



Disaster Risk Reduction Country Profile **DOMINICA, 2014**



Commonwealth of Dominica Disaster Risk Reduction Country Profile
September 2014
Office for Disaster Management (ODM)
Dominica

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Introduction

The Government of the Commonwealth of Dominica through the Office of Disaster Management (ODM) was leading the process to develop Dominica's Country Profile for Disaster Risk Reduction. This initiative was supported by the European Commission Humanitarian Aid and Civil Protection Department (ECHO) within the framework of the regional United Nations International Strategy for Disaster Risk Reduction (UNISDR)¹ project implemented under the 2013-2014 DIPECHO Action Plan for the Caribbean.

Government's Growth and Social Protection Strategy (GSPS)² seeks to reduce environmental vulnerability and improve disaster prevention and management, through a combination of risk reduction, impact mitigation and other measures through effective implementation of the Physical Planning Act and the National Environmental Management Strategy and Action Plan for Dominica; improving the country's capacity for disaster management; establishing a Natural Disaster Contingency Fund; staying current with financial obligations to the World Bank's Catastrophic Risk Insurance Scheme among other strategic actions. The development of the Country Risk Profile forms a critical part of this strategic effort.

ECHO's Disaster Preparedness Programme (DIPECHO) targets vulnerable people living in the main disaster-prone regions of the world. The objective is to reduce the impact of natural disasters by strengthening local physical and human resources in high risk areas. The programme demonstrates through pilot activities that simple inexpensive preparatory measures can save lives and livelihoods at community level.

In the Commonwealth of Dominica, disasters caused by natural hazards carry critical policy implications with reference to their inherent vulnerability, risk and uncertainty which affect the Country's social and economic development. This continues to remain a major concern for the public, private, productive and social sectors, and a thus crucial consideration of which the Government has to remain ever conscious. This is reinforced in the Growth and Social Protection Strategy (GSPS), which states that "Dominica's terrain renders damage to physical infrastructure greater than in other countries of the Region, and the cost of rehabilitation higher. The economic impacts of natural disasters can be large – disruption of economic activity, loss of income, fiscal and external account imbalances and increased poverty." In an effort to adequately mitigate against the risk of potential disasters, the GSPS posits that the development of disaster risk management policies and plans as critical for the Country's sustainable development.

¹ UNISDR was created in December 1999 as part of the United Nations (UN) Secretariat with the purpose of ensuring the implementation of the International Strategy for Disaster Reduction (ISDR), which reflects a major shift from the traditional emphasis on disaster response to disaster reduction, and in effect seeks to promote a "culture of prevention". UNISDR's mandate is to serve as the focal point in the UN system for the coordination of disaster reduction and to ensure synergies among disaster reduction activities.

² GSPS Dominica 2014 - 2018 PG 58

Therefore, the main objectives of the Commonwealth of Dominica's Disaster Risk Reduction Country profile are as follows:-

- To produce an overview of the country's status in relation to disaster risk reduction and management.
- To engage stakeholders in the development of the country's risk profile.
- To raise awareness of the importance of disaster risk reduction.
- To produce a document that would serve as a guide to inform the design of policy, decision making and investment in disaster risk reduction.
- To identify DRR priorities.

Purpose of the document

According to the UNISDR and United Nations Development Programme (UNDP), disaster risk reduction is "The conceptual framework of elements considered with the possibilities to minimize vulnerabilities and disaster risks throughout a society, to avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of hazards, within the broad context of sustainable development."³

Disaster risk reduction profiles are a means of identifying, assessing and reducing the risks of disasters, and aim to reduce the socio-economic vulnerabilities related to disasters, as well as address the hazards that trigger them. As a major responsibility of governments and development agencies, they should form an integral component of development planning, as they go beyond just emergency management towards all sectors of development.

The Country Disaster Risk Reduction Profile is intended to provide a comprehensive overview of Dominica's status in relation to Disaster Risk Reduction and serve as a reference guide for policy design, strategic planning and decision making. The document can be useful to all stakeholders involved in varying aspects of Disaster Risk Reduction, Disaster Management and vulnerability reduction in Dominica as well as the overall sustainable development of the Country.

Methodological Approach

In order to gain a full perspective on how to reduce disaster risks, it is important to analyse vulnerability and capacity, as risk is the product of vulnerability/capacity and the likelihood of the hazard occurring. In fact, it is the specific vulnerabilities and capacities of a community, country or region, which turn impact/event into a disaster. Therefore, the methodology for the development of an efficient DRR profile should include broad consultation with stakeholders at all levels, in addition to in depth literature review.

³ [Living With Risk: A Global Review of Disaster Reduction Initiatives](#), UNISDR, 2004; pg. 17

The process first involved the utilization of various sources of information in order to properly conduct the analysis from different perspectives. Various documents and literature on disaster risk reduction and management in Dominica, the Caribbean Region and internationally were consulted and provided much of the background data and information required for compiling this document.

The "Criteria for Identifying Key Actions for Disaster Risk Reduction (DRR) Planning in Latin America and the Caribbean" was used as the basis for information gathering from individual interviews, focus group discussions, consultations and literature review.

During implementation of the project, a wide range of stakeholders were engaged in a highly iterative and participatory process of consultation and discussion. Among these were government agencies, non-government organisations, civil society, and Utility Companies. The success of any DRR strategy depends on participation of those responsible for implementation.

A list of major stakeholders was compiled in collaboration with the Office of Disaster Management to ensure their participation and input in the process.

One on one interviews were held with senior public officials, as it is essential to have commitment from decision makers at all levels in order to commit resources and make provisions for planning. Two district consultations were held which brought together stakeholders working at the community level in an effort to relate local knowledge and experience with information gathered as part of the literature review. Among these were representatives from Local Government Authorities, Community Disaster Management Committees, Community Emergency Response Teams, Dominica Red Cross, Schools, Fisheries Cooperative, Tourism, Health and Utility Companies.

A National consultation was convened that provided a wide range of stakeholders the opportunity to review and comment on the Draft Country document. It was also an opportunity to sensitise stakeholders on the importance of DRR as a whole and the incorporation of DRR into policy, strategies and work programmes.

A small group of stakeholders including representatives of the ODM, Carib (Kalinago) Council and the Dominica Red Cross met to review a preliminary final copy of the Country Risk Profile prior to the official submission of the completed document.

1. Executive Summary

By virtue of Dominica's geographic circumstance it is highly vulnerable to disasters both natural and anthropogenic. The economic, social and environmental costs are of colossal proportions. The frequency and intensity of these phenomena are constant impediments to the growth and sustainable trajectory targeted in the Growth and Social Protection Strategy, therefore hindering the eradication of poverty.

Dominica's adoption of the Comprehensive Disaster Management (CDM) Framework⁴ underscores a commitment towards disaster risk reduction, resilience building at all levels and the development and maintenance of sound response and recovery mechanisms. Existing frameworks and mechanisms reflect a progressive trajectory, leveraging past experiences as well as recognising some binding constraints in implementation. A relatively small population, and other contributing factors present challenges for high per capita investments in mitigation and adaptation efforts.

Impacts of climate change and weather variability continue to be a challenge for planners and a test for national capacities in adaptation and response. Global Circulation Models (GCMs) serve as important tools in providing future climate information for Dominica, these reflect projected temperature increases for Dominica, an annual mean increase between 0.4⁰C - 0.5⁰C by the 2015s, 0.6⁰C - 0.8⁰C by 2030s, 0.9⁰C - 1.3⁰C by the 2050s⁵. Similarly, the Intergovernmental Panel for Climate Change (IPCC) projections for hurricanes of the north tropical Atlantic predict more intense storms with larger peak winds speeds and heavier near storm precipitation. Recent weather phenomena in Dominica suggest that the climate is indeed changing, with increases in temperature, changes in the seasons and erratic temperature variations.

While significant investments have been made in addressing disasters in Dominica over the years, there is need to strengthen the legislative framework and regulatory mechanisms in order to effectively maximise the results from these investments. More research and data gathering is needed for adequate planning, monitoring and decision making.

⁴ <http://www.cdema.org/CDMStrategy2014-2024.pdf>

⁵ Dominica Second National Communication on Climate Change 2012

2. International and Regional Disaster Risk Reduction Context

Every year countries worldwide are confronted with responding to and managing the economic and human impacts of disasters, as disaster risks and vulnerabilities increasingly translate to severe development challenges with very negative consequences for poor and vulnerable groups of people and their fragile livelihoods.

In 1994, the Yokohama Strategy for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation and its Plan of Action (“Yokohama Strategy”), was adopted which sought to accelerate implementation of an action plan based on some core principles. Among these were a focus on a culture of prevention; a policy of self-reliance based on enhanced capacity; education and training in disaster risk reduction; strengthening existing mechanisms and communication techniques in the compilation of information on disasters; improving networking and cooperation among and between countries and institutions; encouraging community based-approaches to vulnerability reduction; improved risk assessment and monitoring; involvement and active participation of people in disaster risk reduction and effective national legislative and administrative action.⁶

A review of implementation of this strategy revealed several challenges in attainment of sustainable development and resilience building for moving forward. Additionally, there was a need for an improvement in the clarity of the components of DRR, as well as the evaluation and measurement of indicators of progress, specifically towards resilience. Therefore, the World Conference on Disaster Risk Reduction (WCDR) began the process of encouraging international agencies and national governments to set distinct targets and commitments for DRR. The first step in this process was the formal approval at the WCDR of the Hyogo Framework for Action (2005–2015) (HFA), which established an ordered sequence of objectives (outcome – strategic goals – priorities). Specific gaps and challenges were addressed in 5 priority areas of intervention, which formed the basis for the HFA. These were:-

- (a) Governance: organizational, legal and policy frameworks;
- (b) Risk identification, assessment, monitoring and early warning;
- (c) Knowledge management and education;
- (d) Reducing underlying risk factors;
- (e) Preparedness for effective response and recovery⁷

The HFA was endorsed by 168 countries at the World Conference on Disaster Reduction in Kobe, Japan in 2005 with commitments to reducing disaster risks by 2015.

⁶The Yokohama Strategy for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation and its Plan of Action - May 1994

⁷ Hyogo Framework for Action

Following a review of the implementation of the HFA, it revealed some gaps in the formulation of goals and priorities for action and that there was a greater increase in the exposure of people and assets to hazards than there was a decrease in vulnerability in countries across the world. Since the HFA period of implementation is scheduled to end in 2015, the United Nations General Assembly recommended a post 2015 framework, which promotes the expected outcomes of the HFA while integrating and strengthening the focus of the priorities for action, and giving more prominence to addressing the underlying risk factors and resilience through new strategic goals which replaces the HFA goals⁸.

The post 2015 framework for Disaster Risk Reduction benefitted from a process involving over 86 consultations during the period March 2013 to May 2013, from national, regional, and international levels, consolidated in a synthesised report. Additionally, the United Nations Special Representative of the Secretary-General for DRR, Ms Margareta Wahlström, in December 2013, published the "Proposed Elements for Consideration in the Post-2015 Framework for Disaster Risk Reduction". This publication drew on the outputs of over 100 Post-2015 consultations from national, regional and international levels and is intended for use during the preparatory process of the Third World Conference for DRR (Sendai, Japan, 14 - 18 March 2015) during which time it is anticipated that the new Framework will be adopted.⁹

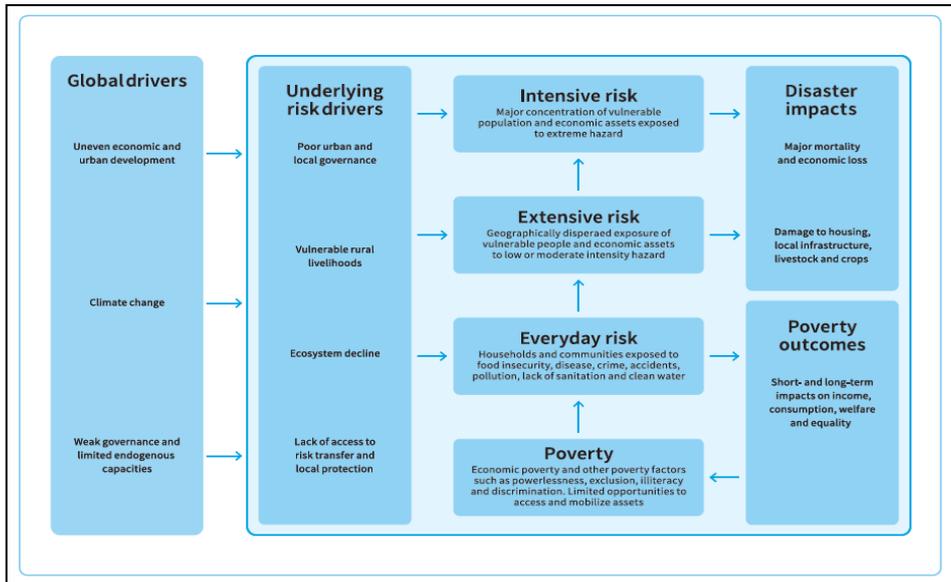
Moreover, the UN's biennial Global Platform for Disaster Risk Reduction provides an opportunity for the UN and its member states to review progress against the Hyogo Framework. It held its first session 5–7 June 2007 in Geneva, Switzerland

The first edition of the Global Assessment Report (GAR) of 2009, reported that poorer countries have disproportionately higher mortality and economic loss risks, given similar levels of hazard exposure. Globally, high-income countries account for 39% of the exposure to tropical cyclones but only 1% of the mortality risk, while low income countries represent 13% of the exposure but no less than 81% of the mortality risk. As shown in **figure 1** below, the 2013 report cites the underlying drivers of risks as poor governance, vulnerable rural livelihoods and declining ecosystems contributing to a further exacerbation of poverty and erosion of sustainable development.

⁸ http://www.wcdrr.org/preparatory/post2015#anchor_a

⁹ Concept note for the National Consultation for the New Framework for DRR Post-2015, April 2014, Barbados

Figure 1. Drivers of Risks and poverty outcomes



Source: GAR 2013

Regionally participation in Caribbean Disaster Emergency Management Agency (CDEMA) has resulted in the development of a Work Programme for the period 2012 – 2020 which is part of the effort in building resilience through enhanced community capacity and participation, coordinated response to natural and other hazards, and the effects of climate change.

3. National Context

3.1 Physical Environment

3.1.1. Geographic location

Dominica is located in the Eastern Caribbean (EC) and is the largest of the Windward Islands, situated between the French Overseas Departments of Martinique to the south and Guadeloupe to the north. The Nature Island as it is called, has coordinates of 15 25 North, 61 20 West. With a rugged interior, mountainous terrain, the 291 sq mile island (754 square kilometres) has 91 miles of coastline. **Figure 2** below shows a map of Dominica highlighting its major villages and location in the Caribbean.

Figure 2. Map of Dominica and location in the Caribbean



Source: avirtualDominica.com

3.1.2 Physiography

Dominica's rugged landscape is covered with multiple layers of virgin rainforest that produce cascading rivers and water pools, mountain peaks and ridges. The highest peak is Morne Diablotin at 4,747 feet (1447 meters) in the central part of the island, Morne Trois Pitons, with an elevation of 4,669 ft (1,423 metres), lies farther south and is a UNESCO World Heritage Site. As a consequence of its elevation, Dominica's vegetation is diverse comprising of over 1000 species of flora and fauna. More than 80% of the island receives annual rainfall of at least 2500 mm.

According to the GSPS, Dominica's terrain renders damage to physical infrastructure greater than in other countries of the Region, and the cost of rehabilitation higher.

Therefore, the economic impacts of natural disasters can be large – disruption of economic activity, loss of income, fiscal and external account imbalances and increased poverty.

The country has nine (9) live volcanoes and experiences frequent seismic and geothermal activity. The capital city of Roseau sits on a pyroclastic flow fan derived from the Wotten Waven caldera situated on the eastern outskirts of the capital. Evidence of volcanic activity is found in the presence of hot water pools around the island, as well as the second largest Boiling Lake in the world.

More than half of the island is covered by dense forest, 45,000 hectares of which is rich in volcanic soil. “Since 1975, an extensive system of national protected areas provides a significant carbon sink and affords protection for approximately 20% of the national territory”.¹⁰

3.1.3 Climate

The country’s climate is tropical in nature, with micro climates a consequence of its mountainous terrain. Annual temperatures average between 26 – 27 degrees Celsius in coastal areas decreasing to 19 – 21 degrees Celsius in mountainous areas, and with night time temperatures varying from 18 – 22 degrees Celsius on the coast to 10 – 12 degrees Celsius at higher elevations.

Dominica ranks among the wettest islands in the Eastern Caribbean with annual rainfall of over 400 inches (10,000 mm). However the island experiences a dry season from February to June. Since the island lies within the Atlantic hurricane belt, it is very susceptible to the impacts of hurricanes from June to November each year.

Recent observations of the impacts of climate change and the interactions with biodiversity and ecosystems reveal that there have been alterations in the species diversity of some of Dominica's ecosystems. A growing phenomenon of grass lands (locally called mulch) on the west coast could be attributed to climate change impacts. These have been found to be a major source of bush fires in Dominica.

Furthermore patterns of rainfall, along with increased temperatures have changed dramatically and there has been recorded an increase in disease and pest occurrences as evidenced in the invasive species like to sargassum seaweed¹¹ (Figure 3) and lion fish among others.

¹⁰ Dominica Low Carbon Climate Resilient Development Strategy 2012- 2020

¹¹ At the end of July 2014, a large mass of sargassum seaweed was found floating on the sea at Thibaud in the north of Dominica.

Figure 3. Sargassum seaweed floating on the sea and lying on the Beach at Thibaud



3.2 Socio-Economic Context

3.2.1 Population and demographics

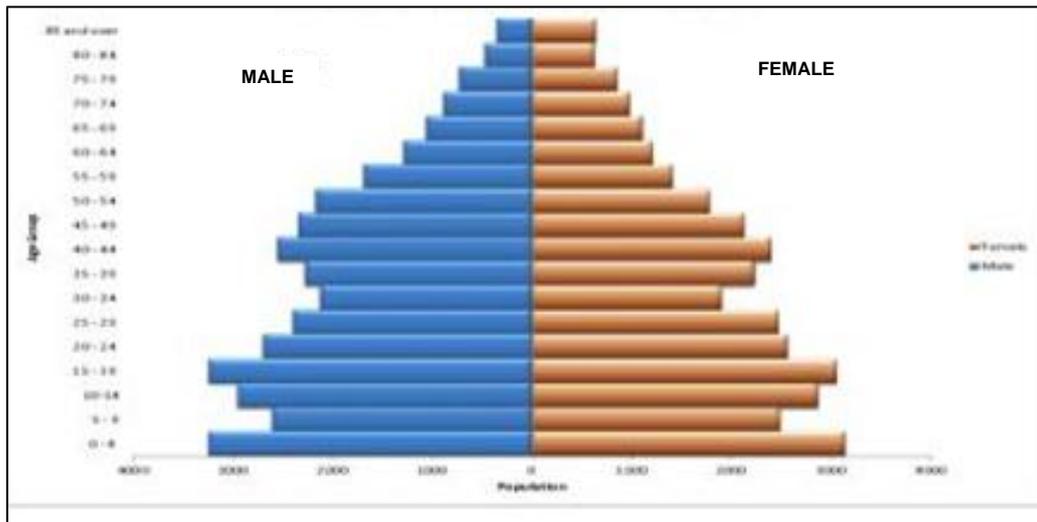
According to the preliminary 2011 Population Census report, Dominica's population stood at 71,293 comprising of 36,411 males and 34,882 females. The population registered a net decrease of 0.6% over the last census of 2001.

Dominica has a growing young population with children below 14 years accounting for slightly more than a quarter of the population. Approximately 41.9% of the population was comprised of children and youth below 25 years while the elderly population (60 years and above) accounted for 14.8%.

Children 0 - 4 years recorded the highest population accounting for 9.3% of the population compared to the 9-5 year age group registering 10.6% of the total population in the 2001 Census.

The Parish of St. David recorded the highest sex (male:female) ratio of 118:100, followed by St. Andrew recording 111:100 and St. Joseph registering 110:100. Among the Communities, the Carib Territory (Kalinago Territory) recorded the highest sex ratio of 130.100 followed by Good Hope with 124:100. Penville also recorded a significantly high sex ratio of 123:100. Figure 4 below shows the Dominican population broken down by age and sex.

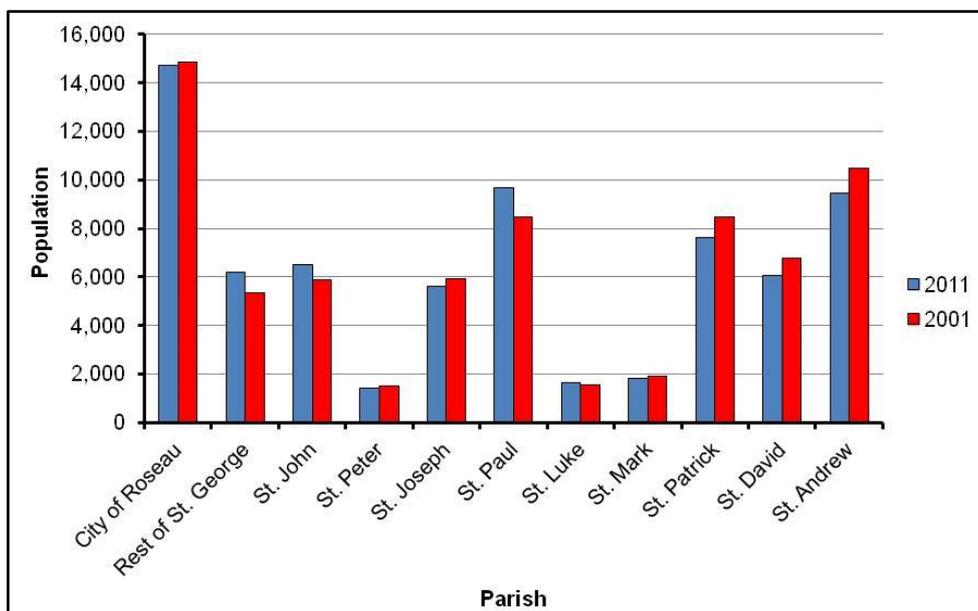
Figure 4. Dominica Population by Age and Sex, 2011



Source: Central Statistics Office

In terms of population spread, as shown in figure 5 below, the capital city of Roseau in the parish of St. George accounts for one of the major population centres on the island. This is followed by the largest rural Parishes of St. Andrew and St. Paul.

Figure 5. Dominica Population by Parish, 2001 and 2011



3.2.2 The economy

Dominica's economy has been traditionally based on agriculture. However, after the devastating impacts of the 1999 ruling of the World Trade Organisation (WTO) that eradicated preferential treatment of tariffs for Windward Island bananas, also Dominica's main export, the economy had been paralyzed. This resulted in the dislocation of many farmers and generated severe economic shocks throughout the general populace. This was compounded by adverse impacts of hurricanes Luis in 1995 and Lenny in 1999.

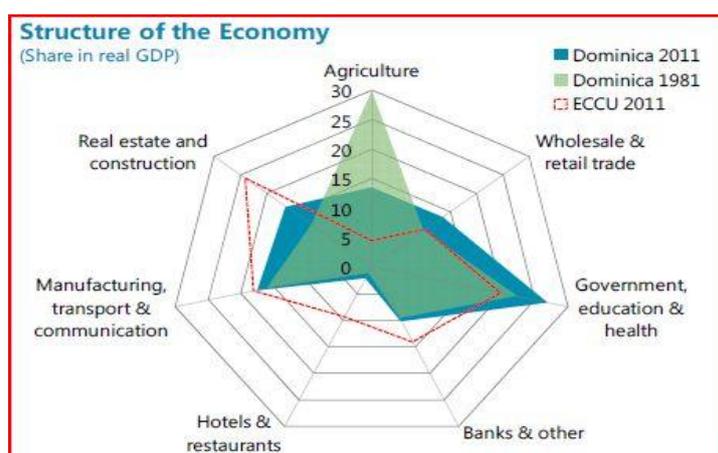
For three consecutive years, 2001 – 2003, large fiscal imbalances and mushrooming public debt resulted in an unsustainable debt burden. Dominica experienced negative growth rates of 4% in 2001, 5.1% in 2002 and 0.1% in 2003.

As a consequence, the Government implemented a Structural Adjustment Programme in 2002 along with a standby-agreement with the IMF that was further extended to 2003 due to difficulties in implementation. This programme, made up of stabilisation and long term adjustment policies was created with the goal of reducing Dominica's fiscal imbalances in the short and medium term in order to adjust the economy towards long-term growth. Following this agreement the Government developed a comprehensive programme aimed at achieving economic growth and reducing poverty encapsulated in the GSPS in 2006. This macro economic framework for achieving sustained growth and poverty reduction has since experienced its fourth revision. The current revision covering the years 2014 – 2018 and under the theme "Towards Economic Transformation: A Pathway to Sustainable Development", contains government's macroeconomic policies, sector strategies and plans, the reform agenda, the Public Sector Investment Programme (PSIP), the annual budget and social protection and poverty reduction strategies.

The economy was stabilised and growth restored in 2004 of 0.8% with negative growth in 2005 and positive growth for the period 2006 – 2008. This transitioning saw the tourism industry and the services sector playing a major role in the economy. Successful exploration of geothermal energy places the economy in a poised position for takeoff particularly based on prospects for export of geothermal energy to the neighbouring countries. Figure 6 demonstrates the shift in Dominica's economy with agriculture playing a significantly lesser role in the economy between 1981 and 2011.

Relative to its Organisation of Eastern Caribbean States (OECS) counterparts, Dominica's economy has maintained its performance and growth trajectory despite three challenging years. The table below captures the performance of selected OECS countries over the period 2004 to 2013.

Figure 6. Structure of Dominica's Economy



Source: Dominica 2012 Article IV Consultation IMF Country Report No. 13/31

Dominica's economy has been adversely affected by many hydro-meteorological events resulting in severe setbacks particularly as a result of its high per capita recovery needs. Additionally, investments in infrastructure are enormous as Government maintains its commitment to overcoming this binding constraint to sustainable development. Despite being a small economy the competing demands on public financing are colossal.

Table 1. OECS Growth Rates 2004 - 2013

Country	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013 ^P	Annual Average
Antigua & Barbuda	3.22	7.56	12.77	7.24	1.47	(10.67)	(8.57)	(2.10)	2.79	0.14	1.38
Dominica	0.83	(1.74)	3.67	3.94	7.77	(0.76)	0.73	1.71	(0.19)	0.8	1.7
Grenada	0.12	12.49	(4.38)	6.28	1.69	(5.63)	(1.99)	0.14	(1.22)	2.74	1.0
St. Kitts & Nevis	3.78	9.24	3.45	5.00	4.04	(3.77)	(3.83)	(1.88)	(0.86)	1.95	1.7
St. Lucia	5.98	(2.64)	7.44	1.49	5.79	(0.23)	0.14	1.49	(0.84)	(1.59)	1.7
St. Vincent & Grenadines	4.62	2.99	5.99	3.12	(0.6)	(2.03)	(2.26)	0.28	1.52	3.14	1.7

Source: GSPS 2014 - 2018

3.2.3 Poverty and unemployment

The 2009 Country Poverty Assessment (CPA) reported that poverty rates had fallen from 39% in 2003 to 28.8% in 2009. Headcount indigence had also been reduced from 15% in 2003 to 3.1% in 2009. “This reduction in poverty is mainly attributed to attempts by the Government, since the last study, to stabilize the economy, contain the debt, expand the social and physical infrastructure, and prioritize initiatives through targeted public expenditure.”¹² Following the 2003 Poverty Assessment, Government adopted a wide range of Social Protection programmes aimed at reaching the poor and vulnerable¹³, cushioning them from hardships while simultaneously increasing their capacities for self-employment, empowerment and breaking the cycle of intergenerational poverty. This effort was implemented concurrently with fiscal measures aimed at controlling and reducing expenditure and improving revenue. Dominica's foreign policy has been leveraged in attracting grant funding for major projects as part of the PSIP.

The causes of poverty are attributable to external factors, including the continued reduction in protection for banana exports, the surge in food and energy prices and the global economic crisis, reduction in remittances and the scourge of natural disasters. Unemployment and underemployment are key characteristics of unemployment in Dominica.

The CPA reported unemployment at 13.9% in 2009, while among the poor, 74% were employed. Approximately 20% of poor males were unemployed compared to 33.8% of poor females. Both poor and non-poor women face higher levels of unemployment than men in Dominica.

The Carib (Kalinago) population was over represented among the poor accounting for 49.8% compared to the national average of 28.8%. This however represents a significant reduction from the last assessment of 2003. The highest headcount of poverty was recorded in the Parish of St. Joseph of 47.2%, followed by St. Patrick with 42.7% and St. David with 40.%. As shown in Table 2, children (0-14) and youth (15-24) years are disproportionately represented among the poor, accounting for 52.1% of the poor.

While the elderly comprised 12.2% of the population they accounted for 9.8% of the poor.

In addition to progress in reducing headcount poverty, Dominica has also made significant strides in attainment of the Millennium Development Goals (MDGs). In education Dominica has achieved universal primary and secondary education and

¹²Dominica Country Poverty Assessment 2009

¹³ See appendix for list of Social Programmes

currently implementation of universal early childhood development is ongoing. Net enrolment at primary schools for 2012 stood at 98.6%.

Table 2. Socio-economic Status by Age Group

Cohort	Age Groups	SOCIO-ECONOMIC STATUS					
		Poor		Non-Poor		Total	
		N	%	N	%	N	%
Children	0-14	7404	35.7	11712	22.8	19116	26.5
Youth	15-24	3402	16.4	8271	16.2	11673	16.3
Adults	25-34	1999	9.6	5771	11.3	7770	10.8
	35-44	2776	13.4	7003	13.7	9779	13.5
	45-54	2061	10	6734	13.2	8795	12.3
	55-64	1092	5.2	5016	9.8	6107	8.5
Elderly	65 and Over	2024	9.8	6760	13.2	8784	12.2
All Groups	Total	20759	100	51266	100	72025	100

Source: CPA 2009

The Country's commitment to achieving 100% access to potable water appears very likely with about 96% of the population currently having access to water.

Efforts at accelerating achievement towards the MDG 2015 deadline and in addressing lagging targets are currently ongoing as part of the collaboration between UNDP and the Government under which an action plan was developed in consultation with several stakeholders. One of the challenges for Dominica has been identified as the reduction in the Infant Mortality Rate (IMR). However the Government with support of the European Union (EU) is currently engaged in addressing this issue through a project aimed at reducing the infant mortality rate.

Figure 7 is a summary of Dominica's progress with the achievement of MDGs.

Figure 7. MDG Progress

GOAL #	INDICATOR	STATUS
 1	Eradicate extreme poverty and hunger	
 2	Achieve Universal Primary Education	
 3	Promote Gender equality and empower women	
 4	Reduce child mortality	
 5	Improve maternal Health	
 6	Combat HIV/AIDS, malaria and other diseases	
 7	Ensure environmental sustainability	
 8	Develop a global partnership for development	

Legend

-  Insufficient Information
-  Achieved
-  Very likely to be achieved, on track
-  Possible to be achieved if some changes are made
-  Off Track

3.2.4 Most vulnerable groups

The situation of vulnerable people is now aggravated by evolving, complex threats such as climate change, new patterns of marginalisation, unplanned urbanisation, high levels of violence, migration, emerging infectious disease and the growing burden of non-communicable disease, environmental degradation, and insecurity of access to food, water, and natural resources.¹⁴ Therefore, strengthening livelihoods and building resilience, of these groups in particular, are central to risk reduction.

Women, children and youth are among the most vulnerable in Dominica. Poverty data indicates that more than half of Dominica's children and youth live in poor households (52.1%). Numerous sources reinforce that generally “Women bear the brunt of any disaster because the gender-based inequalities interact with social class, race, ethnicity, and age, putting them at high risk.”¹⁵ This is no different for Dominica.

The CPA of 2009 found no significant gender disparity in poverty, however the report states that women, particularly poor women faced higher levels of unemployment than men. Bearing in mind that the burden of care for families rests mostly on women, this increases the vulnerability of women to disasters. In response to

¹⁴ International Federation of Red Cross and Red Crescent Societies, Disaster management and risk reduction: strategy and coordination. <http://www.ifrc.org/docs/appeals/annual10/MAA0002910p.pdf>

¹⁵ ¹⁵ http://www.chillibreeze.com/articles_various/when-disaster-strikes-women-910.asp

economic and other pressures women resort to high risk activities further exacerbating their vulnerabilities. Child abuse is of major concern to authorities as the number of cases increase annually. There were 157 cases in 2013, compared to 152 cases in 2012.

Some of the unique challenges facing Dominica's indigenous population contribute to their vulnerability. Among these are the communal ownership of land which poses a hindrance to accessing credit and the incidence of poverty which is above the national average. It must be noted that Government has implemented several initiatives in the Carib Territory in an effort to address some of the challenges faced by the Carib (Kalinago) people. Through the Housing Revolution more than 26 families benefitted from new housing while over 200 families have access to improved infrastructure. Currently there is an ongoing Carib (Kalinago) Territory Capacity Development Programme being funded by the Caribbean Development Bank (CDB) and the Government of Dominica (GoCD).

The preliminary Census report of 2011 registered 3,257 people living with chronic disabilities in Dominica, 49% males and 50.6% females. Mobility was noted to be the main type of disability which recorded a 12% increase from the last Census. Persons with disabilities can be disproportionately affected in disasters, emergency, and conflict situations due to inaccessible evacuation, response and recovery efforts.

In the Dominican context, farmers and fisherfolk are very vulnerable to weather related events as their livelihoods are extremely dependent on the natural resources and infrastructure which are often destroyed by disasters. Additionally as most of Dominica's population is located in the low lying coastal communities of the island, storm surges and coastal inundation often cause havoc among these communities. Fisherfolk suffer major losses of boats, equipment and fishing gears, while families suffer loss of housing and livelihoods.

Farmers are also adversely impacted by weather events particularly due to rains and winds resulting in land slippage and oversaturation of the soil. This results in loss of crop, land and livelihoods with severe economic impacts on these families.

Given the openness of the economy, Dominica is also vulnerable to the impacts of pests and invasive species in the agricultural sector which is a consequence of weather variability and climate change. Black Sigatoka, Giant African Snail, Lion Fish and tristeza virus, citrus greening disease and palm pest complex, among others have been a major challenge for farmers and fisher folk in Dominica further compounding their vulnerability and adding threat to food security.

Due to these adverse impacts, and in order to avert long-term negative effects on people's livelihoods, the Government has had to redirect significant development

resources towards compensation, short-term relief, rehabilitation of infrastructure and restoration of economic activity. Although this has temporarily halted the transition of several families into poverty, many still remain extremely vulnerable. Additionally, the availability of Government funds for rehabilitation efforts remain a challenge.

In 2010, a rapid assessment of homelessness in the City of Roseau revealed that 68 people were considered vagrants (living on the streets). Of these 92% were men with 8% being women¹⁶. Many of Dominica's homeless have been identified as persons who suffer from alcohol and substance abuse, mental health problems, people released from hospital with no homes and those who experience socio-economic problems. In communities around Dominica some of the homeless are considered "Known Characters or Paros" that are usually not considered in development activities. During disasters homeless people become highly vulnerable making it critical in DRR to include their welfare as part of the planning process.

3.3 Governance Structure

3.3.1 Political structure and organisation

The structure of the political system is comprised of three main branches, - the Legislative, Executive and Judicial.

Legislative Branch: Dominica is a parliamentary democracy within the Commonwealth, with the President as Head of State and executive power invested in the Cabinet of Ministers and headed by the Prime Minister.

Dominica's political system is a Westminster-style parliamentary government, currently led by the Dominica Labour Party (DLP) with the United Worker's Party (UWP) on the Opposition side of Parliament. This unicameral parliament, called the House of Assembly, comprises of 30 seats, of which 21 seats are regional representatives (Constituencies) and nine seats are allocated to senators and an ex officio member who could serve as the Speaker of the House. The current administration consists of 18 elected members of the DLP and 3 elected members of the UWP, five (5) Senators of the ruling DLP, four (4) Senators of the UWP and the Speaker of the House of Assembly.

There is a five (5) year cycle for the convening of national elections.

Executive Branch: The President and Prime Minister make up the Executive Branch. The President is elected by the House of Assembly for a five (5) year period, nominated by the Prime Minister in consultation with the Leader of the Opposition.

¹⁶ Cabinet Paper: Strategies to address vagrancy in Dominica 2013

The Prime Minister is appointed by the President among the members of the majority Party. Members of Cabinet of Ministers are appointed by the President on the recommendation of the Prime Minister from the elected majority Party.

Judicial Branch: The judicial system is composed of a High Court Judge, 5 Magistrates, and 10 Magistrate courts located in police stations around the country. Appeals can be made to the Eastern Caribbean Supreme Court (located in Saint Lucia) and to the Caribbean Court of Justice (CCJ).

3.3.2. Local Government and levels of decentralisation

The Local Government system is a decentralised system of local governance that has thrived on the concept of volunteerism and non-partisanship for many years. It was introduced to Dominica over 100 years ago as a system of political decentralisation by the British in order to administer the country.

Dominica's Local Government system consists of 42 Local Authorities, the Roseau City Council, Portsmouth Town Council, Canefield Urban Council, the Carib (Kalinago) Council and 38 Village Councils.

These Local Authorities are elected bodies legally empowered to manage the affairs under their jurisdiction. Among some of their key functions are:-

- To provide opportunities for residents to contribute meaningfully to the decision making process at the local level;
- To take social and economic services closer to the people who need them;
- To create effective communication channels between Central Government and local communities;
- To develop local institutions capable of managing the development of their areas;
- To develop leadership potential at the community level.¹⁷

Additionally, other functions of Local Authorities include, development and maintenance of parks and roads, sanitation and public facilities, provision of social/economic assistance, and the development of recreation and education programmes.

In Dominica, Local Government is a creature of Central Government. None of the Councils – municipal, Village or Carib - are fully autonomous for they derive their authority and responsibilities from the Central Government. It is Central Government

¹⁷ Quoted from Ministry of Social Services website – from Sir Clarence Seignoret's Presidential Address to the House of Assembly 24th June 1991. <http://socialservices.gov.dm/index.php/publications/13-publications/31-dominica-s-local-government-system#conceptualframework>

and the Parliament which delegate such responsibilities and authority to Local Authorities.¹⁸

The Local Government arm of Government has been increasingly called upon in light of rehabilitation and risk reduction efforts at the community level. Additionally, there has been an increase in the number and severity of localised, small and medium scale disasters. Therefore, it is inevitable and valuable that the responsibilities of Local Government Authorities be expanded in order to assist communities in risk mitigation, preparation for or responding to disasters at a local level.

3.3.3. Coordination mechanisms between State and non- governmental actors

Dominica has an integrated mechanism for disaster risk reduction which includes collaboration with several stakeholders.

At the regional level, work with CDEMA has resulted in the development of a Country Work Programme CWP (2012-2016) which seeks to guide interventions and consolidate efforts aimed at Disaster Risk Reduction (DRR).

Through the World Bank support, a Disaster Vulnerability Reduction Project under the Strategic Climate Fund, is in its early stages of implementation as the country responds to its vulnerabilities by implementation of prevention and adaptation measures through building infrastructural resilience, slope stabilisation, improved climate resilient drainage systems, capacity building and data development, hazard risk management and evaluation, and a Natural Disaster Response Investment that allows for rapid reallocation of the loan during an emergency, under streamlined procurement and disbursement procedures of the World Bank.

The structure for management of Disasters in Dominica comprises of the following:-

- The Executive Committee
- The Executive Advisory Council
- Task Forces (13)
- District Emergency Management Committees and
- Community Emergency Management Committees

The Office of Disaster Management (ODM) serves as the Secretariat to this structure and coordinates planning and response activities engaging the various levels through the National Emergency Operations Centre (NEOC).

The ODM collaborates with many stakeholders on an ongoing basis with respect to implementation of the Comprehensive Disaster Management approach. Among its

¹⁸ <http://socialservices.gov.dm/index.php/publications/13-publications/31-dominica-s-local-government-system#conceptualframework>

partners are the Red Cross, Local Government Department and National Local Government Authorities Organisation, private sector agencies, individuals with special skills who serve as resource personnel, community based organisation, government agencies and departments.

3.4 Development Context

3.4.1 National development objectives

Dominica's national development objectives are espoused in the GSPS the first edition of which was published in 2006. Since then, revisions of the strategy had been conducted for the periods 2008 – 2012 and the current edition covers the period 2014 – 2018.

This medium term strategy articulates the framework for sustainable development and economic transformation through identification of GoCD's main priorities for the four year period. The three major pillars of this strategy are:-

1. Sound fiscal policy and administrative reform, including creating an enabling environment for local private investment and the attraction of foreign direct investment;
2. Sectoral strategies for growth; and
3. Strategies for poverty reduction and social protection.¹⁹

The GSPS reinforces the important role of the private sector towards achievement of growth in the economy which accounted for close to 20% of Gross Domestic Product (GDP) in the last 5 years and has expressed Government's commitment to encouraging Public/Private Partnerships.

As an overarching sustainable development framework, the GSPS posits the Government's focus on macroeconomic growth and poverty reduction by Leveraging all of the human, natural and financial resources available to the country, in order to realize the vision for Dominica as a place characterized by economic success and by the much-enhanced quality of life of its people, through their own empowerment, and through policies of Government geared to facilitating an environment within which private enterprise can flourish.²⁰

Dominica's growth trajectory has been impeded by several challenges of economic, political and environmental nature. The GSPS describes exogenous shocks emanating from the lingering impacts of trade liberalisation and globalisation and the country's inability to adjust quickly, among its many challenges. Inadequate physical infrastructure was identified as the binding constraint to development.

¹⁹ GSPS 2014-2018 page 1. GoCD

²⁰ GSPS 2014-2018 page 2 GoCD

Within the GSPS, the Government stresses its intention to reduce environmental vulnerability and improve disaster prevention and management, through a combination of risk reduction, impact mitigation and other measures, including:

- Effective implementation of the Physical Planning Act and the National Environmental Management Strategy and Action Plan for Dominica.
- Improving the country's capacity for disaster management. The National Emergency Management Organization will continue applying measures, within the frame of its Disaster Management Strategy and Emergency Management Plan, i.e. preventing, mitigating and preparing for potential disasters.
- Establishing a Natural Disaster Contingency Fund. Staying current with financial obligations to the World Bank's Catastrophic Risk Insurance Scheme, which involves the pooling of Caribbean countries' risks and provision of insurance coverage in the event of major catastrophes.
- Ensure a well-organized and functioning meteorological department, thus making data more readily available for development and other purposes.
- Participation in the World Bank funded Pilot Project for Climate Resilience (PPCR) which allows access to grant and concessional climate change resources.

Discussions among stakeholders indicate, that disaster risk reduction was not adequately identified as a priority in the GSPS. However they confirmed that allocation of significant resources was identified for risk reduction in the 2014/15 national budget through the World Bank Disaster Vulnerability Reduction Project (DVRP).

It must be noted that in 2012 Dominica developed a Low-Carbon Climate-Resilient Development Strategy for the period 2012 – 2020 which serves as a key platform providing support to the attainment of the goals and objectives of the GSPS. It is in response to climate change and other growing economic challenges which face Small Island Developing States (SIDS) like Dominica and premised on the achievement of sustainable development goals and the transformation of Dominica into a green economy, a programmatic nexus that seeks to attract conventional and innovative sources of climate financing.

The long term goal of the Sustainable Land Management Project (SLMP), through support from UNDP and the Global Environmental Facility (GEF) is to: "ensure that agricultural, coastal, forestry and other terrestrial land and resource uses in Dominica are sustainable, thereby allowing for the maintenance of productive systems that assure ecosystem productivity and ecological functions while

contributing directly to the environmental, economic and social well-being of the *people of Dominica*".²¹

Currently before the Cabinet of Ministers for consideration is the Land Use Policy which, is intended to provide direction for land use planning in Dominica, giving consideration to human health and safety and conservation of the natural environment for future generations. Accompanying the Policy is the National Physical Development Plan which will more discreetly outline the growth and development of Dominica for land use and zoning.

²¹ SLMP - UNDP/GEF/GoCD Page 3

4. The Country's Disaster Risk Reduction Legal, Normative and Institutional Profile

4.1 Legal Framework

4.1.1 Constitution

The Constitution of the Commonwealth of Dominica Chapter 1:01 of November 1978, makes no direct reference to disaster management except for the sections in relation to protection from inhumane treatment and protection of property. The Emergency Powers Act provides specifically for the authority of the President, through publication in the Gazette to declare a state of emergency if a disaster is pending or if the country has been affected by a disaster.

4.1.2 Laws and legally binding provisions

Dominica's current legal framework for disaster risk reduction is captured in the Emergency Powers (Disaster) Act: Chapter 15:03 - Act 20 of 1987. This act gives the President the authority to declare a state of emergency by proclamation in the Gazette, in the event that the country is impacted by a disaster or a disaster is imminent. When the proclamation of a disaster is in force, the President is authorised to make powers to secure the essentials of life to the community and for the preservation of health, welfare and safety of the public.

As a member of CDEMA, GoCD has adopted the CDM approach with respect to the management of disasters. Resilience building, disaster risk reduction and the development and maintenance of sound response and recovery mechanisms are key components of this approach.

Through support from CDEMA, Dominica engaged a consultant in the drafting of a Bill, for presentation to Parliament that would give effect to the GoCD's policy intentions respecting CDM in Dominica.

The suite of proposed Regulations for the better implementation and administration of the Comprehensive Disaster Management Bill 2014 when enacted into law comprises drafts of the following²² -

- (a) the Comprehensive Disaster Management Regulations, 2014;
 - (b) the Comprehensive Disaster Management (Volunteers) Regulations, 2014;
 - (c) the Early Warning Systems Regulations, 2014;
 - (d) the Emergency Shelters Regulations, 2014;
 - (e) the Comprehensive Disaster Management (Evacuation) Regulations, 2014;
- and

²² Final Consultancy Report by John Elue Charles - GOCD, March 2014

- (f) the Disaster Relief and Assistance Regulations, 2014.

In 1996 the Cabinet GoCD approved the Pollution Response Plan.

4.2. Normative Framework

4.2.1 Normative instruments for disaster risk reduction technical and political decision making

A National Emergency Management Plan (NEMP) was developed for Dominica in 1986, its first revision was in 2001 and later 2009. The purpose of the plan was to provide a framework for preparedness, prevention, mitigation and response activities to an emergency situation associated with anthropogenic disaster or technological incidents on the island. It provides operational concepts relating to the various emergency situations, describes the overall responsibilities of the Dominica Emergency Management Organisation (DEMO) and the role of all concerned sectors in assisting in minimizing loss of life and suffering. According to the bill, the primary functions of the DEMO are to establish the policy respecting CDM for Dominica and to provide guidelines respecting the scope and contents of that policy. Although it is still pending approval it is being used as the basis for DRR and is in conformity with the Emergency Planning and Disaster Management Bill and is to be reviewed annually.

Additionally the bill seeks to put into law a Government Department called the Office of Disaster Management to be staffed by technically qualified public officers.

Based on the NEMP various sectors are expected to develop Sector Plans (Agriculture, Health, Public Works, Education, Tourism). **Table 3** below shows the responsibility matrix for Dominica's National Emergency Plan.

Table 3. Dominica National Emergency Plan Responsibility Matrix

Hazard/ Function/ Emergency Procedure	Main Responsible Organisation	Key Support Organisations (secondary)	Sectoral Plans
1. Warning/ Monitoring	Meteorological Office Ministry of Works	Ministry of Agriculture	Emergency Animal Disease Preparedness Plan
2. Notification	ODM	National Committees, District Committees, Government Ministries.	
3. EOC	ODM	Disaster Committees, District Committees, Ministries, Private Sector	Sectoral EOCs, MOW, MOH, CMU, Private sector plans
4. Communications 5.	Telecommunications Committee	Private sector. Amateur radio operators.	MOW. Private Sector Plan
6. Transportation	Transportation Committee	MOW, Volunteers.	MOW

Hazard/ Function/ Emergency Procedure	Main Responsible Organisation	Key Support Organisations (secondary)	Sectoral Plans
		Private sector.	
7. Evacuation	Police	District Committees, Transportation Committee	Ops Orders
8. Shelter Management	Shelter Management Committee.	MOE, District Committees, Social Organisations. MOH. Supply Management Committee.	Respective Agency Disaster Plan and SOP.
9. Search and Rescue	Fire Service. (land) Police (maritime)	Transportation Committee, MOW.	SAR Plan
10. Security	Police	Cadet Corps Neighbourhood Watches	
11. Medical attention	Ministry of Health	MOH, Private sector, Transportation committee Fire Service, Police.	Respective Agency Disaster Plan and SOP
12. Environmental Health	Ministry of Health	MOH Shelter Management Committee	MOH
13. Damage & Needs Assessment	Damage Assessment Committee	Ministry of Works	MOH, MOW, Private Sector Plan
14. External Assistance	Ministry of External Affairs	ODM	Ministry of Foreign Affairs Guidelines in a Disaster
15. Supply Management	Supply Management Committee	Governmental Ministries. Private sector. Transportation Committee	Private Sector Plans
16. Public Information	Information Committee (GIS)	ODM, Media Houses, All Committees.	Crisis Communication Plan
17. Protection and Rehabilitation of Infrastructure	Works/Rehabilitation Committee	MOW, Private sector	MOW, Private Sector Plan, Recovery Plan
18. Environmental Protection and Rehabilitation	Solid Waste Management Authority	MOW, Transportation Committee	Recovery Plan
19. Reconstruction	Ministry of Planning	ODM, MOW. All Ministries, Private Sector.	Recovery Plan

Source: NEMP

The **Fire and Ambulance Services Act Chapter 42:60 of 1991** provides the framework for reducing the risks from fire hazards and essentially complying with regulations for the protection of lives and property.

The **Physical Planning Act of 2002** provides the legislative framework for integration of the Environmental Impact Assessment (EIA) process into planning. Pursuant to Part IV (23) (1) of the Act, “unless the Authority otherwise determines, environmental impact assessment shall be required in respect of any application for development permission to which the Second Schedule applies.” However, section

(23) (2) also gives discretionary powers to the Physical Planning Division (the Authority) for any development where it is of the opinion that any significant environmental harm could result.

Dominica Litter Act 40:61 of 1990 makes provision for the abatement of nuisances caused by the littering of premises and public places for purposes in relation to protection of the environment, proper disposal of waste.

The **Quarry Bill and Regulations 2013 (Draft)** is an ACT to provide for the operation and licensing of quarries, to maximize the economic benefits of quarry operations and to minimize the negative impact of quarry operations on the environment and productive industries including, tourism, fisheries and agriculture and for related matters.

The **Environmental Health Services Act 8 of 1997** is the policy framework within which environmental health matters are addressed. It is “an act to make provision for the conservation and maintenance of the environment in the interest of health generally and in relation to places frequented by the public.” The Act is administered by the Minister responsible for Health who may delegate any of his functions to the Chief Medical Officer or the Chief Environmental Health Officer. The Act also empowers the Minister to make regulations in certain areas stipulated in the Act for the purpose of its proper execution.

The **Water and Sewerage Act of 1989** makes provision for a national policy for water and the granting of an exclusive licence to Dominica Water and Sewerage Company (DOWASCO) for the development and control of water supply and sewerage facilities in Dominica.

Water and sewerage services are governed by the Water Regulations 1997 and Sewerage Regulations 1997 made by the Minister after consultation with DOWASCO under Section 68 of the Water and Sewerage Act (Chap 43:40).

Management of pollution is implemented under the following legal framework²³:-

²³²³ Integrated Water Resource Management Policy (Draft) GoCD, July 2011

Figure 8. Pollution Control Legal Framework

Act/Regulation	Key Provisions
Environmental Health Services Act of 2000	Establishes a framework to regulate waste, including hazardous waste and the control of activities likely to cause pollution of the environment. The Act is administered by the Environmental Health Department
Physical Planning Act	Provides for the orderly development of land. The environmental protection plan prepared under it could include policies and measures for the protection of water supplies, water catchment areas etc. Physical Planning Division
Water and Sewerage Act	Establishes DOWASCO's responsibility for the development and control of water supplies and sewerage facilities. DOWASCO
Public Health (Nuisance) Regulations	Regulates activities that cause pollution.
Fisheries Act 1987 & Regulations (Draft)	Promotes and regulates fishing and the marine waters. Regulations prohibit the dumping of litter, soil debris or pollutants activities in marine reserve. Fisheries Division
Forestry & Wildlife Act	Prohibits the deposit of deleterious substances in water or in any place where such substance may enter the water or streams. Forestry Division
Forest Act	Controls and protects watersheds by maintaining water supplies in springs, rivers, canals and reservoirs. Forestry Division.
Water Catchment Rules	Rules prohibit, washing, use of pesticides in rivers or streams, disposal of household or industrial waste in catchment areas.
Crown Land (Forest Produce) Rules	Provides some protection to watershed
National Parks & Protected Areas Act	Minister has power to make regulations for the preservation and maintenance of water supplies and the prevention of soil erosion, landslides, deposit of mud, silt stones in any water. Offers legal protection to approximately 20% of Dominica's forestlands as forest reserves or national parks. Forestry and Parks Division.
Stewart Hall Catchment Rules	Prohibits agricultural cultivation and other activities, which may be detrimental to the water supply
Agricultural Small Tenancies Ordinance	Promotes soil and water conservations
Solid Waste Management Act	A person shall not deposit solid waste in any marine waters, rivers or river banks without a license
Pesticide Control Act	Controls the importation and use of pesticides.
Litter Act	Controls the deposit of litter in public places including waterways. Environmental Health Department

Dominica is party to several Conventions, the matrix below summarizes the major conventions to which the country is signatory.

Table 4. List of Conventions to which Dominica is a signatory²⁴

Basel Convention	In effect since 3rd August, 1998
Convention on Biological Diversity	Ratified 5th July, 1994
Cartagena Protocol on Biosafety	Ratified 13th July 2004
Cartagena Convention for the Protection and Development of the Marine Environment (1 protocol ratified)	Ratified 7th September 1990
International Convention on Civil Liability for Oil Pollution Damage	Acceded August 2001
UN Framework Convention on Climate Change	Ratified 21st March, 1994
Kyoto Protocol on Climate Change	Ratified 5th January, 2005
Cotonou Agreement (Replaced the Lome Convention)	Ratified 26th July, 2002
UN Convention to Combat Desertification	Ratified 28th November, 1997
UN Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES)	Ratified 30th June, 1995
Third UN Convention of Law of the Sea (UNCLOS)	Ratified 3rd September, 1991
Convention on the Limitation of Liability for Maritime Claims Relating to the Arrest of Sea Going Ships	Acceded August, 2001
Treaty for the Non-proliferation of Nuclear Weapons	Acceded 3rd August, 1983
International Convention on Oil Pollution Preparedness, Response and Cooperation	Acceded August 2001
International Plant Protection Convention	Ratified April 1979
UN Convention on the Prohibition and Use of, Stockpiling Production and Transfer of Antipersonnel Mines and their Destruction.	Ratified 26th March, 1999
UN Convention on the Prohibition of the Development, Production and Stockpiling and Use of Chemical Weapons and (weapons of mass destruction) their Destruction. (<i>Chemical Weapons Convention</i>)	Ratified 12th February, 2001
Geneva Convention on the Prohibition of Military or any other Hostile Use of Environmental Modification Techniques	Ratified 9th November, 1992
Treaty for the Prohibition of Nuclear Weapons in Latin America	Ratified 26th April 1993
UNESCO Convention on the Protection of the World Cultural and Natural Heritage	Ratified 4th July, 1994
International Convention for the Regulation of Whaling	Acceded 18th June 1992
Suppression of Unlawful Acts Against Safety of Maritime Navigation	Acceded August 2001
International Convention for the Safety of Life at Sea	Acceded 2000
Stockholm Convention on Persistent Organic Pollutants (POPs)	Acceded 3rd August 2003
Vienna Convention for the Protection of the Ozone Layer	Ratified 30th March, 1993
<ul style="list-style-type: none"> • Montreal Protocol on Substances that Deplete the Ozone Layer • London Amendment • Montreal, Copenhagen & the Beijing Amendments 	<p>Ratified 20th June, 1993</p> <p>Ratified 30th March, 1993 Ratified 10, March, 2006</p>
Rotterdam Convention on the prior informed consent procedure for certain Hazardous Chemicals and Pesticides in International Trade	Acceded January 2006

²⁴ ECU Website - <http://ecu.gov.dm/index.php/conventions>

4.2.2 Public Policies

Policies that are specific to DRR are mainly contained in the NEMP. These policies are supported by the various established procedures and protocols within varying Government agencies. Some of these policies include:-

- Dominica Policy and Strategy on Disaster Management (Draft)
- Damage Assessment and Needs Analysis (DANA) Policy (Draft)
- Shelter Policy (Draft)
- National Land Use Policy (Draft)
- Biodiversity Strategy and Action Plan (2001 – 2005)
- Integrated Water Resource Management Policy (Draft)
- Standard Operating Procedures (SOPs) for the NEOC

4.3 Institutional framework

4.3.1 Organization of the national system and mechanisms at all levels

Comprehensive Disaster Management in Dominica is the responsibility of the Dominica Emergency Management Organisation (DEMO) although not formally law, it is being used as the framework for all risk reduction and management and adaptation efforts:-

DEMO comprises the following organs:-

- (1) The **Executive Committee of DEMO**, which comprises of the Prime Minister; such Ministers as the Prime Minister considers necessary to assist in the policy making and decision making process respective to disasters; the Secretary to the Cabinet; the Government Press Officer; the Commissioner of Police; the Deputy Commissioner of Police; the Chief Meteorology Officer; the Chief Fire Officer; the Director of Agriculture; the Chief Medical Officer; the Chief Executive Officer of Dominica Air and Sea Ports Authority and the Director of the Department of Disaster Management (DDM).
- (2) The **Disaster Management Advisory Council** is mandated to operate as a mechanism for the key stakeholders in disaster risk management to consult with each other and to coordinate their actions on matters relating to CDM. The Disaster Management Advisory Council is also empowered to advise the DEMO as regards the development of the Comprehensive Disaster Management Policy.
- (3) Such task forces or operations groups as may be established; According to the NEMP there are 13 Task Forces.
- (4) The District Disaster Management Committees; The District Committees are umbrella bodies through which Community Disaster Management Committees coordinate their response and communicate with respect to events with the NEOC through the DDM; and

(5) The Community Disaster Management Committees (CDMC) - it is expected that each community in Dominica would establish its own Disaster Management Committee. This effort is expected to be spearheaded by Village Councils and where there is no council, Improvement/Development Committees would spearhead the process. These committees work in collaboration with the DDM and Dominica Red Cross where capacities are enhanced and vulnerability assessments conducted and hazard maps created as well as a Disaster Emergency Plans developed through a participatory process. Not all communities in Dominica have established functional and working CDMCs. There is a re-emergence of these non-functional committees during the hurricane season or whenever an event has occurred, their response is swift.

The DDM plays a coordinating role with respect to Management and coordination of DRR.

4.3.2 National plans and their implementation

Greater integration of hazard risks into medium and long-term economic and financial analysis and planning could substantially reduce the economy's hazard vulnerability, thus contributing to sustainable growth.²⁵

The CDM Cycle approach has been adopted by Dominica. This approach is based upon the principles of Prevention, Mitigation, Preparedness, Response and Recovery.

Government Departments have been encouraged by the ODM to develop sector and department plans and Focal Points. There has been some compliance with this request however there is no documentation on progress of implementation.

Utility Companies (DOMLEC, DOWASCO, LIME) and some Petrol and Bulk Stations have developed Emergency Plans and Business Continuity plans that are tested and revised annually.

The ODM is well on its way towards implementation of Dominica's Country Work Programme 2012 - 2016. Among some of the ongoing and proposed efforts include:-

- Passage of CDM Parliamentary ready Legislation in collaboration with CDEMA - pending Parliament's approval.
- Finalization of the Country Risk Profile Document/ UNDP – facilitated by consultant Amonia Paul Rolle.
- Initiate a Pilot Project Community Alerts Project (CAP) project in Portsmouth and Calibishie - UNDP & CDEMA.

²⁵ Dominica: Natural Disasters and Economic Development in a Small Island State (WB), October 2001

- Complete National Volcanic Contingency Plan and a community specific plan for Pointe Michelle together with the Dominica Red Cross-DIPECHO PROJECT/ECHO/UNDP.
- Installation of strong motion earthquake monitoring equipment in Salisbury in collaboration with the Seismic Research Center of the University of the West Indies, Trinidad and Tobago.
- Roll out Vuelco Volcanic simulation with the Seismic Research Center, University of the West Indies carded for April 2015.
- Rehabilitate the Early Warning System for the Roseau Valley area – JICA Project.
- Seismic expansion project under the PPCR-World Bank Project.
- Complete Template Plans for Schools, Communities and Families – in collaboration with Dominica Red Cross and USAID /OFDA/ Local Government
- St. Marys Primary, The Convent Preparatory School and Choices home for juveniles based at Jimmit to develop School Safety Programmes.
- CDEMA funded risk reduction sub- regional project based in Bioche – Completion of documentary and expansion of Bioche link Road.
- Develop PSA's for public broadcast and continue Public sensitisation programme.
- Work jointly on a process to develop set a framework for the function of Tsunami Task Force at the ODM and to arrive at standard operation procedures and an action plan.
- Work on improving an emergency response plan for the ODM in collaboration with the Ministry of Health.
- ROSS University to discuss Emergency and Disaster Related Matters (Recommended that the ODM relate to the ROSS University as a Community within the Dominica Context)
- Continue community capacity enhancement as part of education/ prevention/mitigation facilitate a number of sessions around the Island addressing communities, Disaster Committees, Village Councils, young people and children among other important routine task not excluding representing the ODM at several meetings, workshops and other such activities.
- Develop a network of professionals in every district to build capacity to prepare, respond and manage emergencies. These professionals would serve as resource persons of the ODM to deliver training on Community Emergency Response Team (CERT) programs.
- Secure assets of the Jimmit compound by fencing the perimeter inclusive of constructing a functional security check point and guard house with CCTV component.

GoCD's aim to achieve near 100% access to potable water is being progressively advanced by DOWASCO. Between 2000 and 2013, \$180,474,738.56 was spent on water systems around Dominica. This effort is being supported by Basic Needs Trust Fund (BNTF), Government of Japan (WEF), Dominica Social Investment Fund (DSIF), European Union and other development partners. For the period 2012/13 \$73,072,489.40 was expended on the upgrade and or extension of water systems around the island.

5. The State of DISASTER RISK in the Country

5.1 Historical disaster analysis

There is currently no comprehensive analysis of disaster risk for Dominica, however eclectically there are various assessments that have been carried out with a view to providing limited analysis of Dominica's vulnerability to various natural and anthropogenic hazards.

Research confirms Dominica as extremely vulnerable based on the presence of:-

- nine (9) potentially active volcanoes,
- tectonic earthquakes
- landslides
- floods
- tropical weather systems (hurricanes)
- tsunamis
- climate change
- anthropogenic hazards

All of these hazards are exacerbated by Dominica's small population and topography.

Figure 9. Rockfall Hazards



Anecdotally the cost of recovery from disasters has seriously impeded Dominica's development. The openness of the economy and its past history of being a mono-crop economy structurally expose the country's fragile economy to external shocks.

According to the World Bank, rehabilitation costs of major storms from 1979 to 1999 amounted to around EC\$380m (US\$140m), equivalent to EC\$18m per annum, and for key economic infrastructure - roads, electricity, water, telecommunications and international transport links – around EC\$10m. (See table below).

Table 5. Economic costs for major tropical storms 1979 – 1999 Housing and Infrastructure Damage²⁶

	Hurricane David	Hurricane Hugo	3 storms	Hurricane Lenny
	1979-80	1989	1995	1999
1. Buildings				
Housing	27.0	...	4.3	2.7
	(5.3)a			
Public & Commercial	26.8	...	8.6	8.9
	(8.8)a			
(Sub-total)	53.8	5.0	12.9	11.6
	(13.1)a			
2. Utilities/Infrastructure				
Roads/sea defences	10.1	...	33.8	70.2
				(124.7)b
Water	2.3	...	0.8	0.3
Electricity	5.0	...	0.7	0.2
Telecommunications	3.0	...	2.1	2.0
Port (DPA)	7.8	...	1.2	3.5
(Subtotal)	28.3	15.0	39.1	76.2
				(130.7)b
3. Total	82.1	20.0	52.0	87.8
	(44.1)a			(142.3)b

Rehabilitation Costs 1979-1999 (EC\$m current prices)

- a. Excludes full reconstruction costs of roads including upgrading sea defenses (Liautaud, 2000)
- b. Includes full cost of upgrading sea defenses according to the Mouchel (1997) report modified by the Ministry of Communications, Works and Housing (GoCD, 1999d) and reassessed by Liautaud (2000).

Costs for infrastructure recovery alone for Hurricane Lenny, bringing it back to its pre-disaster condition, and not counting loss of current production, was estimated by CDERA at \$21.5 million²⁷, accounting for 8.8% of GDP.

Warmer sea surface temperatures result in more frequent and intense hurricanes. These create severe challenges for coastal infrastructure and ecosystems with the potential for displacing populations of already vulnerable groups. It is estimated that every two (2) years a country in the Caribbean can expect to be affected by a natural disaster, the cost of which can be as much or equal to 100% of GDP.

5.2 Hazards / Threats

Like most of its Caribbean neighbours, Dominica is very vulnerable to multiple hazards, some of which could occur simultaneously. Among the most common are hurricanes, earthquakes, flooding, rains, fires, seismic and volcanic activity and

²⁶ Dominica Natural Disasters and Economic Development (WB), October 2001

²⁷ USAID/J-CA Hurricane Lenny recovery in the Eastern Caribbean 2000

associated tsunami threats. **Table 6** captures some of the hazards to which Dominica is prone.

Table 6. Category of Hazards

TYPES OF HAZARDS		
NATURAL	MAN MADE	EXTRAORDINARY
Volcanic Eruption	Fire	Nuclear
Hurricane	Explosions	Other
Earthquake	Pollution	Radioactive agents
Landslide	Power Failure	
Flood	Invasion	
Drought	Shipwreck	
Epidemic	Strikes	
Tsunami	Aircraft Crash	
	Toxic and Oil Spills	
	Construction Failures	
	Major Road Accidents	
	Hazardous Material Spills (Hazmat Spills)	
	Mass poisoning	
	Toxic Chemical Spills	
	Civil Strife	
	Terrorism	
	Pest and disease	
	Bomb threats and other threats of violence	
	Health Emergencies	

Two highly vulnerable centres to volcanic eruption are the north and south of Dominica. However, even the large central volcano (Morne Diablotin), which is currently listed as low risk, has the potential to produce a large eruption (see Figure 10)

Large expanses of forest are protected in Dominica through the National Parks system and some have been certified as UNESCO World Heritage sites.

The abundance of water can be seen from Figure 11 depicting rivers, water catchments and DOWASCO water catchments.

Figure 10. Volcanic Hazard Map

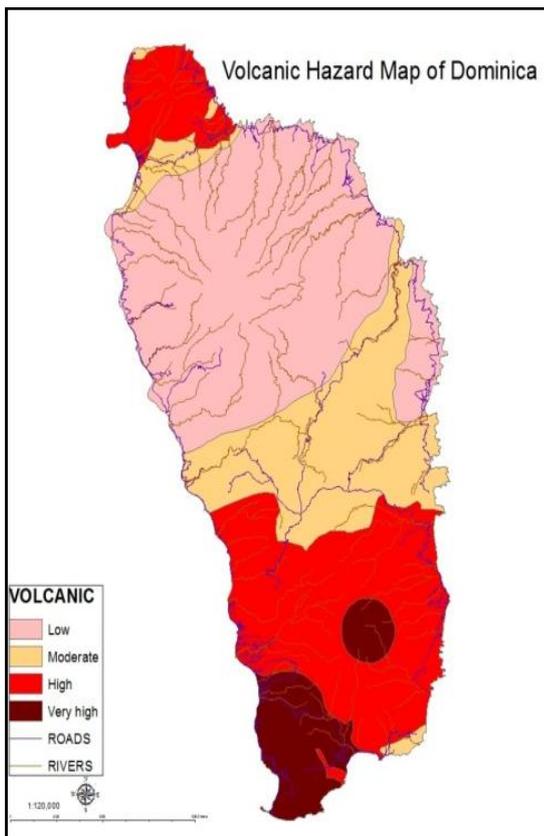
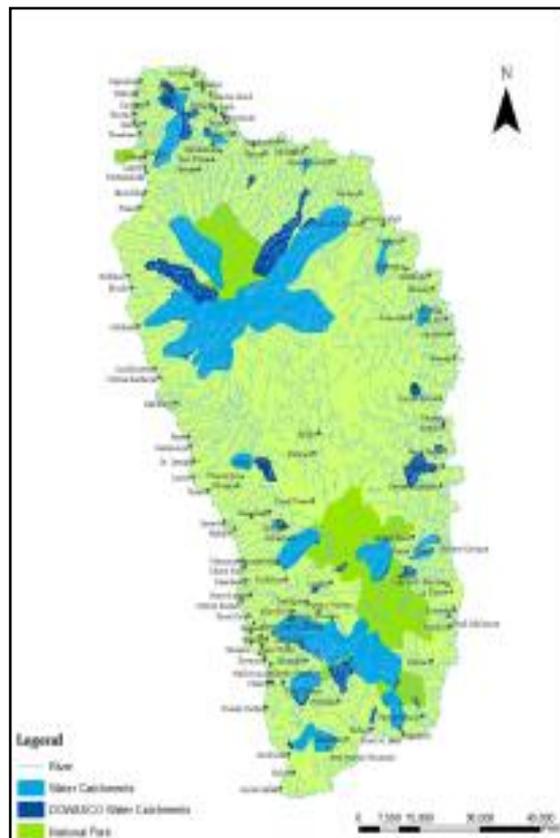


Figure 11. Hydrology Map



The maps below (Figures 12 and 13) demonstrate the country's vulnerability to coastal impacts and flooding.

Historically the country has been affected by hydro meteorological events, some with very devastating effects on the economy including mortality. Generally landslides can be the result of prolonged or heavy rainfall or earth movements/earthquakes. In 1977 a major landslide in the community of Bagatelle claimed the lives of thirteen (13) people; in 2007 two (2) residents were buried in a landslide in the community of Campbell; on 24th May 2010 three (3) mortalities were recorded resulting from a landslide at San Sauveur (Figure 14).

Figure 12. Flood Hazard Map

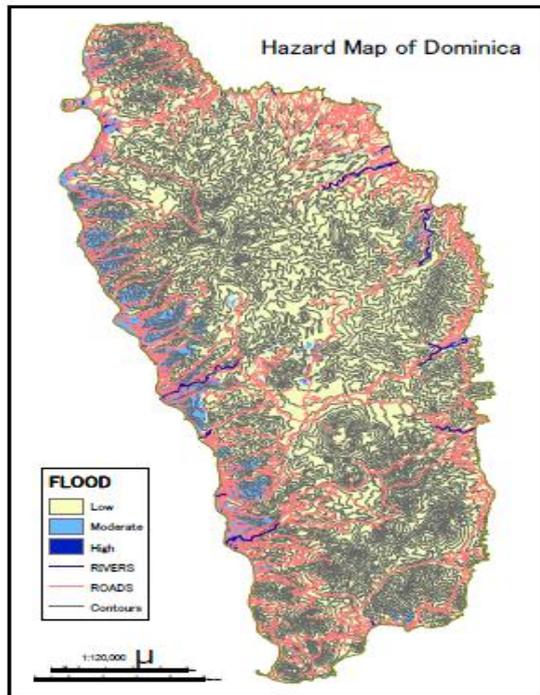


Figure 13. Coastal surge hazard map

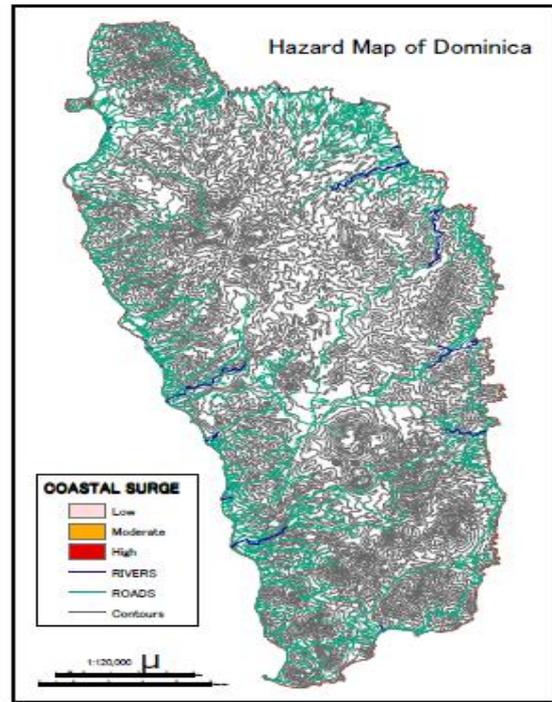


Figure 14. Landslide at San Sauveur



(classicinternational.com)

The table below provides a snapshot of the cost of clearing landslides in Dominica for the period 1983 - 1987.

Table 7. Cost of landslide clearing 1983 - 1987

Fiscal Year (June/July)	Landslide Costs (in thousands of dollars)
1983-1984	92.8
1984-1985	269.0
1985-1986	71.7
1986-1987	63.0

Figure 15. Landslide Hazard Map

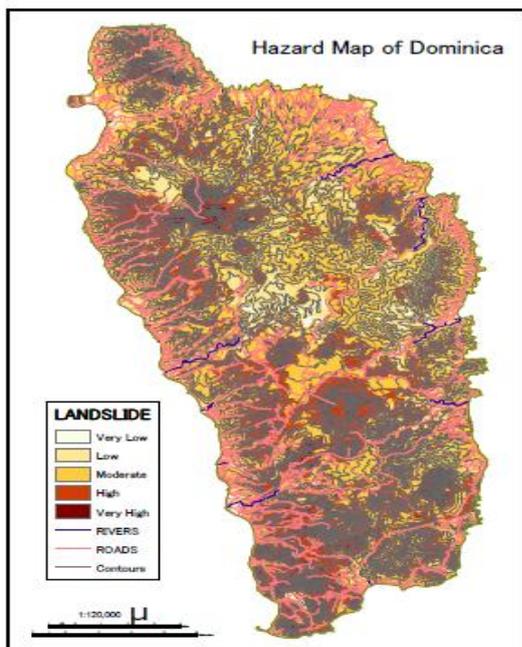
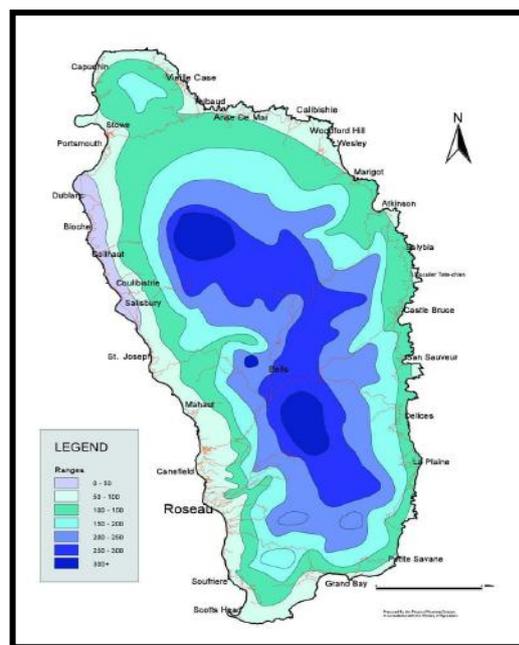


Figure 16. Rainfall Map



Fires

For the period 2012 - 2013, the Fire and Ambulance Service responded to a total of 627 fire calls. The majority being bush fires which represented 54% of the calls, while accidents accounted for 26.9% and fire dwellings 10% of the calls.

Table 8. Events impacting Dominica 1920 - 2014

Date	Event	Impact	Losses	Classification
2013 Dec - Present	Chickungunya	Over 3000 affected		
2013 Nov 21	Fire (Roseau)	house destroyed	1 death	
2013 Jul 21	Fire (Roseau)	1 business place destroyed		
2013 May 3	Fire (Roseau)	3 houses destroyed, 3 damaged		
2013 Dec 24	Trough, ,flash flooding and landslides	damage to housing and infrastructure		
2013 April	Heavy rains, 30+ landslides across the country	Damage to roads and agriculture	2 deaths	
2013 Sept 5	Landslide Morne Prosper	Road blocked		
2012 Jul 22	Fire (Zicack)	House destroyed	1 death	
2011 Oct 6	Fire (Morne Prosper)	3 houses destroyed		
2011 Jul 29	Landslide Soufriere	Road blocked		
2011 Jul 28	Miracle Lake flooding (Layout)	Damage to ecosystem, agriculture, fisheries and road network		
2011	Storm Ophelia	Damage to housing and infrastructure		
2010-2011	Severe Drought and extended rainy season of 2010	Loss of income in agricultural sector		
2010Jul 14	Fire (Bioche)	4 houses, 1 Disco destroyed		
2010 May 24,	San Sauver Landslide	Disaster Zone	3 deaths	Area disaster zone
2010 Mar 18	Fire (Coulibistrie)	3 houses destroyed		
2009 Jul	Flooding	Damage to infrastructure		
2009	H1N1	Alert	No cases reported	Alert/ phase
2008	Hurricane Omar	Damage to coast and fishing industry	No deaths	Sea surge 20 to 30 feet
2007	Hurricane Dean (Cat 2)	Damage to agriculture and housing		Flash Flooding
2007	Landslide Campbell		2 deaths	
2007	Landslide		2 deaths	

Date	Event	Impact	Losses	Classification
	Bellevue Chopin			
2007 Nov 29,	Earthquake (6.5 Richter Scale)	Housing Infrastructure	No deaths	North declared a disaster area 7.2 magnitude
2004 Nov 21	Earthquake	Damage to churches and housing in the north	No deaths	6.4 magnitude
2004 Nov	Series of landslides			
2003	Carholm landslide	Damage to agriculture and Tourism	No deaths	Flood prone/hazard area
2003	Landslide Bellevue Chopin			
2003	Seismic activity north			500+ events in one week
2001	Drought			
1999 April	Landslides in the north 100+	Damage to roads and housing		
1999	Hurricane Lenny	Coastal Damage	1 death	Sea Surge 30 to 40 feet
1998 to 2000	Seismic activity in the south			168 tremors one day
1998 Aug 23	Small aircraft crash		11 deaths	
1997	Landslide Bagatelle			
1995	Hurricane Luis	Damage to housing, agriculture and infrastructure		
1995	Hurricane Marilyn (Cat 1)	Damage to housing, agriculture and infrastructure		
1995	Hurricane Iris	Damage to housing, agriculture and infrastructure		
1989	Hurricane Hugo			
1988	Hurricane Gilbert			
1986 Nov 11	Landslide Good Hope		1 death	
1986 Nov 12	Landslide Castle Bruce			
1984	Hurricane Klaus			
1983	Landslide Bellevue Chopin		1 death	
1980	Hurricanes Frederick & Allen (Cat 1)	Economy Agriculture	No deaths	Disaster

Date	Event	Impact	Losses	Classification
1979 Aug 29	Hurricane David (Cat 5)	Total devastation	43 deaths 60% homeless	Disaster
1979 May 29,	Change of Government / Insurrection	Social Unrest	1 death	Revolution
1977	Bagatelle Landslide Disaster		13 deaths	
May 21, 1975	Morne Prosper Vehicular accident		28 deaths	
1970	Landslide Bellevue Chopin			
1960	Landslide Bellevue Chopin		1 death	
1920	Landslide and flooding in Roseau Valley		1 family died	

Figure 17. Landslide at Soufriere (left) Figure 18. Flooding at Massacre (right) ²⁸



²⁸ Photo credit - Dominicanewsonline.com

Figure 19. Destruction of Portsmouth Catholic Church - Earthquake 2004



5.3 Emergencies affecting Public Health and Safety

The recent outbreak of the Ebola virus in West African states and the declaration of a Global health emergency by the World Health Organisation (WHO) bring to the fore the need for countries to be constantly revising their national emergency plans and strengthening health facilities and public institutions. The IHR (2005) defines Public Health Emergency as “an extraordinary event which is determined, as provided in these Regulations:

- Beyond the affected State’s national border; and may require immediate international action;
- To constitute a public health risk to other States through the international spread of disease; and
- To potentially require a coordinated international response”. This definition implies a situation that: is serious, unusual or unexpected; carries implications for public health”.

Dominica conducted the first performance measurement of the Essential Public Health Functions (EPHF) at the national level in December 2001. The Ministry of Health of Dominica collaborated with the Pan American Health Organisation (PAHO) Office of Caribbean Program Coordination (CPC) in Barbados and of the Division of Health Systems and Services Development of PAHO in Washington in the conduct of the assessment.

The following defines the various functions being measured:-

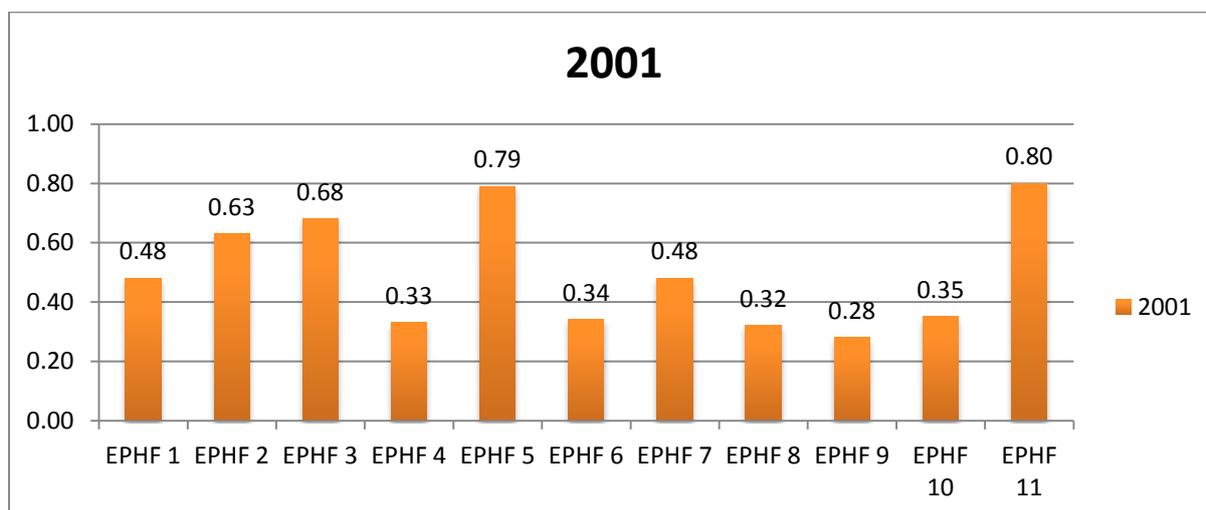
- EPHF 1 – Monitoring, evaluation and analysis of health status
- EPHF 2 – Public health surveillance, research, and control of risks and threats to public health
- EPHF 3 - Health promotion
- EPHF 4 – Social participation in health

- EPHF 5 – Development of policies and institutional capacity for planning and management in public health
- EPHF 6 – Strengthening institutional capacity for regulation and enforcement in public health
- EPHF 7 – Evaluation and promotion of equitable access to necessary health services
- EPHF 8 – Human resource development and training in public health
- EPHF 9 – Quality assurance in personal and population-based health services
- EPHF 10 – Research in public health
- EPHF 11 – Reducing the impact of emergencies and disasters on health

The results of this assessment captured in Figure 20 below, indicate that function 11 which is reducing the impact of emergencies and disasters on health received the highest score. This could be interpreted as a consequence of the country’s sensitivity to natural disasters and capacities built in preparedness, mitigation and response mechanisms within the health sector.²⁹

Function 9 – Ensuring the Quality of Personal and Population-based Health Services - had the lowest score reflective of the lack of capacity to carry out quality assurance activities on a regular basis within the system, the emphasis being on those activities geared towards providing services.

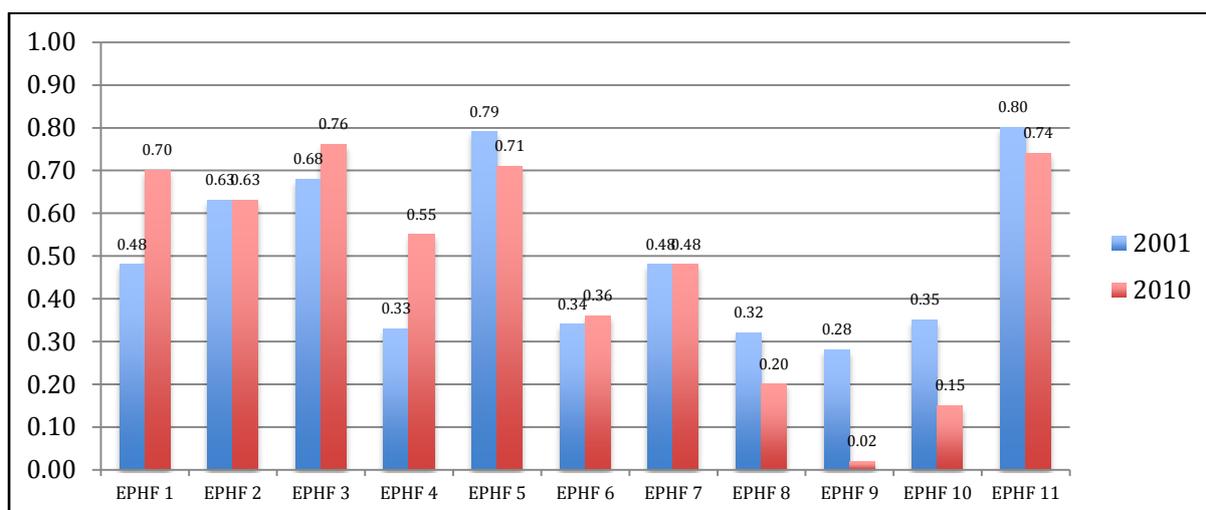
Figure 20. Essential Public Health Function Measurement Results 2001



Source: Ministry of Health

²⁹ Strategic Plan for the Ministry of Health

Figure 21. Essential Public Health Function Measurement Results (2001 and 2010)



Source: Ministry of Health

Results of the 2010 Essential Public Health Function Measurements (see figure 21) reveal significant improvements in three of the indicators that is EPHFs 1, 3 and 4. According to the report Dominica performs within the “optimal” range on only one of the eleven EPHF Functions that is EPHF 3 – Health Promotion. Additionally performance was reported within the “above average” range for five EPHF Functions: 1, 2, 4, 5 and 11.

Performance was within the “average” range for two EPHF Functions 6 and 7. While Performance was within the “minimum” range for three EPHF Functions: 8, 9 and 10.

Summarily, in comparison to 2001, performance fell in four (4) EPHF areas, namely EPHFs 8, 9, 10 and 11.

Among the major recommendations of this study with regard to EPHF 2 (Public Health surveillance), the following were suggested:

1. Improving Surveillance Systems to Identify Threats to Public Health:

- Ensure surveillance system provides information for the production and dissemination of periodic bulletins and that system has capacity to process systematic feedback on such publications.

2. Improving Capacities and Expertise in Public Health Surveillance:

- Increase expertise in public health surveillance to analyze threats and risks to public health, including:
 - forensic medical services (e.g. pathology, medico-legal, police laboratories, etc.)

- management and use of geographic information systems
 - environmental health and toxicology
 - Use of an active geographic information system
 - Analyzing and conducting demographic (population-based) research on:
 - Infectious diseases
 - Chronic diseases
 - Injuries
 - Mental health
 - Occupational health
 - Rapid epidemiological evaluation methods
 - Rapid environmental sampling in response to reports of environmental health risks
 - Using research results to improve epidemiological surveillance systems.
3. Enhancing the Capacity of Public Health Laboratories and
 4. Improving Capacity for Timely and Effective Response to Control Public Health Problems.

In Dominica, Primary Health Care Services are decentralized, and delivered from facilities located in villages throughout the island. Fifty-two (52) health clinics/centres, and two district hospitals administer health care services to citizens to a very defined population catchment. One privately owned hospital provides secondary health care.

Between 600 – 3000 persons are served from each Type I clinic within a five mile radius. These facilities are staffed by a Primary Care Nurse or District Nurse Midwife. At Type I clinics, services delivered include child health, reproductive health, nutrition, health education, medical care, community action and emergency services. Staff from the Type III centre, pay scheduled visits for health care delivery and supervision.

The Type III centres are staffed with a multi-disciplinary team of health care professionals including various categories of nurses, medical doctors, pharmacist, drug abuse prevention officer, environmental health officer, and dental therapist.

Two small district hospitals located in Portsmouth (26 beds) and Marigot (20) provide for inpatient care. In 2006, Primary Health Care (PHC) services expanded to include a diagnostic centre at Portsmouth, providing basic laboratory and imaging services. There is a referral system from primary health care to secondary care with some guidelines for referral.³⁰

This decentralized system lends itself to a highly effective primary health care system. However, given the country's high vulnerability and openness of its economy the potential threat of public health emergencies pose grave challenges for health

³⁰ Strategic Plan 2010 - 2019, Ministry of Health, GoCD

authorities in Dominica. Some of these threats include but are not limited to:- Leptospyrosis, Chikungunya, Dengue, Ebola, cholera; food borne illness and communicable diseases; and mass fatalities due to events such as poisoning, structure collapse, etc.

The Ministry of Health's mechanism for disease surveillance includes collaboration with several stakeholders who meet on a regular basis.

5.3. Vulnerability

5.3.1. Analytical criteria and methodology

There has been no comprehensive analysis on Dominica's vulnerability to disasters, however varying bits of data and information on specific indicators are available. These include research studies, assessments and very limited raw data. In the absence of a comprehensive analysis of the country's vulnerability, the following can be considered as tools in the identification and analysis of vulnerability:-

- Post assessments of the impacts of various disasters
- Studies to inform projects and strategies e.g. PPCR, DVRP, GEF etc
- Benchmarking Tool used for assessment of the Fond Cole and Dubique communities
- Vulnerability and hazard maps for selected hazards
- Community based vulnerability and capacity assessments
- Financial reports on damage impacts of storms
- Information from simulation exercises

5.3.2. Components of vulnerability

Economic Vulnerability

A lack of hazard information and failure to utilize available information on risk and vulnerability can be attributed to the under-investment in mitigation and adaptation resulting in multiple design failures for development projects in Dominica. For example the flooding that occurred in Massacre in 2011, according to anecdotal information suggests that the design of some of the bridges built could not accommodate the volume of water which was also exacerbated by pipelines attached to the bottom platform of the bridge causing further obstruction to the free flow of water which resulted in flooding of the community. Another contributory factor is excessive cost-minimization in initial investment in the public provision of modern infrastructure and inadequate consultation with stakeholders during project conceptualisation. Recovery costs associated with disasters aimed at rapid return to normalcy sometimes does not include mitigation/adaptation into rehabilitation.

There has been a concerted effort to include climate change considerations in development in recent times as is indicated in several recently adopted strategies including the GSPS, and the Low Carbon Climate Resilient Development Strategy.

The experiences of Caribbean Community (CARICOM) Heads of State following devastation caused by hurricanes in the Caribbean in 2004, forced a request to the World Bank for assistance to gain access to affordable and effective disaster risk financing instruments. The Caribbean Catastrophic Risk Insurance Facility (CCRIF) was established in May 2007 and started operations one month later. It provides coverage to 16 Caribbean countries, including Dominica, Grenada, St. Lucia, St. Vincent & the Grenadines, Anguilla, Antigua and Barbuda, Belize, and the Bahamas.

Per capita costs for recovery and rehabilitation are usually significant representing single digit percentages of GDP. Shrinking fiscal space makes it difficult for government to meet increasing demands on public financing and challenges with servicing foreign debt commitments while managing and recovering from the impacts of disasters.

When disaster strikes, resources that were previously allocated for planned projects frequently gets diverted to respond to disasters; the lives and livelihoods of people become severely impacted particularly the poor, who have higher sensitivities to disasters, they feel the worse brunt of these events. Given Dominica's rate of vulnerable persons at 11.5%³¹, this group of people would be among the first to fall below the poverty line in the event of any disaster or shock experienced in the economy, thereby increasing poverty rates as well as the rate of unemployment, those deemed poor could fall further into being indigent. These households would experience loss of income, inability to provide food and nutrition and could potentially fall into a cycle of poverty that would require significant state resources to normalize the situation.

Physical Vulnerability

Most of the infrastructure in Dominica is prone to several hazards. Roads and utility infrastructure is among the most vulnerable to landslide and storm surge. This sometimes leaves communities entirely cut off from the rest of the island, particularly communities with single road access in and out of these communities. Associated impacts are felt on communications, electricity and water since most of these are placed along major road networks.

³¹ Dominica Country Poverty Assessment 2009 reported 11.5% of the population as being vulnerable

A landslide in the community of Bagatelle in 1977 claimed the lives of 13 people. Some of the critically injured had to be airlifted to receive medical attention due to a landlocked situation from blocked roads. A similar situation was experienced in the community of Grand Fond when the community was cut off from the rest of the island due to blocked roads as a result of landslides. Food had to be airlifted to the community to avert a crisis in 2011.

Public and private structures and housing suffer damage from the impacts of storms and rain. The December trough of 2013 impacted the south of the island causing major damage to road infrastructure and housing.

Dominica is also prone to major earthquakes. In 2004 an earthquake destroyed the Portsmouth and Vieille Case Catholic church including several homes in the north of the island.

Social Vulnerability

Most of Dominica's population are located on the coastline of the island making it highly vulnerable to sea level rise and surges, flooding, wind damage and loss of housing and livelihoods. On the other hand, some settlements located more inland are built on steep slopes, resulting in land slippage and constant threat to life and property. This is exacerbated by issues of poverty, poor land use, reluctance to observe and enforce adequate building codes and unregulated settlements among other things.

Experience has shown that in events of disasters, communities in Dominica are easily mobilised and contribute significantly to recovery and rehabilitation efforts particularly at the community level, however it is also evident that it is becoming increasingly difficult to mobilise volunteers outside of disaster events. Community cohesiveness becomes very critical in the resuscitation of community organisations responding to events.

The progress has been substantial but uneven in reducing hazard risk in all areas of infrastructure and building. The socioeconomic conditions prevailing appear to correlate to dramatic changes in cultural and social behaviour of the population. The acquisition of tastes for foreign foods by the population which is competing against the consumption of local foods, as well as the growing sedentary lifestyles of the population, contribute towards high food import bills as well as an increase in the volume of garbage generated from these food imports. An associated outcome has been an increase in the rates of obesity and chronic non-communicable diseases among Dominica's population. Indiscriminate dumping of garbage into water ways and valleys, and poor practices that adversely impact the environment result in blocked waterways, resulting in increased sudden velocity and volume of water downstream as what occurred in the Newtown flooding during the 24th December

2013 weather trough. Impacts of pest and disease in the agricultural sector threaten food security.

National Resource Vulnerability

Water and electricity are lifeline services that are frequently impacted during weather events and or landslides. Ruptured pipelines and the potential for damage to water storage tanks further augment the vulnerability of communities downstream for example at Giraudel and Antrim (Upper Roger). Land slippage at Antrim has been a recurring problem for DOWASCO, a situation that exposes a major 12 inch pressured pipeline to rupturing. This potential threat could affect over a third of the population, critical emergency services, including the Princess Margaret Hospital and water users from Mero to Castle Comfort called the Water Area 1 (WA1). This threat also exposes the community of Canefield to significant loss of property and life if there is a serious event.

Human activity in areas designated as water intakes are threatened through indiscriminate dumping, these are real threats that could pollute and contaminate the water source.

Dominica's water source for more than one third of its population is located on private property. Efforts to protect this water source are proving to be a major challenge as a consequence of the indiscriminate dumping in an area called Red Gully. On one occasion forty, 45 gallon drums of chemical were deposited near this water source. Correct supervised removal of these drums cost DOWASCO over \$50,000.00.

Environmental impacts that affect Dominica's biodiversity and ecosystems also pose threats to food security. Occurrences that denude Dominica's steep slopes of their cover by clearing further expose the land to the erosive force of rains making it vulnerable to recurrent landslides. Climate change has both onsite and off-site effects on land. Onsite effects include the lowering capacity of the land, causing either reduced outputs (crop yields, livestock yields) and/or the need for inputs. Off-site effects include changes in water regime, such as decline in water quality and sedimentation of river beds and reservoirs.³²

Fisheries resources are also exposed to several land based sources of pollution, this is compounded by stresses of storms and other weather related events that impact marine life including corals, but particularly the infrastructure of the fisheries sector. For Hurricane Omar, GoCD's expenditure in compensating loss of fishing boats and gear cost over US\$1.6 mil.

Geothermal resource is a relatively new area of potential exploration for Dominica in its quest towards transforming the country into a Green economy. Exploitation of this

³² Dominica Low Carbon Climate Resilient Development Strategy 2012 - 2020

natural national resource, while it provides many potential benefits including economic stability paradoxically also exposes the country to some new hazards.

The exploration phases have been successfully concluded, guided and informed by an Environmental Impact Assessment (EIA). There were four (4) potential sites identified for exploration. Among the major issues with specific reference to DRR in relation to implementation of this project were as follows:-

Sites 1, 2 and 4 were located in zones of low risk of landslides while Site 3 was located in a zone of moderate risk of landslides. Since the Roseau Valley is classified as lying in a volcanic risk zone, consequently the geothermal project was exposed to volcanic hazards including seismic activity.

Some areas in the Roseau Valley may be potentially susceptible to the effects of earth tremors e.g. liquefaction hazard. It was recommended that installations for exploratory drilling be constructed in accordance with anti-earthquake standards in force and the most modern building codes (CUBIC code, 1985).

The report states that according to the Dominica seismic risk map:

- Project sites 2, 3 and 4 were located in a very low seismic risk zone,
- Project site 1 was located in a moderate seismic risk zone.

The report indicated that there was minimal data concerning the risk of flooding and that this risk exists however it was given a low rating. A large part of the Roseau Valley (centre and South) was classified as a low-level hazard zone for landslides. The northern and extreme Eastern parts (Valley of Desolation, Morne Trois Pitons National Park) were classified as high-level hazard zones for landslides.

Based on the EIA report, Sites 1, 2 and 4 were located in zones of low risk of landslides while Site 3 was located in a zone of moderate risk of landslides.

Further, the report indicates that no data could be gathered to assess the risk of mudslides and erosion. Nevertheless, given the extreme physical conditions (seismic activity, friability of the steep slopes and observed rockslides), the risk of erosion and mudslides was noted to be potentially high. The table below summarises the hazards to which the project sites are exposed.

Figure 22. Hazard exposure of proposed exploration sites for geothermal energy

Risks/Sites	1 Pachoute Estate	2 Laudat, Rain forest tram carpark	3 Robinson Estate	4 Laudat, Domlec, balancing tank
Hurricane	High			
Earthquake	Moderate	Very low	Very low	Very low
Volcanic eruption	High			
Flooding	Low or zero	Low or zero	Existent but not evaluated	Low or zero
Landslide	Low	Low	Moderate	Low
Mudslide/Erosion	Potentially high			

Among the several matters requiring constant monitoring are, water quality, air quality, noise, fauna and flora, geology and topography, geothermal activity and waste management.

Figure 23. Geothermal Exploration



Attitudinal/Motivational Vulnerability. People sometimes because of their circumstances and experience, have low confidence in their ability to effect change, may feel defeated by events they have no control over or may think that their situation is their lot in life. They are harder hit by disasters than those who have an attitude of confidence to effect change.

5.4. Capacities

5.4.1. Analytical criteria and methodology

According to UNISDR the term capacity can be defined as “The combination of all the strengths, attributes and resources available within a community, society or organization that can be used to achieve agreed goals”. Capacities for DRR have been given attention following Dominica’s devastation by Hurricane David in 1979.

Nationally, institutional capacity has been built through the development of National Emergency Planning Organisation (NEPO) and its associated mechanisms. The establishment of the Office of Disaster Management for the coordination of activities has been a step in the right direction. Discussions emanating from the development of this country document identify a lack of adequate technical capacity and human resource at ODM and other key Ministries as a critical capacity deficit.

The importance of collaborating with local communities in the management and coordination of DRR is evident through the existence of various community disaster organisations, district organisations, Community Emergency Response Teams/Community Disaster Response Teams (CERT/CDRT), and the participation of community leaders on some of the organs of DEMO. In working with communities a comprehensive and ongoing programme of training and awareness building at the individual and community level exist. This is being implemented by ODM in collaboration with many partners, including UNDP, United States Agency for International Development (USAID)/Office of Foreign Disaster Assistance (OFDA), UNISDR, GEF. Some community groups have been equipped with relevant tools and equipment as part of the effort of an early response mechanism, given the topography of the country and resource constraint that could deter authorities from responding in quick time.

Other institutions and agencies such as DOMLEC, DOWASCO, St. John’s Ambulance and Dominica Red Cross place heavy emphasis on community participation in the management of resources and mitigation and adaptation efforts. These communities serve in some cases as first responders who report incidents to the relevant authorities. The Local Government system has been leveraged in that respect and plays an integral role in the management of localised crisis situations with effective results in mitigation activities.

5.4.2. Institutional and coordination mapping

The figure below illustrates the disaster management structure of the NEPO.

Figure 24. Structure of NEPO



5.4.3. Mapping of disaster risk reduction programmes, initiatives and plans

There are several initiatives, plans and programs that address risk reduction in Dominica some of which have been supported by development partners and implemented by varying Government Departments.

The Environmental Coordinating Unit has implemented the following projects:-

- Pilot Programme for Climate resilience
- Sustainable Land Management - Community vulnerability maps and adaptation plans were developed in 11 vulnerable communities in Dominica.
- Disaster Vulnerability Reduction Project - a project to reduce the impacts of climate change disasters in Dominica and build resilience to adapt to such impacts which is currently being implemented with World Bank financing.

The Office of Disaster Management has implemented the following:-

1. Caribbean Disaster Management (CADM) 3 year Project which placed focus on Hazard Mapping and Vulnerability Assessment, Flood Management, Community Disaster Planning, Early Warning System, Climate Change, Knowledge Enhancement.
2. Project to install instruments to strengthen earthquake monitoring in June 2014 with support of the UWI Seismic Research Centre (UWI-SRC) and funded by the Caribbean Catastrophic Risk Insurance Facility (CCRIF).
3. Two DIPECHO projects ongoing in Dominica include CAP (Common Alert Protocol and Community Alert Project) for Portsmouth. This project is being used as a pilot project.
4. The Country Work Programme 2012 -2016 although not formally approved is being followed to the extent that the ODM is able. There are 4 major targeted outcomes of this programme:-
 - a. **Outcome 1:** Enhanced CDM Implementation by the National Disaster Organisation (NDO)
 - b. **Outcome 2:** Strengthened National Response Systems to Priority Hazard³³ Impacts
 - c. **Outcome 3:** Improved National Community Based Disaster Management Systems to Reduce Vulnerabilities to Priority Hazards
 - d. **Outcome 4:** Strengthened National Public Education and Awareness for CDM.

There are ongoing programmes within various Government Departments as well as collaboration with partners such as the Dominica Red Cross.

Dominica's abundance of water is managed by the Dominica Water and Sewerage Company (DOWASO). The company is presently in an advanced stage of implementation of their \$191 mil, ten year Water System Development Plan. Upgrade of Water Area 1 (WA1) includes increasing storage capacity to 850,000 imperial gallons (already complete are storage tanks in Antrim 250,000, Massacre 100,00 and 500,000 in Morne Bruce) This program includes increase in the water treatment capacity - additional filtration plants, clarifiers on the rivers, etc. Several other water projects have been completed, some with funding from Basic Needs Trust Fund (BNTF), Caribbean Development Bank (CDB) and GoCD. To date over \$100 mil has been spent as part of this programme. Intended works at Belles, Penrice and Sylvania will take water coverage to almost 100%, thus meeting Dominica's MDG target for access to water by 2015.

³³ The Priority Hazards for Dominica were determined to be: Volcanoes; Earthquakes; Tsunami and Hurricanes- Hazard Landscape of Dominica

5.4.4. Tool inventory

DRR Tool/ Resources	Specific Tools
Policies and Plans	National Emergency Management Plan
	Pilot Programme for Climate Change Resilience (PPCR)
	Growth and Social Protection Strategy
	National Land Use Policy
	Water Resource Management Plan
	Community Disaster Management Plans
	Biodiversity Strategy and Action Plan
	Integrated Water Resource Management Policy (IWRMP) (Draft)
Monitoring and Evaluation tools	Vulnerability Benchmarking tool
	Post disaster assessments and research studies
	Vulnerability and hazard maps for selected hazards
	Geonode
	Community based vulnerability and capacity assessments
	Simulation exercises
	Water quality and turbidity monitoring equipment
	Vulnerability Assessment of Health Centres
	Decentralised response mechanism using community Based Organisations (CERT etc)
Knowledge and Information	Public sensitisation and awareness programs by various sectors
	Communications Strategy (Tourism)
	Brochures and pamphlets

5.5. Reduction of underlying risk factors

The Government's strategy in reducing risk factors associated with disasters is reflected in the Growth and Social Protection Strategy (GSPS) as well as the Low Carbon Climate Resilient Development Strategy through investments in a Climate Resilient Development and Low Carbon Development Pathway.

6. Disaster Risk Analysis of the Country

6.1. Definition of analytical criteria and methodology

Dominica's Country Work Programme (CWP) 2012 - 2016, developed in collaboration with CDEMA identifies Volcanoes, Earthquakes, Tsunami and Hurricanes as priority Hazards. Stakeholders at the National Consultation held 28th - 29th August, 2014 through group exercises identified specific localities in Dominica

that are vulnerable to these hazards. The results of the exercise indicated the following captured in the matrix below:-

	Earthquake and Tsunamis	Volcanoes	Hurricanes
Vulnerable Localities	Communities along the West Coast (Scottshead to Capuchin)	North: Morne Au Diable (MV): Penville – Pointe Round)	The entire country
	Roseau and Portsmouth – densely populated, infrastructure	South: Morne Plat Pays (MV#1): Roseau – Scottshead)	
Vulnerable Elements	human resource, infrastructure, utilities, marine ecosystem (coral reef), agriculture, ports communication,	<ul style="list-style-type: none"> • Eco systems • Biodiversity • Human: Elderly and Children (0-18 years), respiratory disorders • Major infrastructures: Prisons, Government building, Public Health • Air traffic: Canefield and Marigot • Food and Water safety (reservoir) • Road networks • Electricity supplies (utilities) • Social gathering: church, school, market • Data: Government, Financial institutions 	Human resource, infrastructure, utilities, marine ecosystem (coral reef), agriculture, ports, communication, housing
Recommendations for addressing vulnerabilities	-Early warning systems -Education: community mobilization, evacuation plans, assimilation exercise - Training - Relocation of essential services (going forward)	<ul style="list-style-type: none"> • Inventories of assets • Maps: to assist • Develop evacuation routes • Community Plans: Resource, information 	-Early warning systems -Education: community mobilization, evacuation plans, assimilation exercise - Training - Relocation of essential services

7. STRATEGIC DIRECTIONS FOR DISASTER RISK REDUCTION IN DOMINICA

Dominica's strategic directions for disaster risk reduction can be found in the Growth and Social Protection Strategy that commits to the following:-

- Implementation of the Physical Planning Act and National Environmental Management Strategy and Action Plan;
- Improving the country's capacity for disaster management; Establishing a Natural Disaster Contingency Fund;
- Staying current with financial obligations to the World Bank's Catastrophic Risk Insurance Scheme;
- Implementation of the Code of Practice for Quarries; and
- Ensuring a well-organized and functioning Meteorological Department.

Dominica's Low Carbon Climate Resilience Development Strategy is identified in the GSPS as a key platform providing support to the attainment of these goals and objectives through GoCD's initiatives in key sectors and the programme of the Environmental Coordinating Unit (ECU) as well as strategic investments into a Low Carbon Climate resilient and Low Carbon Development Pathway through the following components:-

Low Carbon Climate Resilient Development Pathway

- Promotion of food security through Climate Resilient agricultural/Fisheries development;
- Enhancing Ecosystems/Infrastructure resilience and promotion of sustainable human settlement;
- comprehensive risk management framework and sustainable climate change financing;

Low Carbon Development Pathway

- Development and commercialisation of geothermal resources;
- Harnessing of solar energy resources;
- Harnessing of wind energy resources;
- Harnessing of hydro-power resources;
- Promotion of Green Communities in Support of Health/Wellness;
- Reducing greenhouse gas emissions through improved connectivity and waste management;
- Protection of carbon sinks;
- Development of biofuels to reduce petroleum import;
- Sustainable financing for low carbon technologies and energy conservation;
- Development of low-carbon management services and technologies

Implementation of the World Bank funded Disaster Vulnerability Risk Reduction Project is expected to produce significant resilience strengthening of the infrastructure and local capacity over the next six years.

The Criteria for Identifying Key Actions for Disaster Risk Reduction (DRR) Planning in Latin America and the Caribbean was used as the instrument for data collection as part of a rapid assessment. This tool used ex-ante, establishes key question on selected categories regarding risk management processes and provides the criteria relevant to the responses using a traffic light scheme. The instrument was applied throughout the process of data and information gathering.

7.1 Categories and relevance of the criteria

The categories used in the Matrix of Criteria correspond to a classification of the basic explanatory macro-variables of risk. The identification and selection were based on the analysis of existing systems of indicators, considering the availability of information for rapid use as the main criterion for observation.

FOCUS OF ANALYSIS	CATEGORIES
RISK	<p>1. Apparent and immediately recognizable signs of hazard and exposure. This category focuses on the obvious manifestations of disasters, without entering into a more complex risk analysis. The criterion is essential as it provides a first insight into the country situation and its sub-national and local levels. This criterion should be considered as an element of decision-making in the short term.</p>
	<p>2. Drivers of risks in the country and their configuration in the territory This refers to political, social and economic conditions underlying the social construction of risk. This concept stems from two central ideas: (i) the understanding of risk as a process, i.e. with a specific background and therefore not a spontaneous or casual situation, but rather a phenomenon that occurs when certain conditions of territorial sustainability are ignored in the development process; and (ii) that the processes underlying the construction of risk are essentially social, despite the fact that physical phenomena associated with disasters may be natural.</p>
MANAGEMENT	<p>3. Current capacities for risk management This category is extremely important since it prioritizes observations about hazard and exposure: for example, a country with less hazard but unprepared compared with another with high risk of hazards but highly prepared. These conditions are observable through national and international reports and refer to how a country has or has not developed capacities at the national and sub-national level.</p>
	<p>4. Enabling regulations This refers to the existence of a regulatory framework for action on imminent</p>

FOCUS OF ANALYSIS	CATEGORIES
	<p>risk conditions that facilitates and strengthens the capacity to manage risk. These regulations must be found within the legislation on disaster risk, but above all, in sector-specific and municipal regulations, customs codes, health legislation, building regulations and others.</p>
	<p>5. Trends and future prospects</p> <p>This category is designed to identify risk trends, particularly through the availability and management scenarios and forecasts on issues such as climate change.</p>

7.2. Definition of risk scenarios

Risk scenarios have been developed for Dominica for mainly hydro meteorological events. These reside in the various strategies and plans referred to earlier in this document and some have been tested by simulation and table top exercises. The absence of detailed studies on risks and vulnerabilities leaves a major gap for planners and for influencing well informed decision making.

Based on Dominica's Country Work Programme for the period 2012-2016, the priority hazards identified are flooding and seismic hazards (earthquakes, tsunamis and volcanoes). The discussions of the national validation workshop on the Dominica Country Profile led to the development of the considerations below for the development of risk scenarios that are based on probabilistic criteria.

Hurricane Considerations

1. Vulnerable areas:
 - The entire country
 - Specifically the coastal communities
2. Vulnerable Elements: human resource, infrastructure, communication/utilities, marine ecosystem (coral reef), agriculture, ports

Earthquake and Tsunami Considerations

3. Vulnerable areas:
 - Communities along the West Coast (Scottshead to Capuchin)
 - Roseau and Portsmouth – densely populated, infrastructure
4. Vulnerable Elements: human resource, infrastructure, communication/utilities, marine ecosystem (coral reef), agriculture, ports
5. Addressing vulnerabilities :
 - Early warning systems

- Education: community mobilization, evacuation plans, assimilation exercise
- Training
- Relocation of essential services (going forward)

6. Risk reduction: Education

Volcanic Considerations

1. Vulnerable Areas

- North: Morne Au Diable (MV): Penville – Pointe Round
- South: Morne Plat Pay (MV#1): Roseau – Scottshead

2. Uncertainties that are acceptable

- Timing of “occurrences”
- “Magnitude” and duration of eruption
- Expected behaviours/response]

3. Vulnerable Elements

- Eco systems, Bio-diversity,
- Human: Elderly and Children (0-18 years), respiratory disorders
- Major infrastructures: Prisons, Government building, Public Health
- Air traffic: Canefield and Marigot
- Food and Water safety (reservoir)
- Road networks
- Electricity supplies (utilities)
- Social gathering: church, school, market
- Data: Government, Financial institutions

4. Risk Reduction

- Education/testing
- Plans at all level
- Communities; Alternative routes, systems of transportations, communication
- Food and water security
- Shelters
- Relocation (Building designs)
- Decentralization

7.3. Prioritization of risk scenarios and areas for intervention

The following matrix captures the assessment of Dominica’s risks and their relevance or priority levels. Noting the lack of relevant assessments to undertake prioritization, the matrix is used to identify areas for intervention for DRR. The Traffic Light legend is used as follows:-

<p>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.</p>	
<p>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.</p>	
<p>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.</p>	

Apparent and immediately recognizable signs of hazard and exposure

Guiding question	Variables	Criteria to be considered for decision making	Relevance			
<p>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?</p>	<p>a. Hazard/danger</p>	<p>Dominica's coastline is particularly prone to sea surge, sea level rise, flooding and anthropogenic impacts. Records of events exist (ODM, Media Financial reports) and there has been recorded an increase in intensity and frequency of storms. Limited Hazards maps exist that demonstrate areas of vulnerability.</p>				
		<p>The north and south of Dominica have been identified as being very vulnerable to the potential for volcanic eruption, this is captured in a hazard vulnerability Map. 1998 swarm of earthquakes and other activities have been recorded which affect the entire country. .</p>				
		<p>The industrial Estate at Canefield is highly vulnerable to fire, oil and chemical spill and other hazards. The location of fuel bulk stations, Paint manufacturing plant, and airport pose serious threats to life, property and infrastructure.</p>				
		<p>Communities, squatter settlements, Infrastructure have been affected by multi hazards events and particularly exposed to geomorphic risks. Records exist of historical impacts as well as maps for selected areas. No composite map was identified for multi-hazard scenarios.</p>				
		<p>The Antrim Valley (Upper Roger) is currently experiencing regular land slippage which has had negative impacts on WA1. The existence of 12 inch power pressured water pipeline is particularly vulnerable to rupture. The impact of this type of rupture could cause a serious calamity downstream for lives, property, infrastructure and loss of water supply to more than 1/3 of the population including PMH. Generally pipelines are prone to rupture and storage tanks pose serious threat to communities downstream for massive flooding from volume and velocity of water.</p>				
	<p>b. Record of impacts</p>	<p>Record of impacts exists, however these can be found at various institutions and agencies and these are not comprehensive but reflect interests of agencies. There is no complete repository of data on impacts.</p>				
		<p>Bush fires during the dry season are of concern as they place demands on the limited resources of the Fire and Ambulance service.</p>				
<p>c. Monitoring of the hazard/danger</p>	<p>Hydro meteorological and volcanic events are monitored by the Dominica Meteorological Office and Seismic Research Center in Trinidad respectively in collaboration with other regional institutions. However most of the other hazards are not monitored. A pilot project for an early flood warning system for the Roseau river is unserviceable while an early flood warning system is being considered for Layou. Efforts are advancing for an early warning system in Portsmouth and Calibishie using the Common Alert Protocol System.</p>					

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. Some areas have been recorded with recurring impacts, past events, and high vulnerability .e.g. Campbell, Bellevue Chopin, San Sauveur, Dubique. However there are no known detailed studies or probability forecasting.	
		b. Limited records exist on past events but are not located in one central location.	
		c. Limited structured monitoring exists, except for post event assessments.	
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. The existence of multi-hazard areas are recorded however integrated scenarios and studies do not exist, save for the considerations presented in the Low Carbon Climate Resilient Development Strategy.	
		b. There are very little records on risk scenarios and impacts of climate change except for some simulation exercises that were carried out; the recently approved World Bank DVRP Project addresses some of the major risk factors that respond to some of the identified hazards, however there is need for a comprehensive study of identified areas.	
		c. Some communities with support from Dominica Red Cross and ODM have developed multi-hazard, trans-border hazard maps and to a lesser extent some communities have developed action plans. These were based purely on indigenous knowledge and experience in the absence of scientific analysis.	

Analysing Drivers of Risk

Guiding question	Variables	Criteria to be considered for decision making	Relevance
<p>4. In the selected areas, what are the characteristics of environmental degradation in areas with historical impacts or influenced by hazards?</p>	<p>a. Interaction of environmental degradation (*) and hazards</p> <p>(*) 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 stress (including water for irrigation and livestock); soil erosion, poor waste and pollution management.</p>	<p>a. Some communities are more exposed than others. Some of the characteristics of environmental degradation include, deforestation, soil erosion resulting from poor land use practices; housing settlements on slopes that compound exposure to land slippage from inadequate carrying capacity as well as inadequate and poorly designed storm drains for waste water; poor sanitation and waste disposal (sewerage), construction close to rivers and near beaches or flood prone areas; coral bleaching; coastal pollution</p>	
		<p>b. Several measures are in place by various agencies that contribute to mitigation efforts e.g. squatter regularisation programme, building standards, housing and sanitation programme, etc.</p>	
		<p>c. The impacts of environmental degradation particularly in recent times have produced significant impacts, e.g. Newtown and Pointe Mitchel flooding in December 2013 cost over \$45³⁴ mil. Interaction between the hazard and environmental degradation is strong, exacerbating exposure and vulnerability.</p>	
<p>5. What is the composition of the population in terms of their socio-economic conditions and their exposure to hazards in the selected area?</p>	<p>a. Socio-economic situation of the exposed population</p>	<p>Squatter and housing settlements in communities such as Gutter, Tarish Pit, Fond Cole, Kingshill, Bena Ravine, Yam Piece, Good Hope, Sans Sauveur, Dubique are predominantly of lower economic profile. Communities in the Parish of St Joseph, particularly Layou, Belles are among the most vulnerable based on their poverty status of 47.2% of the population which is above national average of 28.8% with issues of poor</p>	

³⁴ Amount was spent on housing and infrastructure

Guiding question	Variables	Criteria to be considered for decision making	Relevance
		<p>housing, overcrowding, sanitation, unemployment among others.</p> <p>a. The Parish of St. Andrew in the north with the highest severity of poverty accounts for 13% of the population being moderately vulnerable to volcanic and other hazards.</p> <p>The Carib (Kalinago) population is about 2574 or 3.7% of the population; with about 49.8 % poverty which is above national average.</p> <p>The population of the Parish of St Joseph is 5396 or 7.8% of the population. Communities are vulnerable to multi hazards (Fire, landslides, flooding, earthquakes, volcanoes, health emergencies, hurricanes etc)</p> <p>b. The socio-economic indicators are low for a greater proportion of the exposed population. (poverty and education) A characteristic of poverty is heads of households with only primary level education.</p>	
6. In the selected territorial area, what are the essential conditions and access to services, and which are exposed to hazards?	<p>a. Access to basic services (***)</p> <p>b. Exposure of essential services (***)</p> <p>(***)For the methodological purposes of</p>	<p>a. The majority of Dominica's population have access to essential services, however these services especially water, communication and electricity are historically highly impacted by events further exposing these vulnerable communities.</p>	

Guiding question	Variables	Criteria to be considered for decision making	Relevance
	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)	<p>b. About 17.4%³⁵ of Dominica's households utilise pit latrines, however currently there is an ongoing programme addressing this issue. Other essential services are very accessible island wide.</p> <p>About 4% of population is without access to potable water and 1.4% with no electricity. The population without access to essential services can be estimated to be very small out of the population in areas exposed to hazards from the selected areas. An ongoing drive to achieve 100% access to water is in its advanced stage, while strides accomplished in geothermal exploration indicate strong potential for electricity access by the total population.</p>	
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?	<p>a. Implementation of the Regulatory Framework</p> <p>b. Accountability mechanisms for DRM and Environmental Management</p>	<p>a. The regulatory framework for DRM or for Environmental Management in Dominica is presently being developed.</p> <ul style="list-style-type: none"> • the Land Use Policy is before Cabinet for approval • Hazard specific plans • the NEMP has not been approved • the Comprehensive Disaster Management Bill 2014 is being reviewed by the Ministry of Legal Affairs • The Fire and Ambulance Services Act requires updating to address contemporary issues • Water resource management is addressed under the Water and Sewerage Act 1989 • Draft Shelter Policy • IRWM Policy 	

³⁵ Preliminary Census Report 2011

Guiding question	Variables	Criteria to be considered for decision making	Relevance
		<p>Where some laws exist that provide limited responsibility towards risk reduction, enforcement is weak e.g. Litter Act, building codes, etc.</p> <p>b. Enabling mechanisms are in place for facilitating risk management, these reside in the responsibilities of various government departments however in some cases there may be conflicting TORs. The ODM with coordinating responsibility is limited by capacity and the approved legal instruments for implementation. Recent changes in the governing environment which creates opportunities for closer interaction between the public and Government pose new challenges for coordination and accountability.</p>	<p>Red</p> <p>Yellow</p>
<p>8. How are the processes of use, occupation and transformation of land in urban areas exposed to hazards in the selected territorial areas?</p>	<p>a. Use, occupation and transformation of territory at the urban level in areas exposed to hazards</p> <p>b. Control mechanisms for the occupation, use and transformation</p>	<p>a. The fringes of the City of Roseau have been transformed into unplanned settlements. The close proximity of structures within the City makes it vulnerable to the spread of fires. As a major population centre sanitation and public health threats are of concern. A challenge exists for the relocation of some of these households.</p> <p>The existence of one Landfill for solid waste disposal in itself is a challenge on many fronts. A lack of mechanisms for sorting biodegradables from recyclable and other materials in an effort to prolong the lifespan of the Landfill as well as the exploration of transforming garbage into cash has not been adequately explored.</p> <p>One Landfill for the entire country is certainly inadequate given the country's topography.</p> <p>b. The Physical Planning Division provides limited control over urban and rural occupation. With an increasing trend towards unsafe squatting, there is need for review of building codes, establishment of a Land Use</p>	<p>Red</p> <p>Yellow</p>

Guiding question	Variables	Criteria to be considered for decision making	Relevance
		Policy/Plan and requisite resources for enforcement of these protocols.	

Analysing Capacities for Disaster Risk Management

Guiding question	Variables	Criteria to be considered for decision making	Relevance
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. A decentralised structure with a community focus of participation exists for preparedness and response. Some of the sectors and communities lack plans and have limited capacities.	
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	b. Coordination mechanisms of local governments are in place but lack capacity for monitoring risks, and response to certain hazards.	
11. What are the conditions of the resources for preparedness and emergency or disaster response/ management of relevant governments in the selected territorial areas? (Processes may be implemented by the central government)	a. Resources for response b. Structured processes for response	a. Funds for preparedness and management of response are limited and usually sourced through project financing with development partners. There is need at the community level to provide tools and equipment as well as financial incentives.	
		b. There are frameworks in place that enable the allocation or reallocation of resources once a disaster or emergency has occurred.	
		c. For fiscal year 2014/15 GoCD allocated \$100,000 towards facilitating community response and preparedness. US\$1 mil under the DVRP is set aside for rapid response to an incident. Access to US \$750,000 from CDB is available. Government's fiscal prudence allows the	

Guiding question	Variables	Criteria to be considered for decision making	Relevance
		country to access regional and international funding.	
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 conditions in the selected area?	a. Status of early warning and monitoring systems (EWSs)	a. Most areas of recurring impact or high exposure do not have early warning and monitoring systems in place; there are major gaps in coverage and information.	
		b. There are early warning and hazard monitoring system(s) in place, for meteorological events however due to the geological profile of the country with micro climates, detailed monitoring is not done. E.g. rainfall is monitored mostly for aviation purposes at Canefield and Melville hall. Monitoring done also by Forestry and wildlife on rainfall.	

Analysing Enabling Regulations

Guiding question	Variables	Criteria to be considered for decision making	Relevance
13. Are there appropriate legal frameworks for DRM? What is the state of implementation of these national, sub-national or local instruments (laws,	a. Validity of the legal frameworks b. Implementation of legal instruments for DRM	There is a legislative framework in place however it does not meet the comprehensive needs of the country. Several DRR specific bills and policies are drafted and awaiting Parliament's or Cabinet's approval.	

Guiding question	Variables	Criteria to be considered for decision making	Relevance
regulations, decrees, etc.)?		a. Limited regulations and legal instruments exist for DRM, but there is a lack of enforcement due to the “everybody knows everybody” syndrome and capacity constraints (financial and technical and otherwise).	
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 is an inter-agency structure of coordination, led by the ODM. However there is need for clarity of responsibility and accountability based on past experiences and human resource capacity constraints.	
15. What are the characteristics of the sectoral capacity (regulation, technical and resources) in the selected area? (Sectoral is understood as the ministries, public companies, institutions, etc.)	a. Sectoral capacity for DRM	a. Some critical sectors have assigned roles and responsibilities for DRM e.g. Health, Agriculture, however it is not clear to what extent Plans are being tested, implemented and updated. The response mechanisms of these sectors have historically been tested occasionally. This has revealed some weaknesses in inter-agency coordination, absence of multi hazard plans and the tardiness to adopt the comprehensive disaster management approach.	
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 an inadequate legal framework for DRM, or policy instruments that allocate responsibilities however the requisite resources are not always available or updated.	

Analysing *Future trends and perspectives*

Guiding question	Variables	Criteria to be considered for decision making	Relevance
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 some scenarios about the impacts of climate change, however, except for hydro-meteorological hazards they are not coordinated or integrated into the 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 limited mechanisms for risk trend analysis, and where they exist, they are not necessarily linked to the development analysis and observatories	
		b. Insufficient mechanisms are in place for the analysis of development, the environment and risk and integrated scenarios of development. Severe gaps in data and monitoring exist.	

8. Conclusions and Recommendations

Emanating from the process of the conduct of this rapid assessment of the country, several areas of strengths, which contribute towards risk reduction efforts as well as weaknesses, were identified. Among the strengths are:-

- ✓ abundance of natural resource including biodiversity
- ✓ Decentralised structure for management of DRR
- ✓ Strong Local Government system that lends support to the decentralised structure
- ✓ some mechanisms that could be considered best practice
- ✓ Two major policies that identify DRR as a priority
- ✓ a consistent public awareness programme
- ✓ Focus on building infrastructure resilience

Some of the weaknesses identified are:-

- weak and outdated legislation
- lack of comprehensive legislative framework
- lack of enforcement of legislation and regulations
- lack of data and analytical capacity
- weak or absent multi hazard planning and monitoring systems
- poor socio-agricultural practices
- limited financial and technical capacity
- inadequate infrastructure for disaster risk management

Recommendations being presented can be categorized into the two broad headings of improving resilience and strengthening adaptation. As follows:-

Improving resilience

- Mainstreaming DRR into sector and national policies in order to ensure that there is political commitment and that the dialogue on DRR is included as part of national and sectoral policies. This is necessary as DRR ought to be a critical component of development planning, as well as sectoral strategies, programmes and work plans. Although some sectors are affected more obviously than others, the recent increasing scale and frequency of disasters has proven that all sectors should develop an effective approach to reducing disaster risk.
- Improving capacities for vulnerability and risk assessment and monitoring is one of the most valuable ways of ensuring that communities and countries are well equipped for limiting the potentially adverse effects that disasters can bring. Enhancing the coordination and implementing capacity of agencies involved in disaster management is imperative for the identification of gaps

and setting priorities as well as the enhancement of monitoring and early warning systems.

- Updating the legislative framework in response to a changing environment and context (approval of draft policies and bills) will be a significant part of any DRR strategy, as DRR requires the redefinition of roles, responsibilities and mandates of several agencies.
- One of the key steps is giving a legal mandate to the ODM, thus making it an official Government Department, with requisite resources, especially for data collection, monitoring and analysis.
- Improving agency collaboration and coordination is key, with clear definitions of roles and responsibilities in order to avoid duplication and address the complexities of DRR with a collective response.
- Due to the dynamic nature of DRR, every aspect will not be able to be covered adequately by one organization or agency. Therefore, strong relationships between agencies and sectors, including vertical and horizontal linkages, are valuable. Of equal value are the linkages between central government and local organizations.
- The allocation of committed resources to DRR, especially in an environment where resources are limited, is a major challenge. Decisions also have to be made as to the priority investment areas, as well as the sequence of interventions. For developing countries, several DRR activities can also be classified as general efforts towards sustainable development, especially those specifically targeted at reducing vulnerability and increasing resilience.
- Improvements to livelihoods to reduce vulnerability are at the core of DRR. Empowering people to be able to face risks and challenges is one of the critical initial steps of a sustainable DRR strategy.
- The enhancement of community-based DRR is a cost-effective and efficient way of responding to local needs and priorities, as it depends on local and traditional knowledge, strengthens capacities, reinforces ownership and encourages sustainability. This is a shift away from traditional emergency response, in which community members were seen as victims and therefore disruptive or irrelevant to emergency planning.
- Encouraging a gender responsive approach DRR may auger well, as studies have shown that women and children are disproportionately affected by disasters, and are more vulnerable to shocks of all types. The different ways in which disasters affect men, women and children should be factored into all discussions about DRR, therefore implementing a more gender-sensitive approach.
- Construction of dedicated/model emergency shelters per district fitted with rain harvesting, and green technology.

Strengthening Adaptation

- The need to set priorities.
- Taking advantage of lessons learnt and best practices.
- Coherence of development programmes and policies.
- Implementation of good risk management practices, including greater consideration of hazard-related issues in broader sustainable development and poverty reduction policies and programs as well as appropriate, cost-efficient post-disaster relief and rehabilitation efforts.
- Improvements to livelihoods to reduce vulnerability.
- Increased and better coordination of community participation.
- Develop and adopt a structured public communication strategy.
- Including risk mitigation considerations in response and recovery activities.

Highly relevant condition

CATEGORY	HIGHLY RELEVANT TOPICS FOR PROGRAMMATIC INTERVENTION IN DOMINICA (RED)
1. Historical records of hazards, exposure and disasters	There are some scenarios about the impacts of climate change, but they are not coordinated or integrated into the risk management strategies with very little forecasting except for meteorological hazards.
	The existence of multi-hazard zones or areas is confirmed through various studies and assessment reports however integrated scenarios and studies are not conducted for multi-hazard, trans-border hazards and/or impacts of climate change. Some action plans exist at the national, sectoral and community level. There are no detailed studies or probability forecasting. Severe data gaps exist with limited analytical capacities.
2. Drivers of risk	Human induced activities and environmental degradation present high indicators of impairment that generate severe impacts and can interact with the hazards, increasing the exposure and vulnerability of the population.
	<p>A very small percentage of the population is without access to essential services. However the essential services, due to their location primarily along the coast are highly vulnerable to impacts that in turn affect the general population.</p> <p>The regulatory framework for DRM or for Environmental Management in Dominica is presently being developed. Existing legislation requires update and is not adequately enforced. There is need for enabling regulations for comprehensive risk management and clarification on terms of reference of various actors to reduce and remove duplication</p>

	or confusion as well as increasing efficiency and effectiveness of policies and programmes.
3.Current risk management capacities	A National Emergency Management Plan exists but requires approval. This plan requires inclusion of multi hazard scenarios and allocation of requisite resources for implementation.
	Areas of recurring impact or high exposure do not have early warning and monitoring systems in place; gaps in coverage and information delivery delays.
5.Trends and future prospects	There are some scenarios about the impacts of climate change, but they are not coordinated or integrated into the risk management strategies with very little forecasting except for meteorological and seismic hazards.
	There are no mechanisms for risk trend analysis; they are not linked to the development analysis and observatories.

Moderately relevant conditions

CATEGORY	RELEVANT TOPICS
	MONITORING FOR FUTURE PROGRAMMATIC INTERVENTIONS (YELLOW)
2. Drivers of risk	The socio-economic indicators are low for a greater proportion of the exposed population. (poverty and education) A characteristic of poverty is heads of households with only primary level education. Several measures are in place through a wide range of social protection programmes, however specific and improved targeting is required to maximise outcomes.
	About 5.4% of the population in sum is without electricity and water, however current programmes being implemented are well on the way to addressing this situation including reducing the population using pit latrines.
	Unsafe squatting and poor capacities for waste and sanitation management continue to be an area of concern in the City and Town for Planners. Management of the sole Landfill for solid waste management presents a potential hazard for neighbouring communities and the longevity or lifespan of the landfill. However a detailed study could provide information on opportunities for transformation of the landfill into generation of value added to garbage and extending the life of the facility.

3. Current risk management capacities	Coordination mechanisms of local governments are in place but lack capacities for monitoring risks, response to certain hazards.
	There are frameworks that allow for allocation or reallocation of resources once a disaster or emergency occurs.
4. Enabling regulations	Existing regulations and mechanisms exist however enforcement is weak in some cases.
	Some critical sectors are assigned roles and responsibilities for DRM. However there is need for greater inter-agency collaboration and adoption of multi hazard plans using the CDM approach.

9. Annexes of this guide

Annex 1: Glossary of Terms

Adaptation

The adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

Anthropogenic hazards

Hazards created through the action of human activity (Baastel- ESL)³⁶

Capacity building

The combination of all the strengths, attributes and resources available within a community, society or organization that can be used to achieve agreed goals.

Capacity Development

The process by which people, organizations and society systematically stimulate and develop their capacities over time to achieve social and economic goals, including through improvement of knowledge, skills, systems, and institutions.

Comprehensive Disaster Management (CDM)

Comprehensive Disaster Management which includes attention to all phases of the Disaster Management Cycle – prevention, mitigation, preparedness and response, recovery and rehabilitation (CDERA). It includes emphasis on reducing risk.

Coping Capacity

The means by which people or organizations use available resources and abilities to face adverse consequences that could lead to a disaster. In general, this involves managing resources, both in normal times as well as during crises or adverse conditions. The strengthening of coping capacities usually builds resilience to withstand the effects of natural and human-induced hazards (ISDR)

Climate Change

A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods". (UNFCC)

Disaster

A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.

³⁶ CDEMA CDM Glossary

Disaster Risk

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.

Disaster Risk Management (DRM)

The systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster.

Disaster Risk Reduction (DRR)

The concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.

Early Warning

The set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities and organizations threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce the possibility of harm or loss.

Emergency management

The organization and management of resources and responsibilities for addressing all aspects of emergencies, in particular preparedness, response and initial recovery steps.

Environmental impact assessment

Process by which the environmental consequences of a proposed project or programme are evaluated, undertaken as an integral part of planning and decision making processes with a view to limiting or reducing the adverse impacts of the project or programme.

Hazard

A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

Land-use planning

The process undertaken by public authorities to identify, evaluate and decide on different options for the use of land, including consideration of long term economic,

social and environmental objectives and the implications for different communities and interest groups, and the subsequent formulation and promulgation of plans that describe the permitted or acceptable uses.

Mainstreaming

Is the iterative process of integrating considerations of climate change adaptation into policy-making, budgeting, implementation and monitoring processes at national, sector and sub national levels. It is a multi-year, multi-stakeholder effort grounded in the contribution of climate change adaptation to human well-being, pro-poor economic growth, and achievement of the Millennium Development Goals. (MDGs) It entails working with a range of government and non-governmental actors, and other actors in the development field. (United Nations Environment Programme (UNEP))³⁷

Mitigation

The lessening or limitation of the adverse impacts of hazards and related disasters.

Office of Disaster Management (ODM)

In this document ODM refers to the national organizational structure for Disaster Management inclusive of the legal, institutional and operational aspects of disaster prevention and mitigation, preparedness and response and recovery and rehabilitation.

Preparedness

The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions.

Prevention

The outright avoidance of adverse impacts of hazards and related disasters.

Public awareness

The extent of common knowledge about disaster risks, the factors that lead to disasters and the actions that can be taken individually.

Recovery

The restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors.

Relief / response

The provision of emergency services and public assistance during or immediately

³⁷ Mainstreaming Climate Change Adaptation into Development Planning: A Guide for Practitioners (UNEP)

after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.

Resilience

The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.

Risk

The combination of the probability of an event and its negative consequences.

Risk assessment

A methodology to determine the nature and extent of risk by analysing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services, livelihoods and the environment on which they depend.

Risk management

The systematic approach and practice of managing uncertainty to minimize potential harm and loss.

Structural and non-structural measures

Structural measures: Any physical construction to reduce or avoid possible impacts of hazards, or application of engineering techniques to achieve hazard resistance and resilience in structures or systems;

Non-structural measures: Any measure not involving physical construction that uses knowledge, practice or agreement to reduce risks and impacts, in particular through policies and laws, public awareness raising, training and education.

Sustainable development

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Technological hazard

A hazard originating from technological or industrial conditions, including accidents, dangerous procedures, infrastructure failures or specific human activities, that may cause loss of life, injury, illness or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

Vulnerability

The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard.

Annex 2 - List of Acronyms

BNTF	Basic Needs Trust Fund
B-Tool	Vulnerability Assessment Benchmarking Tool
CARICOM	Caribbean Community
CBO	Community Based Organisation
CDB	Caribbean Development Bank
CC	Climate Change
CCJ	Caribbean Court of Justice
CCRIF	Caribbean Catastrophic Risk Insurance Scheme
CDB	Caribbean Development Bank
CDEMA	Caribbean Disaster Emergency Management Agency
CDERA	Caribbean Disaster and Emergency Response Agency
CDM	Comprehensive Disaster Management
CDMP	Caribbean Disaster Mitigation Project
CDRT	Community Disaster Response Team
CPA	Country Poverty Assessment
CSO	Central Statistics Office
DANA	Damage Assessment and Needs Analysis
DDM	Department of Disaster Management
DEMO	Disaster Emergency Management Organisation
DIPECHO	Disaster Preparedness and Prevention – European Commission for Humanitarian Aid
DLP	Dominica Labour Party
DOMLEC	Dominica Electricity Service
DOWASCO	Dominica Water and Sewerage Company
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DVRP	Disaster Vulnerability Reduction Project
EC	Eastern Caribbean
ECHO	European Community Humanitarian Organisation
EIA	Environmental Impact Assessment
EOC	Emergency Operations Centre
EU	European Union
GAR	Global Assessment Report
GCC	Global Climate Change
GDP	Gross Domestic Product
GEF	Global Environment Facility
GNP	Gross National Product
GSPS	Growth and Social Protection Strategy
GoCD	Government of the Commonwealth of Dominica
HFA	Hyogo Framework for Action
IMR	Infant Mortality Rate
ISDR	International Strategy for Disaster Reduction

JICA	Japan International Cooperation Agency
MAP	MDG Acceleration Plan
MDG	Millennium Development Goals
MOU	Memorandum of Understanding
NEMO	National Emergency Management Organisation
NEMP	National Emergency Management Programme
NEOC	National Emergency Operations Centre
NGO	Non-Governmental Organisation
OECS	Organisation of Eastern Caribbean States
OFDA	Office of Foreign Disaster Assistance
PAHO	Pan-American Health Organisation UN United Nations
PPCR	Pilot Programme for Climate Resilience
PSIP	Pubic Sector Investment Programme
SIDS	Small Island Developing States
SLMP	Sustainable Land Management Project
SRC	Seismic Research Unit
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific Organisation
UNFCCC	United Nations Framework Convention for Climate Change
UNISDR	United Nations Office for Disaster Risk Reduction
US	United States WB World Bank
USAID	United States Agency for International Development
UWI	University of the West Indies
WTO	World Trade Organisation

Annex 3 - List of Social Protection Programmes

SOCIAL INSURANCE				
Program	Implementing Agency	Target Group	Targeting Mechanism	Year started
Public Assistance	Ministry of Social Services and Community Development and Gender Affairs	Poor & indigent persons and families	Means tested and home visits	1940
Child Welfare	Ministry of Social Services and Community Development and Gender Affairs	Children in need of care and protection and children at risk	Referrals from social service agencies	Prior to 2003
		Abused children and families		
Care of the Elderly and vulnerable individuals		Elderly and other vulnerable persons	Means tested and home visits	
Probation		Juvenile offenders	Self-targeted	
Yes We Care		Housebound and disabled elderly persons	Means tested and home visits	2009
Blind Welfare		Persons with disability of blindness	Self-targeted	Prior to 2003
CHANCES				13 th April 2011
Centenarian Program			Persons 100 yrs+	Self-targeted
Public Support Program	Office of the Prime Minister	Persons in need	Self targeted	
HEALTH BASED PROGRAMS				
Free medical	Ministry of Health	Persons 60 yrs and over and	Self-targeted	Aug

care		below age 18		2008
Assistance for overseas medical care		Persons recommended by a specialist and care not available in Dominica	Means tested	
Assistance to cancer patients		Persons recommended by a specialist and assessed by Welfare Division	Means tested	
Primary Health Care		General population in 52 Health Centres	Self targeted	1980
HIV/AIDS Program				
Social Security	Dominica Social Security	Employed and self-employed persons	Contributions	1990
EDUCATION and DEVELOPMENT				
Program	Implementing Agency	Target Group	Targeting Mechanism	Year started
Adult Education	Ministry of Community Development and Gender Affairs	Persons needing remedial education	Self-targeted	Prior to 2003
Skills Training Program	Ministry of Education, Human Resource, Sports & Youth	Unemployed and underemployed youth	Self-targeted	1981
Cooperative Division Skills Training	Ministry of Community Development and Gender Affairs			Prior to 2003
Workshop for the Blind	Ministry of Community Development and Gender Affairs	Persons with disabilities	Based on disability	1964
Education Trust Fund	Ministry of Education, Human Resource, Sports & Youth	Needy secondary and tertiary students	Means tested	1981

Education Enhancement Project	Ministry of Education, Human Resource Development	Government school plant, teachers and students in the Secondary schools		July 2010
School Feeding Program		All students in 7 Primary schools	Geographically targeted	1991
School's Transfer Grant		Students entering secondary school		
Small Business Unit	Ministry of Employment and Trade	Persons with or about to establish micro-business	Self-targeted	Oct 2008
<u>Housing Revolution</u> (Repair and construction of homes) (Squatter regularization)	Ministry of Housing, Settlements & Water Resource	Persons and families in need	Means tested	2007
		Squatters on government land	Self-targeted	2005
XXXXXXXXXXXXXX				
Employment Unit	Ministry of Employment and Trade	Unemployed persons	Means tested	2010

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