are the conditions and the implementation of the regulatory framework related to the Risk Management and Environmental Management, especially in those areas exposed to hazards?	a. Implementation of the Regulatory Framework b. Accountability mechanisms for DRM and Environmental Management	a. There is no enabling regulatory framework for DRM or for Environmental Management in the selected territorial area (or national, regional or local regulatory framework), especially when: (i) there is no legislation governing the use and safe and orderly occupation of the urban and rural territory, (ii) not regulated protection and watershed management, ecosystems, slopes and overall atmosphere, (iii) the building and planning codes for reducing risks are not applied There are no formal accountability	

Guiding Question	Variables	Criteria to be considered for decision making	Relevance
		mechanisms by State agencies for Risk Management and Environmental Management.	
		b. There are enabling regulations for Risk Management (safe and orderly use and occupancy of urban and rural territory, protection and management of watersheds, slopes, ecosystems and environment, building and planning codes to reduce risks), but low or emerging implementation. Formal accountability mechanisms by State agencies are not implemented for Risk Management and Environmental Management.	✓
		c. There are enabling regulations for Risk Management (safe and orderly use and occupancy of urban and rural territory, protection and management of watersheds, slopes, ecosystems and environment, urban planning and building codes to reduce risks) and for environmental management implementation is effective in the	

Guiding Question	Variables	Criteria to be considered for decision making	Relevance
		selected territorial area. Formal accountability mechanisms by State agencies are implemented for Risk Management and Environmental Management.	
8. How are the processes of use, occupation and transformation of land in urban areas exposed to hazards in the selected territorial areas?	a. Use, occupation and transformation of territory at the urban level in areas exposed to hazards b. Control mechanisms for the occupation, use and transformation	a. There is a high and increasing occupation of urban areas at risk (over 30% of the population of the analysis area) without planning processes or control over the implementation of the urban and rural land use planning regulations. Lack of physical control mechanisms for the occupation, use and transformation of urban landscape.	
		b . Moderate occupation of at-risk urban areas (between 5 % and 30 % of the population in the selected area) without planning processes or control with an increasing trend towards (unsafe) squatting in hazard-prone urban and suburban areas subject. Regulations and monitoring	

Guiding Question	Variables	Criteria to be considered for decision making	Relevance
		mechanisms are only partially implemented.	
		c. Little occupation of at-risk urban areas (less than 5 % of the population in the selected area) and with effective control processes and mechanisms for urbanization and future population settlement.	
9. Are there capacities and decentralized structures for emergency and disaster response appropriate for existing hazards in the selected area?	a. Emergency and disaster response capacities	a. Areas with recurrent events and/or at high risk of disaster lack structures for preparedness and response, or these are emerging and have limited capacities (there are no integrated response plans or institutional and community-based preparedness plans).	
		b. Institutional response structures are present but lack plans, their capacity is limited to certain institutions but not integrated into the system. Community and institutional preparedness for emergencies and/or disasters exist in some institutions and communities.	✓

Guiding Question	Variables	Criteria to be considered for decision making	Relevance
		c. A coordinated and participatory structure operates as part of the national system with deconcentrated and decentralized structures, community and institutional preparedness for emergencies and/or disasters is part of the system.	
10. Mechanisms for coordination of local governments (consortia, associations and commonwealths) based on basins, ecosystems productivity, etc. are in place in the selected area?	a. Coordination Mechanisms of local governments for DRM and Environmental Management	a. There are no coordination mechanisms of local governments in place for DRM and Environmental Management.	
		b. Coordination mechanisms of local governments are in place but not include DRM and Environmental Management among their priorities.	
		c. There are municipal associations or commonwealths in place that have coordination mechanisms for DRM and Environmental Management.	
11. What are the conditions of the resources for	a. Resources for response	a. Governments do not have the funds, resources and/or streamlined and timely administrative processes for	

Guiding Question	Variables	Criteria to be considered for decision making	Relevance
preparedness and emergency or disaster response/ management of relevant governments in the selected territorial areas? (Processes may be implemented by the central government)	b. Structured processes for response	the preparedness and management of/response to disasters or emergencies.	
		b. There are legal frameworks in place that enable the allocation or reallocation of resources once a disaster or emergency has occurred; access to resources is not streamlined or administrative processes are ineffective.	✓
		c. Governments have funds and streamlined and timely administrative processes for preparedness and management/response to disasters or emergencies.	
12. What is the status of early warning and monitoring systems that enable the analysis, monitoring and generation of timely information for decision-making and notifying communities about hazard	a. Status of early warning and monitoring systems (EWSs)	a. Areas of recurring impact or high exposure do not have early warning and monitoring systems in place; gaps in coverage and information delivery delays.	
		b. There are early warning and hazard monitoring system(s) in place, but they lack a multi-hazard approach and/or they are not linked to the National Early Warning System, if	✓

Guiding Question	Variables	Criteria to be considered for decision making	Relevance
conditions in the selected area?		any; no clear criteria for management and territorial prioritization for proper and timely dissemination of warning or appropriate and timely information.	
		c. There are multiple coordinated warning and monitoring systems and/or a consistent and proper warning system, providing full coverage in the selected area that includes multi-hazard criteria and is integrated to the National Early Warning System with effective mechanisms for disseminating appropriate and timely warnings and information.	
13. Are there appropriate legal frameworks for DRM? What is the state of implementation of these national, sub-national or local instruments (laws, regulations, decrees, etc.)?	a. Validity of the legal frameworks b. Implementation of legal instruments for DRM	a. Non-existent regulations and legal instruments for DRM or their validity is not consistent with national and international legal frameworks. Legal frameworks may exist in the said conditions, but they are not implemented.	✓
		b. Regulations and legal instruments exist for DRM, consistent with national and international legal frameworks, but they are not	

Guiding Question	Variables	Criteria to be considered for decision making	Relevance
		implemented.	
		c. Regulations and legal instruments exist for DRM, consistent with national and international legal frameworks and are duly implemented.	
14. What are the characteristics and conditions of inter-agency structures (platforms, management committees, coordination meetings, etc.) for coordination and decision-making in the selected area?	a. Characteristics of the coordination structures for DRM	a. There are no inter-agency structures linked to form a coordination and participation system, platform or body.	
		b. There are inter-agency structures linked to form a coordination and participation system, platform or entities, but its activation, capacity and work are limited and temporary (often activated only in case of emergency) .	✓
		c. There are inter-agency structures linked to form a coordination and participation system, platform or entities with sound institutional capacities and ongoing operations.	
15. What are the characteristics of the	a. Sectoral capacity for	a. Critical sectors have not assumed roles and responsibilities for DRM.	

Guiding Question	Variables	Criteria to be considered for decision making	Relevance
sectoral capacity (regulation, technical and resources) in the selected area? (Sectoral is understood as the ministries, public companies, institutions, etc.)	DRM	b. There are some sectoral institutions with internally assigned Risk Management responsibilities and specific planning but limited in terms of DRM as an comprehensive process of territorial development or focused primarily on the disasters or emergencies.	✓
		c. Sectoral bodies have assumed their roles and responsibilities with a vision of DRM as a key and integrated component and have the structure, experience and good practices for Disaster Risk Management.	
16. What are the characteristics of the legal bodies for the deconcentration of DRM towards territorial governments?	a. Legal deconcentration of responsibility towards local governments	a. There is no legal framework for DRM, or policy instruments that allocate responsibilities and resources to territories or local governments.	
		b. There are legal bodies that clearly define the responsibilities and powers of territorial authorities, however, they are unknown to the authorities, are not implemented and/or resources are not allocated.	

Guiding Question	Variables	Criteria to be considered for decision making	Relevance
		c. Advanced level of decentralization including the responsibilities of sub-national governments in risk management and the allocation of resources.	✓
17. What is the degree of integration of scenarios about the impacts of climate change in the Risk Management Strategies of the selected area?	a. Integration of climate change scenarios in DRM strategies	a. There are no scenarios for the impacts of climate change.	
		b. There are scenarios about the impacts of climate change, but they are not coordinated or integrated into the risk management strategies.	✓
		c. There are scenarios about the impacts of climate change in Risk Management strategies.	
18. What is the status of mechanisms for risk trend analysis, and its relation to similar observatories or similar mechanisms for the analysis of development trends in the selected area?	a. Status of the risk analysis mechanisms and relationship with the analysis of development trends	a. There are no such mechanisms. There are no trend analysis, forecasts or risk scenarios.	
		b. There are mechanisms for risk trend analysis, but they are not linked to the development analysis and observatories	✓
		c. There are mechanisms for the analysis of development, the environment and risk and	

Guiding Question	Variables	Criteria to be considered for decision making	Relevance
		integrated scenarios of development trends are being developed.	

Appendix 2 b:

Notes made on guiding questions

QUESTION	COMMENTS
2	There are geo-referenced and territorially disaggregated. There are records of frequent impact in Tobago, not Trinidad.
3	Only the latter part is correct.
9	Tobago has response kit embedded in communities.
13	There are several policies and strategies (National wetland policy, hillside policy) fashioned through national and international conventions and policies, but not enough implementation.
16	Ministry of Planning has devolved planning autonomy to the local level via the Planning and Facilitation of Development (PAFD) Bill. This enables the local authorities to be able to encompass its own strategies within Local Area Planning for their municipal regions.
17	Need better scenarios and integration. No evidence of adaptation.

Appendix 2c

Overall Results of the DRR Prioritization based on the UNISDR-DIPECHO Questionnaire

Focus Areas	Categories	Ref Questions	Red (A)	Yellow (B)	Green (C)
Risk	1. Historical records of hazards, exposure and disasters	1			
		2			
		3			
Management	2. Drivers of risk	4			
		5			
		6			
		7			
		8			
	3. Current risk management capacities	9			
		10			
		11			
		12			
	4. Enabling regulations	13			
		14			
		15			
		16			
	5. Trends and future prospects	17			
		18			

Appendix 3: Key DRR Initiatives

(MNS/ODPM Archives, 2015)

Key DRR Programmes/Initiatives- ODPM	Outcome	Outputs	Implementation Period
GOVERNANCE AND LEGISLATION			
Disaster Management Policy and Plan Program	• This program provides a toolkit of policies and plans necessary for managing disaster risk of Trinidad and Tobago.	• Hazard Mitigation Plan and Policy • 4 Sector-based stakeholder meetings held	**January 2014 – Present**
Mausica Project : Construction of NEOC Building (US SouthCOM Funded)	• In keeping with international best practice and standards, the GORTT with support and funding from the US Southern Command will undertake the construction of a stand-alone National Emergency Operation Center at Mausica. The purpose of this new facility will enable the National Disaster Office (ODPM) and its key emergency support functions to improve and strengthen the country's	• Relevant site construction approvals obtained Site preparation works completed (electricity, water, fencing, site paving, billboard erected, waste water system)	**July 2011 - Present**

	capacity to coordinate Level 2-3 emergency and disaster situations.		
Development of Comprehensive Disaster Management Legislation	• Evaluate existing policies/ legislation/ acts; design appropriate regulatory framework for T&T. Goal: legislative authority to facilitate ODPM coordination	• Preparation and submission of CDM policy document to Cabinet • Completion of Preliminary draft Disaster Management Bill	**April 2011-Present**
Office of Disaster Preparedness and Management (ODPM) Training Project	• Aimed to reinforce and develop the capabilities of the ODPM and its partnering agencies allowing effective coordination of response and recovery in the aftermath of disaster. The project hopes to encourage an exchange of experience and knowledge amongst those involved in disaster management as well as to improve coordination of disaster response and the quality and availability of disaster management tools.	• Project is currently in the initiation phase. The development of the project charter and project plan are underway.	**October 2014 – Present**

READINESS			
Disaster Relief Warehouses Project (US SouthCOM Funded)	• With support and funding from the GORTT and the US Sothern Command, this project is aimed at constructing 5 disaster relief warehouses / stores in strategic locations throughout Trinidad and Tobago towards improving the GORTT's ability to mobilise and deliver critical relief supplies to disaster impacted areas.	Identified potential locations	**July 2012 - Present**
Safer Building Program - Shelter-In Place at Sangre Grande Government Primary School (CDEMA / FAO / Brazil Funded Project)	The Caribbean Disaster and Emergency Management Agency (CDEMA) through the Brazil/ CARICOM/ FAO Cooperation Program "living schools" initiative allocated $20,000 USD to CARICOM participating states in order to strengthen national disaster risk management in schools/ shelters. A pilot school: Sangre Grande Government Primary was selected to become a model shelter in times of disaster.	• Conducted an assessment of the Sangre Grande Government Primary School • Stakeholder engagement, sensitization and approvals- Ministry of Education , Ministry of Works and Infrastructure, Ministry of People and Social Development • Proposed and implemented retrofitting techniques	**February 2012 – Present**

		• Proposed and conducted capacity building training • Handover and project completion	
Telecommunications Project	• Evaluation of the current in house communications system in the Radio Room and NEOC has revealed the need for upgrades to be undertaken. • To improve the standard of our existing radio communications and enhance voice and digital communication capabilities.	• Project is currently in the initiation phase. The development of the project charter and project plan are underway.	**October 2014-Present**
The establishment of a National Exercise Day: • **Exercise Dark Wave 2014 Improvement Implementation Project** • **Exercise 2015**	Aimed at enhancing the nation's response capabilities and interoperability with local, regional and international humanitarian assistance agencies.	• Project is currently in the initiation phase. • Recommendations of areas to be tested are being taken from ESF agencies to aid in the planning of Exercise 2015.	**March 2014 – Present**

Disaster Resiliency Centre	• This Centre intends to serve the needs of both islands and by extension, the Caribbean Region, through the provision of functions and services engineered to strengthen readiness and response. This facility will geographically and programmatically integrate regional disaster planning and response resource services, advanced training and technology development for stakeholders such as, first responders and emergency managers.	• Developed Concept Note • Cabinet Approval to proceed with project • Developed Project Schedule • Conducted Research	**December 2013 – Present**
Caroni River Basin Delft-FEWS (Flood Early Warning System)	Produced a data management system that can synchronize data from different agencies, validate the data and perform its operations to produce an early flood warning.	As system is operational, the following responsibilities are being carried out : • Water Resources Agency - host the Delft-FEWS and provide hydrological data • Trinidad and Tobago	**2012 - 2013**

		Meteorological Service - provide telemetry data and forecast data • Office Of Disaster Preparedness and Management - disseminate the early flood warnings to the key stakeholders	
Communities Organised and Ready for Emergencies – Phase 1 "Flood Smart"	• Residents were more knowledgeable of ways to reduce the risks of flooding and to mitigate the adverse effects of flooding • Residents were better prepared for the rainy season and the threats of flooding • Community leaders were more knowledgeable on ways to prepare for and respond to other hazards in Trinidad and Tobago • Communities with high risk became aware of persons/groups that can be	• # of High Risk Communities visited as of December 31st 2011 - 22 # of persons interviewed and assessed of preparedness levels - 333	**2011**

	contacted before/during/after a flooding event or hazard impact • Community members were more aware of the closest shelter to their homes as well as other shelters in the area • There was an overall increase in the awareness of the ODPM's role, in relation to first responders and other agencies.		
Communities Organised and Ready for Emergencies – Phase 2 "Building Better and Safer"	• Community members are more aware of the role of ODPM, first responders and other agencies. • Residents more knowledgeable on ways to prepare for and respond to other hazards in Trinidad and Tobago including locating shelters, retrofitting their homes, key contacts. • Communities were more	24 communities visited	**2012**

	aware of persons/groups that can be contacted before/during/after a hazard impact • Communities more aware of the closest shelter to their homes as well as other shelters in the area		
Communities Organised and Ready for Emergencies (C.O.R.E.) – Phase 3 "Vulnerable Populations"	At the end of the third phase of the C.O.R.E. Program, communities should be: • Able to create and test their own family emergency plans • Aware of how to plan for persons with special needs • Aware of persons/groups that can be contacted before/during/after a hazard impact • Aware of the closest shelter to their homes as well as other shelters in the area • Greater awareness of the role of ODPM, first	• 24 communities visited Hosting of a Special Needs Population Workshop	**2013**

	responders and other agencies. **Outcomes for the ODPM** • Data collected and recorded on the locations of Special Needs centres • Train the trainer sessions on using GPS equipment with CERT members and volunteers, as well as survey tools administration techniques. • Updated emergency/evacuation plans for Special Needs Centres Creation of Special Needs Database		
Communities Organised and Ready for Emergencies – Phase 4 "Assisting Communities through Initiative Vulnerability Exposed"	• Building resilience of the Special Needs Population • GIS Mapping of Vulnerable communities Testing levels of preparedness through follow up visits to	• Distribution of Medical Beds to Mentally disabled populations • Distribution of 25 wheel chairs to elderly differently abled persons	**2014-Present**

	communities who were already given the preparedness survey.	Visit to Elderly Homes and distribution of relief supplies for over 100 elderly persons and 60 hearing impaired students on IDRR Day 2014 (ongoing monthly outreach activities)	
Let's Get Ready – Public Awareness Multimedia Campaign (R)	• Increase the visibility of DRM through all mediums • Improve ODPM's organizational imaging and a brand of cultural resiliency Support a mechanism to improve crisis communication outflows through innovative and technological methods in the realm of social media	• Creation of the CORE Tv Series featuring hazard preparedness and building a culture of resiliency • Promotion of a Customer Care number 511 Call Centre • Development of Social Media Platforms for Early Warning and public awareness. • Creation of an ODPM App	**2011-2014**
National Volunteer Program (R)	• Increase human resource capacity of the ODPM to assist in times of disaster. • Provide technical training to skilled individuals in the DRM field and mainstream DRM into various sectors.	• Over 300 individuals trained as skilled ODPM volunteers • Expansion of the Volunteer Database by increasing Inter-governmental partnerships with the Ministry of Youth and Gender to develop the	**2012-Present**

	• Build a culture of resiliency by allowing volunteers to transfer knowledge learnt by the ODPM to community leaders after certification.	ODPM's volunteer base by :- 1) Conducting DRM training with existing volunteers in this Ministry. 2) Creation of Junior Volunteers by issuing training to existing Youth Groups in this ministry, guided by the nation's Youth Policy.	
RRMC Pilot Project (UNDP-CRMI Funded)	To adapt and implement the Cuban RRMC model to Trinidad & Tobago's context, in order to improve local level risk reduction capacity , particularly in the area of managing and utilizing risk information	• Community Drill exercise • Execution of RRMC Drill (Testing & Evaluation) • Publication of RRMC Toolkits for GIS and Early Warning (Knowledge Sharing; roll out support) • Newspaper (Public Awareness & info)	**February 2011 – December 2013**
	RISK REDUCTION		
Mainstreaming DRR into Sectors	• This project will entail the implementation of the proposals made under the	• Developed Implementation Strategy	**March 2012- Present**

	National Institutional Capacity Assessment (NICA) component under the Inter-American Development Bank (IDB) Project.	• Stakeholder Engagement • Draft Implementation Review Report	
Capacity Development for Disaster Risk Management (UNDP Funded Project)	• The project is aimed at contributing towards (a) Component 1 : improving the DRM framework of Policies, Strategies and Operations in at least 4 sectors or Ministries and (b) Component 2 : assisting in the development of a well-functioning disaster risk management public education and emergency communication system	• Component 1 : Complete National assessment, mapping and ranking of Critical Infrastructure • Component 1 : Developed Standard Operating Procedures for domestic facilitation of International Humanitarian Assistance (IHA) • Component 1: Implemented Disaster Risk Management (DRM) Capacity Development Programme in Ministries • Component 1: Developed sectoral DRM Policy framework for at least 4 Ministries • Component 2 : Strengthened Emergency Communication	**February 2011-June 2014**

		System	
National Risk Assessment (IDB project)	Project involves: • Engagement of consultants • National Risk Assessment • Institutional Capacity Assessment • Establishment of 3 Community Emergency Response Teams (CERTs).	• Risk Asst: IDB reviewing Expressions of Interest. • CERT: ODPM awaiting IDB's No Objection to contract John Sylvester. DRM Specialist: Final TOR passed to CEO's office to procure.	**February 2011 – Present**
Development of Hazard Database	Developed and implemented a system of acquiring and storing hazard-related data. Included: • Collection and collation of hazard information from 2000 to date (2 phases 2006-2011 AND 2000-2005) • Development of Memoranda of Understanding (MOUs) with stakeholders for hazard data	• Historical Hazard Data Collection - 2011 -2006 completed • Meeting held on December 21st 2011 to discuss data/info collection and sharing workflows. • Feedback reviewed and shared on revised incident report form. • Meeting held Tuesday 10th January with Ministry of	**January 2011 – Present**

	• Acquisition of tools and training to support in-house data collection initiatives • Development of short term repository – Access Database, as a precursor to Hazard Information System	National Security resource on way forward with hazard database solution - proposed start March 2012. ODPM provided more detail in interim - attribute definitions and status, and drop down list info.	
Emergency Fund	Aimed at setting up a contingency fund for emergencies.	• Project is currently in the initiation phase. • The development of the project charter and project plan are underway. • Discussions with Ministry of Finance are to be scheduled for further information on developing policy for fund.	**October 2014 – on going**
Climate Smarting and Enhancement of the CDM Country Work Programme – Trinidad and Tobago. **(The Office of Disaster Preparedness and Management (ODPM) in collaboration with the Caribbean Disaster and Emergency Management Agency (CDEMA))**	A finalized Comprehensive Disaster Management (CDM) Country Work Program (CWP), with measureable indicators and realistic targets, which can be processed through the relevant channels for	• Review of the current Country Work Program and enhancement; • Group work enhancement of CWPs outcomes and outputs;	**15/16 September 2014**

	endorsement by the Government of Trinidad and Tobago.	• Group work on CWP performance indicators • An overview of the Guidance Tool for mainstreaming Climate Change Adaptation; • Climate change impacts on Trinidad, identification of adaptation options and entry points in the CWPs	
Preliminary Vulnerability Assessments	• Prepared Preliminary Vulnerability Assessments on Trinidad's 14 Municipalities and Tobago.	• Completion of PVA's • Internal stakeholder review completed	**January 2011 – December 2013**
Risk Information Management System	• Create mechanism and interface to support effective and efficient hazard/disaster information management throughout the CDM cycle. Intended to ensure key information is available to stakeholders for informed	• Gap Assessment • Disaster Information Hazard Data Management Strategy and Action Plan • System Requirement Specification (SRS) document	**July 2013 – Present**

	decision making and to support hazard/disaster info needs throughout the CDM cycle, including mitigation planning, operational readiness and response.		
Capacity Development for Disaster Risk Management (UNDP)	• Effective public participation of governance structures at all levels Enhanced level of human security	• Improved Disaster Risk Management framework of policies and strategies drafted for at least two sectors of ministries • Well-functioning emergency communications system	**2011-2016**
Risk Reduction Management Centres (RRMC) Pilot 2013-2014	• Expanded network of risk information hubs/resiliency centres • Community based EW capacity in pilot area strengthened • Improved capacity for use of GIS as a tool for collecting, managing and utilizing hazard, risk and vulnerability info • Increased local DRR due to established RRMC • South-south cooperation experience in adapting the RRMC model shared widely • Performance of the local	• Established and operationalized local Mayaro Rio Claro RRMC and two (2) Early Warning Points (EWPs) • Outfitting & equipping of the 3 physical sites • Approx 60 local persons trained; 2 technical Training Workshops conducted – GIS and Early Warning • 2 toolkits (GIS & EW) developed which include training material, recommended SOPs, communications plan, visual aids, awareness material etc	**Jan 2013-April 2014**

	RRMC monitored and evaluated in order to identify gaps and recommendations for improvement • RRMC Baseline established • Improved Coordination & Mainstreaming between local and national levels • Community Impact (approx. 60 locals trained in GIS and EW). • Strengthened stakeholder relationships	• GIS Implementation at Mayaro Rio Claro DMU site - Introduction of basic GIS at the MRCRC Disaster Management Unit (DMU) – use of GPS and open source software, specific application for basic hazard mapping • Cuban Technical Assistance Mission conducted • Drill exercise conducted (field simulation) • All quarterly progress reports and monitoring reports completed and submitted • Knowledge sharing & exchange activities conducted	
Safer Schools Program	• To train teachers and principals in Emergency/Evacuation training • To promote safer schools by conducting presentations and lectures on Disaster Preparedness • Develop a competitive	• Creation of a disaster shopper game • Creation of a Kid's Activity Book • Creation of E Book Version of Kid's Book	**2011-Present**

	environment for promoting and learning about DRM through a National School Quiz.

Key DRR Programmes / Initiatives-TEMA	Outcome	Outputs	Implementation Period
Special Needs	Information gathered to ensure that in a state of emergency, all special needs individuals in Tobago will be accounted for and properly and safely evacuated in need be.	• Activity was conducted to determine the level of resilience that is existent within the Tobago communities. • The needs of challenged citizens were also determined. • Uniformed CERT Technicians were identified and carried out interviews from house to house to gain information about the condition of homes and their environment. • In 2011 a survey was conducted and geo-mapping was added to obtain GPS coordinates. • The Tobago Emergency Management Agency has begun its **Special Needs**	**2007-Present**

Key DRR Programmes / Initiatives-TEMA	Outcome	Outputs	Implementation Period
		Registry Update in 2014.	
Rebranding of CERT	This allows for certified professionals which contributes to predictability and sustainability of the program	• Increase of forty technicians • One hundred and twenty seven persons wrote the exam • Certified professionals	**2014**
Mission mode	• Emergency notification software allows for quick dissemination of alerts (Only for VVIP and emergency responders [not for public])	• Software works through email, SMS, fax, phone calls	**2012-Present**

Appendix 4: Country Work Programme

Country Work Programme

Trinidad and Tobago April 2011- April 2016

	Specific Link to CDM Strategy - Outcome	Country Work Programme Output	Activities	Performance Indicator	Responsibility	Resources Needed (Value XX$)	Start date	End date	Comments
OUTCOME 1: Strengthened institutional arrangements for Comprehensive Disaster Management implementation at national and regional levels									
1.1	CDEMA, CU and NDO strengthened/restructured for effective support of the implementation, monitoring and evaluation of CDM in Participating States	1.1 a. Transformation of ODPM/NDO to a CDM Authority 1.1 b. National CDM program developed	1. Draft Legislation Developed and Presented 2. Executive Coaching/ODI implemented 3. CDM Proposal Presented for approval	1. % Increase in National Engagement Requests for ODPM/CDM Implementation [Total Current year (Y_C) -Total last year (Y_L)] ÷ Total Last Year (Y_L) 2. % Rate of Progress with Legislative Process (Draft, Review, Cabinet, Public and Sector Consultation, Parliament/Senate, President, Proclamation/Gazette, Enactment, Regulations, Enforcement) {Hrs of Progress/Total Hours for Enforcement} 3. % Entities with CDM Program Elements Embedded or Specific – Class III *	Ministry of National Security ODPM GoRTT	$5,000,000.00	April 2011	April 2015	Class I – DRR/CCA Entity with CDM embedded in its work programs and/or strategic plan, and mission, with funding allocated Class II – As above, with Gender, ICT, Special Populations and Climate Change factored in ALL programming Class III- As above, with MER and Public Outreach/Education Programs and with Sustainable Metrics incorporated

				[# ClassIII ÷ Total Class III) 4. % Team Members aligned to Mission of ODPM [# Team Members ÷ Total Team Members]					
1.2	CDM is integrated into national policies, strategies and legislation by Participating States								
1.3	Partners programming aligned to national/country and regional CDM programming and priorities in the Caribbean Region	**1.3 a.** All Ministries/Authorities/Agencies/Divisions of Government have active CDM programs 1.3 b. National Strategic Plan includes CDM 1.3 c. Sector (Public, Private/Business and Civil) include CDM in Strategic Plans, Policies and Procedures	1. Meetings with All Ministries Permanent Secretaries – CDM implementation 2. Continuous engagement with GoRTT via NDRCC 3. Ministries/entities encouraged to integrate CDM into core responsibilities and functions via structured meetings /correspondence /standing committees/programs e.g. IDB, UNDP etc. 4. Review all Strategic Plans for Sectors	1. % Increase in GoRTT plans, policies and procedures that includes CDM [Total Y_C – Total Y_L] ÷ Total Y_C] 2. % Increase in ODPM Continuously/ Daily- Monitored Media CDM-Related GoRTT Events/Publications/ Releases, announcements, programs etc. [Total Y_C – Total Y_L] ÷ Total Y_C] 3. % Increase in GoRTT Engagement with ODPM via CDM related requests for reviews, assistance, correspondence, invitations, coordination	GoRTT/ODPM	$1,500,000.00	April 2011	April 2015	Plans are posted on GoRTT websites/published and circulated continuously NDRCC is an extension of the National Platform that is being led by private sector and has a large number of sectors involved in monthly meetings- 480 hours/year – target The ODPM monitors on a daily basis all the media events and postings of CDM related issues etc. on all media including social media as well as its 24 hour 511 Customer Care Centre and its National Operations Centre (NOC) 24 hour

				or supervision etc. of programs [Total Y_C – Total Y_L] ÷ Total Y_C]					situational awareness function Daily correspondence is received by ODPM for assistance with public events, presentations, standing committees, program implementation, from Government agencies – e.g. to assist with CECs and Environmental Impact Assessments (EIAs) from Environmental Management Authority) EMA/Ministry of Environment and Water Resources
1.4	Effective and efficient coordination for preparedness, response and recovery at the national and regional levels								
1.5	Resources for CDM reflect the level of need of CDEMA Participating States and CDEMA CU	1.5 a. National Response Framework (NRF) 2013 implemented in all sectors	1. Manage, Implement and Roll out of new NRF in all Emergency Service Functions (ESFs) and Disaster Management Units (DMUs) -	1. % TTEs+Drills/yr/sector with Level I alignment * [# Exercises ÷ Total Exercises /year/sector Required 2. % Increase of Engagement with ODPM of each sector/year [# Hrs Engagement Y_C – Total Hours Y_L] ÷ Total Hours Y_L /sector	GoRTT/MNS/ODPM Ministry of Local Go ernment Ministries of Government Private Sector Civil Society	$5,000,000.00	April 2011	April 2015	* - Level I alignment must include the following: - Adherence to National Drill/TTE standard published by ODPM - 60-75% of all Functional Areas in the following tested/annually – • BCM • Evacuation • Egress • Mass Casualty Management

				e.g. ESFs (30 ESFs) # Hours of Engagement Required for 30 ESFs = 30 x 20(mth) x 12 (yr) = 7200 hr/ESF/yr Current Year =2500 Last Year = 2000 Increase 500 % Increase = [500 ÷ 2000] x 100 = 25% Based on a yearly requirement of 7200 hours of engagement (training, joint exercises, assistance with programs, planning projects, meetings etc.) there is an increase of 25% - allows for improved coordination for DRM					• Crisis Communication • Contingency Plans Earthquake, Fire, Tsunami, Flooding etc. Level II – 40%-59% of Functional Areas tested as above Level III – Less than 39% of functional areas tested Total # TTEs/Drills calculated/ sector e.g. Government Sector – 41 Ministries/35 State Agencies and affiliated entities – 110 GoRTT Entities 660 drills per year
		1.5 b. National Emergency communication policy implemented and tested amongst all national and local DRM entities 1.5.c. Private and Civil sector included in all DRM activities at National and Regional Levels 1.5 d. Establish and Test Continuity of	2. Manage the process of standardization of all communication tools and strategies for emergency management – e.g. Web EOC; IP Phones, Radios, SAT COM, Social Media, Crisis Communications, National Alert State Policy, EWS/PWIS. National Incident Management System (NIMS) etc. 3. Regular Table Top (TTE) Exercises, Drills and Exercises for all sectors and	3. % of Random + Scheduled Communication Tests/Sector/year 40 Random/year/sector 40 Scheduled/year/sector 4. % Average Increase in Sector Engagement/year % Increase in [NDRCC+ CORE+ ODPM REQ +					Civil Society/Private Sector/Business Sector Engagement/Hrs/Year (i) NDRCC -480 hrs/year (ii) CORE – programs 120 hr/year (iii) Requests to ODPM by any form of correspondence for any CDM Related engagements – 12-24 /year (iv) Meetings/Lectures/Workshops/ Fairs/Bazaars/functi

		Government (COOG) Protocols	DMUs and ESFs 4. Improve the ODPM/National Operations Centre (NOC) Liaison Functions to include COOG continuous monitoring and evaluation	MEETINGS+ MEDIA] ÷ 5					ons and events e.g. sports etc. 36 hrs/year (v) Publications/Media releases/events – 20-50/yr
OUTCOME 2: Increased and sustained knowledge management and learning for Comprehensive Disaster Management									
2.1	Regional Disaster Risk Management Network for informed decision-making at all levels improved	2.1 a. Develop Centres of Excellence (COS) within Relevant Ministries/Sectors/Agencies for CDM	1. COSs identified and established throughout Trinidad and Tobago and Sub-Regional Focal Point (SRFP) countries- Guyana, Suriname and Grenada	% Progress of COS – [Identification NDRCC/ODPM Stakeholder Alliance Consultation, Land Acquisition, Statutory Approvals, Estimates, Funding Approvals- PSIP-Cabinet-, Tenders, New and Existing systems - processes, plans and procedures development, roll-out, retrofitting, implementation of work programs, MER, sustainable metrics developed] = Hrs/year	MNS/ODPM	$120,000,000.00	April 2013	April 2018	COS sites: 1. Mayaro – Interoperability Props – Community Based Drills etc. 2. Cumuto – National Security Training Agency 3. Ministry of Environment and Water Resources – Climate Change 4. University of West Indies – GIS and CDM courses 5. University of Trinidad and Tobago –DRM and BCM/BCP 6. Ministry of Public Administration – BCM 7. Ministry of People 7 Health - Rehabilitation CDM 8. Ministry of

									Housing/Community Development/ Trade and Investment/Transport/ Tourism, Works and Infrastructure, Local Government – Reconstruction 9. TTMET/UWI Seismic
2.2	Infrastructure for fact-based policy and decision making is established//strengthened	2.2 a. ODPM Headquarters Enhanced 2.2 b. COS established in Mayaro	1. ODPM HQ to be completed by 2016 2. Approvals and Plans drawn and approved for COS and ODPM 3. Funding with PSIP established	1. % Progress of ODPM HQ	MNS/ODPM	$75,000,000.00	April 2012	April 2016	Infrastructure development and Land Preparation Stage – 2014 ~ 40% of total progress in hours
2.3	Incorporation of local/community and sectoral based knowledge into risk assessment improved	2.3 a. Establishment of an Integrated Risk Management culture in all sectors and entities	1. National Hazard/Risk Mapping Atlas developed and completed and shared with all sectors 2. Develop BCM programs in all sectors 3. NDRCC engagements improved	1. % Risk Atlas completed 2. % BCM implementation/sector/year	MNS/ODPM Ministry of Public Administration	$1,200,000.00	April 2012	April 2015	Risk Atlas development= Total National Risk Management Program – involves all sectors – and includes identification, quantification, assessment, VCA assessments, mapping, evaluation, cost benefit analysis, integrated mitigation, data analysis, Statistical Analysis = GoRTT + Private Sector/Business Sector+ Civil Society = 20 hrs/month/sector
2.4	Existing educational and	2.4 a. ODPM to develop, manage and	1. ODPM continuous engagement on standing	1. % Increase in standardization of	ODPM TT BUREAU OF	$500,000.00	April 2012	April 2015	There are over 3500 policies, related to

	training materials for CDM standardized, improved and applied in the region.	implement, National Standards for CDM educational and training programs	committee of TT Bureau of Standards 2. Via, GoRTT, CORE and NDRCC, ODPM develops standards for all educational and training materials for CDM and encourages alignment by all sectors and stakeholders	policies, educational and training materials for CDM- [DRR/DRM AND CCA]	STANDARDS				CDM in many entities – e.g. HSSE, OSH and NEBOSH, WHO, as well as ISO, e.g. RHA and AATT acts, bills and laws in key areas
2.5	A Strategy and curriculum for building a culture of safety is established in the region	2.5 a. ODPM builds a national culture of safety	1. NDRCC/CORE and GoRTT engagements balanced to ensure all hazard approach to building a culture of resilience 2. Emergency management and Safety Management programs incorporated into readiness programs of ODPM	1. % Decrease reported incidents/year e.g. 1.Transport Accidents 2. Falls at home/workplace 3. Non- Accidental and Accidental Injuries (Non-intentional and Intentional) 4. Industrial/Workplace Accidents 5. Reported Offences- Sexual Assault, Domestic Violence, Crime 6. Fires 2. Increase % Training Programs for Safety/year/sector	MNS/ODPM MoLG Ministry of Health Ministry of Energy and EA Ministry of Labour Ministry of Legal Affair- Justice Department	$ 250,000.00	April 2013	April 2015	
OUTCOME 3: Improved effectiveness of CDM at sectoral levels									
3.1	Disaster Risk Management program at the sectoral level improved	3.1 a. Sector Capacity is improved continuously for CDM	1. Meetings and Lectures, Correspondence and Events organized for public and private sectors 2. NDRCC engagements institutionalize public and private sector participation in a sustainable manner	1. % Increase in NDRCC Engagement/year 2. % Increase in CORE engagements/year [# Hours YC – Total Hours YL] ÷ Total Hours YL x 100 3. % DRR Courses	ODPM Sectors	$100,000.00	April 2011	April 2015	Assessment of Engagement: 1. % Attendance/meeting/sector 2. % Meeting attended/meeting/sector 3. Quality of Engagement – e.g. Degree of Participation –

				Attended/Sector/Year 4. % Media Assessment Incidents/Events by key Decision-Makers that reveal understanding and action on CDM 5. Ratio of Incidents that reveal Decision Makers - understanding and actions taken to not understanding or taking inappropriate action					Subjective metric e.g. value of contributions etc. 4. % of programs/policies/agenda items- reported on/consulted/reviewed/debated/edited by Head Office/Sector 5. % of meetings same representative attended/sector/ 6. % of meetings same alternate attended/sector
3.2	Hazard information integrated into sectoral development planning and programming	3.2 a. National Capacity Building enhanced and improved continuously 3.2 b. National Critical Infrastructure Policy developed and implemented 3.2 c. National Risk Assessment/Atlas provides baseline data for all key sectors and improves continuously	1. Increased meetings with financial and insurance sectors on Risk Transfer Mechanisms in DRR 2. NDRCC includes Insurance and Finance Sectors and Public Sector as well on a sustainable basis 3. UNDP/IDB projects completed to develop baseline National Risk and Capacity as well as Critical Infrastructure Assessment	1. % Hours Engagement with Insurance/Financial/Lead Sector/ Sectors/year	ODPM SECTORS MINISTRIES CIVIL SOCIETY PRIVATE/BUSINESS SECTOR	$250,000.00	April 2011	April 2015	See engagement metrics
3.3	Disaster and climate risk proofing of development programming and	3.3 a. CDM integration and mainstreaming in all sectors enhanced and improved	1. Scheduled meetings /Workshops/Seminars and Focus Group Meetings with ALL key sectors an ongoing process via NDRCC and	1. % Existing Programs/Policies/Processes (ppp) in Tourism, Health and Agriculture et al reviewed/re-	ODPM Ministries of Health, Tourism and Agriculture	$150,000.00	April 2014	April 2016	All Sectors Engaged

	investment decision-making at the sectoral level strengthened	continuously 3.3 b. Cross-Sector Collaboration in CDM strengthened and improved	CORE as well as with GoRTT 2. Distribution of Public Education Information and CDM materials to all sectors with increased engagement in policy development, legislation, plans, and procedures	engineered/improved/enhanced with CDM focus 2. % New programs/policies/processes (ppp) in Tourism, Health and Agriculture et al, developed with CDM focus [# New ppp ÷ Total ppp] x 100	and Planning and Sustainable Development. Local Government and Works and Infrastructure/Housing and Community Development				
3.4	Prevention, Mitigation, Preparedness and Response/Mitigation Procedures developed and Implemented (in the tourism, health and agriculture sectors and planning and infrastructure sectors)	3.4 See 3.3 a. and b.	1. National Response Framework and Standard Operations Procedures for all sectors developed and shared 2. Regular exercises continuously with all key sectors to assess readiness	1. % SOPs developed/reviewed/assessed/tested, re-engineered or edited and implemented /sector/year 2. % of media events/sector/year that demonstrate sector CDM SOPs activity, execution and implementation/sectors /year # Events/Sector ÷ Total Media Events (CDM Related-SOPs)	ODPM ALL Sectors	$222,000.00	April 2013	April 2016	Media Events are continuously monitored by ODPM and 511 Centre daily. Programs, events, functions etc. that are sector driven and have SOPs implemented will be recorded. Total /yr recorded
OUTCOME 4: Strengthened and sustained capacity for a culture of safety and community resilience in Participating States									
4.1	Standards for safe communities developed, agreed and applied	4.1 a. Strengthen the Community Based Institutions for CDM Implementation 4.2 Improved capacity of the Disaster Management Units and transform them into Regional Risk Management Centres 4.3 CDM	1. Increased support and resources applied to Municipal Disaster Units/EOCs and CERT Training 2. Increased CORE visits with key NGOs, CBOs and FBOs and institutions such as Scouts, Red Cross, Rotary International etc. 3. Improves Civil-Military Coordination programs at	1. % Increase in Engagement with key stakeholders e.g. Rotary, Red Cross, Habitat for Humanity and ADRA , Private Sector, in CORE and DMUs/TEMA 2. % Increase in Strategic Alliances amongst key partners in community/municipalities e.g. MOUs/MOAs and	ODPM/MNS DMUs/MoLG TEMA/THA NGOs CBOs FBOs TTRCS IFRC Rotary Clubs Habitat for Humanity	$10,000,000.00	April 2013	April 2016	Engagement is assessed by and with 60% attendance in EACH function and more that 8 scheduled meetings per year. 1. Programs implemented with CDM and at LEAST three NGOs/CBOs and/or FBOs 2. Programs

		programming within the Small Business Sector within the Municipalities and Tobago/TEMA-THA System 4.4 Integrated BCM implemented in all key business and civil sector organizations and entities	the Municipal Levels with drills and community based exercises 4. Enhancement of the strategic alliances of Food and Nutrition, Water and Sanitation, Shelter and Health Care Agencies within communities and the development of clusters within each region	Agreements amongst WASH, FOOD, HEALTH, SHELTER AND SECURITY agencies and entities 3. Cost Benefit Analysis/Assessment of Extreme Incidents in Communities – *Grade I-IV Grade I - Excellent DRR/DRM Response Grade II – Very Good Grade III – Good Grade IV – Fair Grade V - Poor	School Feeding Program Hardware and Grocery Associations Pharmacy / Nursing and Medical Associations ETC				implemented with CDM and at LEAST THREE of the following: Business Sector, Civil groups, Chambers of Commerce, Red Cross, Rotary, Kiwanis or Lions 3. Programs implemented with CDM and at least TWO of the following; Fire, Police, Health Authority, EMS 4. Programs implemented with CDM and with ALL of the following: Food and Water Vendors & Suppliers, Shelter Managers and Mall Owners, Funeral Parlours, Hardwares, Supermarkets, Heavy Equipment Owners, Bankers, Utilities etc.
4.2	Community-Based Disaster Management capacity built/ strengthened for	4.2 a Improved participation of UWI/UTT and other academic and professional bodies in	1. Step up UNDP RRMC program 2. Increased meetings with Academics and professional	1. % Increase in DMU transformation to RRMCs 2. % Increase in	ODPM DMUs UWI/UTT	$200,000.00	September 2013	April 2016	

	vulnerable groups	TT with CDM programs 4.2 b. Transformation of DMUs to RRMCs	associations and the development of clusters for community CDM improvement	Engagement with professional associations/Universities /Academic bodies etc. 3. % Increase in exercises/drills and ppps that involve at LEAST three of the research and data partners and the DMU/TEMA – per year	Associations and Bodies – Professional and Academic				
4.3	Community Early Warning Systems, integrated, improved and expanded	4.3 a. Every Home/Community must develop a culture of resiliency to all-hazard impacts 4.4 b. Public Education and Mitigation programs involve Safer building techniques in an all hazard approach	1. Increased funding of EWS/PWIS and Public Education programs of ODPM and DMUs 2. Public Education Programs include Safer Buildings in CORE programs 3. Annual Surveys and CORE visit surveys used to assess awareness 4. Regular Exercises done at Community level to test awareness and knowledge of CDM	1. % Increase in VCA Assessments by Red Cross etc./year 2. % Housing Stock/Municipality with ***Level I Safe Building 3. % Unsafe Buildings Incidents/year 4. % Media Assessment Events/year that reveal increased awareness and Knowledge of CDM	ODPM GISL CORE programs TTRCS Rotary Central Statistical Officer	$ 1,340,000.00	April 2011	April 2015	*** Level I – Buildings built in accordance with Statutory Approved Codes- Public Health; Town and Country; Local Regional Corporation; and inspected by Fire, Electrical and Building Inspectors- No extensions; Risk Transfer Mechanisms such as alarms, insurances, etc. + Emergency Operations Plans including BCM– OSH Regulation compliance- e.g. signage etc. in Industrial Buildings Level II- Past approvals as above but unapproved extensions and additions EOP/BCM plans present with exercises in Industrial buildings Level III – No Approvals, but built

									according to some acceptable standard Level IV – No approvals and not built to standard- clear risks present.
4.4	Community - Based Disaster Management capacity built/ strengthened to address gender and vulnerable group needs	4.4 a. National VCA done by TTRC in all communities under the guidance of the DMUs and incorporated by ODPM in National Risk Atlas 4.4.b. UNDP EWS Integration program implemented with DMU/RRMC support in all communities	1. National Alert State developed and roll out process coordinated with NOC 2. Public Warning and Information Systems (PWIS) and EWS proposal to be approved by Cabinet and implemented 3. ODPM/Ministry of Gender programming included in all edit and evaluation processes of National Risk Assessment and VCAs	1. % Risk Atlas completed 2. % Integration of EWSs in TT 3. % VCA completed per year/Municipality	ODPM DMU TTRCS	$500,000.00	April 2014	April 2016	
4.5	Early Warning Systems for disaster risk reduction enhanced in member states/ territories	4.5 a. Integrated EWS in TT with PWIS with continuous improvement methodologies	1. Roll out of EWS/NAS system 2. PWIS system to be introduced	1. % Increase in Integrated EWS /year 2. % SOPs developed/tested and monitored/year/sector-agency	ODPM DMU NOC MNS	$3,850,000.00	APRIL 2014	APRIL 2015	Cabinet to approve Integrated EWS/PWIS

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