COMMONWEALTH OF DOMINICA

POLICY ON PLANNING FOR ADAPTATION TO CLIMATE CHANGE

PREPARED UNDER COMPONENT 4

OF THE

CARIBBEAN PLANNING FOR ADAPTATION TO CLIMATE CHANGE PROJECT

(CPACC)

Policy Framework for Integrated (Adaptation) Planning and Management in Dominica

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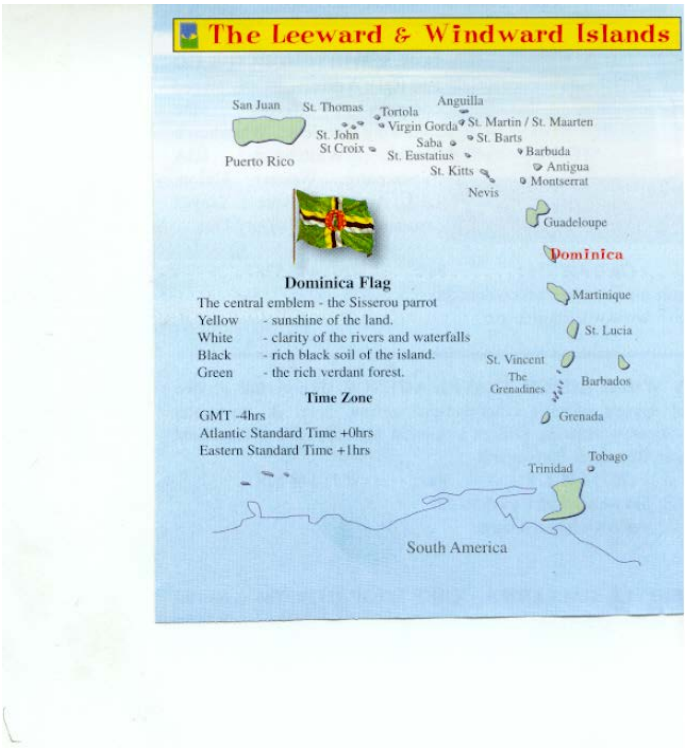
March 2002

COMMONWEALTH OF DOMINICA

BACKGROUND

The Commonwealth of Dominica is a small island developing state within the Organization of Eastern Caribbean States (OECS). It is located at about 15° N and 65° W, between the French dependencies of Martinique to the South and Guadeloupe to the North It is the largest of the member states, measuring 47 Km in length by 25 Km wide and occupies an area of 750 square kilometres (290 square miles/195,000 acres). **Figure 1.1**



The climate is classified as "humid tropical marine", which is characterized by little seasonal or diurnal variation with strong and steady trade winds. There is a distinct "dry" season (between February and June) and the "wet" season (between July and December). In this connection, the lush forested interior enjoys an average annual rainfall in excess of 10,000mm (400 inches) at the central peaks, which rise to over 1300m. This reduces to an average of about 50 inches per annum along the central portion of the west coast, which tends to be the driest section of the island. Average temperature values range from 27 degrees Celsius on the coast to approximately 21 degrees at the highest elevations and there is little seasonal fluctuation, generally less than two degrees Celsius.

The economy of Dominica is described as being small, open and primarily agricultural-based. Export dependent with both commodity and market concentration, the island has always been in a vulnerable

position economically, socially, culturally, and environmentally. Economic developments, in particular, are significantly affected by both natural and man-made external factors as is increasingly evidenced by the negative impact on the local economy of changes associated with such international phenomenon as globalization and trade liberalization.

The agricultural sector is the main determinant of economic growth and the main source of food and income for most of the population. In this regard, for the period 1992 – 1999, agriculture accounted for, an average **25%** of GDP, **70%** of total export earnings and **60%** of foreign exchange. Moreover, it supplied **60%** of the food requirements of the population and employed **30%** of the labour force (CSO, 1999).

In this situation, the small domestic market makes economic growth highly dependent on exports. Over the last five years (1995 – 1999) real growth average 2.0% per annum, and growth is estimated at less than 1% for the year 1999. Decline and stagnation characterized the major productive sectors, agriculture and manufacturing and tourism between the period 1995 – 1999. At the same time, Government services contribution, the second largest sub-sector of the economy, has been variable against the background of worldwide reduction in aid flows.

Physical Character

Geologically, the entire island of Dominica is considered young, having begun to form probably less than 50 million years ago, during the Miocene period of the Cenozoic era. Over this period Dominica has under gone numerous and considerable changes in elevation but is now relatively stable. Volcanism is active at present in the sulphur spring region (Soufriere area), and the area of the boiling lake and Valley of Desolation.

The topography of Dominica is characterized by very rugged and steep terrain extending above 1500 meters in elevation over much of the country. A few pockets of more gently sloping (flatter) lands are restricted primarily to the river valleys, the coastal areas of the North-east, and the Bells Wet Area in the centre of the island. The cone of Morne Diablotin (1730m) **(fig. 1.1)** dominates the northern half of the island whilst in the south a chain of mountains including Morne Trois piton (1424m), extends to the coast. In fact the peaks of all these mountains are less than seven km form the sea, leaving the island with a very narrow coastal plain. Along this coastline are found approximately fifty (50) usually sandy

beaches with lengths varying from 50m to 1.5km. Being volcanic in origin they are coloured black to grey to light cream. These beaches are extremely susceptible to the impacts of hurricanes and storms. These impacts include narrowing of beaches, destruction of the coastal vegetation in the tree line, and the conversion of sandy beaches into narrow stretches of bouldery shoreline; however, some beach accretion has been reported to occur (James, 1997).

Figure 1.2 Morne Diablotin, Portsmouth and Prince Rupert Bay

Local Climatology and Related Phenomena

Given the mountainous nature of the terrain, flood risks are minimal except in the lower lying coastal settlements, especially during the passage of hurricanes. Being situated in the hurricane belt, hurricanes of varying intensity are reported to occur in Dominica on average every 15 years. The first record of a hurricane hitting the island was in 1780. Since then, two particularly devastating hurricanes, "David", in 1979 and "Luis" in 1995 have hit the island. Table 1 below provides a summary of recent major natural disasters in Dominica.

Table 1
Summary of Recent Major Natural Disasters in Dominica

Activity	Year	Comments
Earthquake[1]	1998 – 1999	In the south of the island
Hurricane	1999 (Lenny)	Extensive damage to infrastructure, beaches
Hurricane	1995 (Luis)	Extensive damage to infrastructure, beaches, 1 life lost
Hurricane	1979 (David)	Extensive damage to all sectors,

[1] During 1998 and 1999, there was heightened seismic activity (earthquakes, tremors), in the South of the island, leading the National Disaster Preparedness Committee to draw up plans for the potential evacuation of the residents in this area.

		significant environmental damage, 39 lives lost
Volcanic eruption	1980	Minor
Landslide/Flood	1998 (Layou)	Significant land loss, environmental damage
Landslide	1977 (Bellevue	Significant land loss, environmental damage, 8 lives lost

With regard to natural disasters, the pattern of population settlement and infrastructural development is particularly interesting, since, ninety percent (90 %) of the population live along the coast, and all port facilities, as well as the bulk of the island's road and communication infrastructure are also similarly located along the coast. This is important considering that Dominica is prone to extremely damaging natural disasters as a result of both it's positioning within the hurricane belt and its geo-physical makeup. These natural disasters which include *inter alia:* hurricanes, storm surges, landslides, intermittent floods, earthquakes and volcanic activity, all have serious potential negative impacts on lower lying areas and the populations within them inclusive of the abundant natural resources of the country which is reported to represent the region's richest diversity of natural flora and fauna.

Dominica has a very narrow continental shelf on the west coast and a fairly large shelf on the east coast. As a result there are not many very large expanses of coral reef on the west coast of the island. The coral diversity on the western side of the island is greater than on the eastern side. At Anse Bateau, on the South-west coast, are fringing coral reefs some of which can withstand the very warm waters produced from hot volcanic vents found on the sea bed which are locally called champagne bubbles. Hurricanes and storm surges have caused tremendous damage to reef systems located in shallow waters. Hurricane Lenny, which was characterized by extremely high impact waves in excess of 60ft high, took a toll on the inshore coral reefs of Dominica. Huge pieces of reef were ripped from the seabed and tossed unto the beach, causing severe loss of habitat to coastal pelagic and reef fishes.

Coral bleaching is another cause of death of coral. During studies done by the Fisheries Division in 1998, it was reported that about 15% of the corals showed some form of bleaching, ranging from minor to severe bleaching.

Dominica is home to the most diverse assemblage of wildlife species remaining in the Eastern Caribbean. All the faunal groups are well represented. It is the great diversity of habitats encompassed within this island of less than 750 square kilometres (290 sq.m) that gives rise to this rich diversity of

animals and faunal communities. The greatest diversity of animal life occurs in the rain forest with birds and bats particularly well represented.

The Island's resident birds include two single-island endemics and nine regional endemic species. Dominica's two endemic parrot species *Amazona imperialis* and *Amazona arausiaca* are considered endangered and threatened, respectively, (IUCN Red Data List), and are specially protected birds under Dominican law. The most recent population estimate (1999) put the parrot populations at approximately 200 *A. imperialis* and 1500 *A. arausiaca*. Although *A. imperialis* may never have been abundant in Dominica, it is now considered to be the world's most critically endangered Amazon parrot. Both species have been negatively impacted by the combined effects of forest clearance for agriculture and logging, and damage to the forests caused by hurricanes.

Dominica remains one of the least densely populated islands in the Caribbean. In 1999, Dominica's population was estimated at 76,056, with an average population density of 101.33 per sq. km. However provisional results of the 2001 National Census released by the Statistics Division indicate that the population is 71,242 with an average density of 94.91 per sq. km. Dominica has a relatively young population. Sixty two percent (62.5%) of the population of 74750 is below the age of 30. Most population concentrations are along the coast, due to the rugged nature of the interior. Life expectancy at birth in 1994 was 64 years for men and 71 for women. In 2000, life expectancy was estimated at 71 and 74 years for males and females respectively. The rate of natural increase in the population increased in the 1994 – 1999 period as a result of marginal increases in birth rates and fertility rates. Historically, this has been offset by high net migration rates. (*Chief Medical Officer's Report, 2000*).

The adult literacy rate in 1994 was 81.2%. This had risen to 95% by the year 2000. A 1995 Draft Poverty Assessment, by the British Development Division (BDD) estimated the level of poverty in Dominica at 27.6%[2].

Vulnerability

With regard to vulnerability to climate change impacts, a recent Climate Change Vulnerability and Adaptation Assessment for Dominica, prepared by Challenger, B et al (2001) noted "that global climate change is likely to have adverse impacts for small island states such as Dominica already confronting

[2] Poverty was defined as households spending 60% or more of their income on food.

severe problems related to the impacts of existing extreme climate events, as well as other social environmental and economic vulnerabilities and challenges".

The report concluded: "projections for global climate change would have profound, adverse impacts on Dominica, exacerbating many of the existing socio-economic and environmental difficulties that the country already faces. In Dominica's case the islands rugged topography imposes it's own unique set of development challenges. At the same time international trends towards economic globalization have severely restricted the growth of the islands banana industry while tourisms tremendous potential remains largely untapped due to problems of air access associated with the islands terrain.

"The islands rich terrestrial and marine biodiversity is increasingly under stress from a number of human activities. Institutional arrangements for resource management are in many instances restricted by budgetary, technical, legal and policy constraints.

"The wide range of adaptation measures necessary at the sectoral level will require giving priority to those activities that can be expected to have a multiplier effect on promoting the integration of climate change concerns into the planning and implementation of adaptation measures. These include:

- Public awareness
- Coastal area management
- Disaster response
- Integrated water resource management
- Physical planning and development control, and
- Building capacity for climate change

"The ultimate objective of adaptation activities and programmes should be the integration of climate change considerations into the planning, development and implementation of virtually all activities at all levels. It is necessary to ensure that adaptation activities serve wider development goals and objectives of reducing vulnerability to existing climate stresses and of promoting sustainable development.

One important factor underlying all of the efforts to respond to the challenge of climate change will be the issue of the political will to tackle such a long term, and yet unquantifiable, task. Climate change will occur across time frames that far exceed the normal time horizon for political decision-making. Additionally many of the adaptive actions identified involve taking anticipatory actions likely to be resisted (at least initially) by important stakeholder groups and are therefore likely to be politically

sensitive. These complicating political realities will require resolute leadership guided by the best available scientific and technical information. They also highlight the need for a vigorous public awareness programme so as to begin to empower stakeholders at all levels with the necessary tools for attempting to meet the challenge of climate change in Dominica."

INTRODUCTION

The Government of Dominica accepts the conclusions of the Inter-Governmental Panel on Climate Change (IPCC) and other expert scientific bodies, which state that global temperatures are increasing due to the burning of fossil fuel and other human activities. Government further accepts the scientific predictions that this trend of global warming is likely to continue for several decades, even if the causative activities were to cease with immediate effect. It is further accepted that global warming will result in climate change, which may be manifested, *inter alia*, by:

1. Sea level rise;
2. Changes in local and regional temperatures regimes;
3. Changes in rainfall patterns;
4. More severe weather events such as droughts, rainstorms and hurricanes;
5. Climate variability.

Dominica, a Small Island Developing State (SIDS), is characterized by limited land space, vulnerability to the effects of changes in marine conditions due to its encircling coastline, limited human and economic resources to address adverse impacts, population centers and critical infrastructure located on low lying coastal lands and an extremely vulnerable location within the hurricane belt. Because of these factors the Government of Dominica is of the conviction that Dominica is highly susceptible to the anticipated impacts of Climate Change. Scientific research done for the Caribbean region has indicated that these impacts are likely to include, among others:

- The flooding and submergence of coral reefs, wetlands and coastal lowlands due to sea level rise;
- Loss of forests and terrestrial biodiversity as a result of changes in diurnal and nocturnal temperatures and rainfall;
- The depletion of water supplies and water quality;
- Reduced agricultural productivity;
- An increase in the occurrence of pests, contagious and stress-related diseases, and other human health impacts;
- Increased coastal erosion and infrastructure damage as a result of the increased strength of storm surges and hurricanes;
- Loss of marine biodiversity from sea-level rise, increased water temperatures, and effects on marine environment from climate change impacts.

The evidence from around the world heightens concern about Climate Change, which suggests that this phenomenon is already accuring. Such evidence includes:

- The loss of coral reefs in the Seychelles and as a result of an increase in coastal water temperatures;
- The submergence of low-lying islands in the Maldives as a result of sea level rise;
- The melting of the polar ice caps;
- The increased frequency of cyclonic events in the Caribbean Basin over the last two decades.

The Government of Dominica recognizes that Climate Change is a major environmental phenomenon with serious ramifications for all nations of the world. Government however, is aware that although Dominica and other SIDS contribute only a minute amount to total global Greenhouse Gas Emissions, they bear an overwhelming disproportionate level of risk to the impacts of Climate Change due to their inherent vulnerability.

In 1993, Dominica ratified the *United Nations Framework Convention on Climate Change* (UNFCCC). Government remains committed to meeting the goals of the Convention, which are essentially to reduce global greenhouse gas emissions and to address the actual and anticipated effects of Climate Change. Notwithstanding, Government is of the conviction that the limited scope available for addressing the issues of reduction of Greenhouse Gas Emissions, and more importantly, Dominica's susceptibility to the effects of Climate Change, requires that urgent attention be given to developing strategies to adapt to Climate Change.

The Government of Dominica recognizes that not all issues and processes relating to Climate Change have been fully understood and that further research is required. Notwithstanding, it is generally accepted that there is sufficient evidence to merit urgent action that is guided by the tenets of the precautionary principle.

Accordingly, Government sees the need for a policy to guide a national plan of action, formulated to address the effects of Climate Change. Such a policy must be created in an environment of cooperation and coordination, promoting the needs and concerns of all sectors of society, thus ensuring efficient and effective use of scarce resources in the implementation of policy directives.

POLICY STATEMENT

The aim of this *National Climate Change Adaptation Policy* is to foster and guide a national plan of action, formulated in a coordinated and holistic manner, to address short, medium and long term effects of Climate Change, ensuring to the greatest extent possible that the quality of life of the people of Dominica and opportunities for sustainable development are not compromised.

POLICY OBJECTIVES

The objectives of this policy are to:

1. Foster the development of processes, plans, and strategies to:
    - Avoid, minimize, adapt, or mitigate to the negative impacts of climate change on Dominica's natural environment including ecosystems, ecological processes, biotic resources, lands and water;
    - Avoid, minimize or respond to the negative impacts of climate change on economic activities;
    - Reduce or avoid damage to human settlements and infrastructure resulting from climate change;
    - Avoid or minimize the negative impacts of Climate Change on human health;
    - Improve knowledge and understanding of Climate Change issues;
    - Conduct systematic research and observation on Climate Change issues.
    - Explore and access opportunities being developed through negotiations on climate change issues and related matters to meet the development objectives of the country.
2. Foster the development and enforcement mechanisms for appropriate and innovative legislative and regulatory instruments, which will promote effective implementation.
3. Foster the development of appropriate institutional systems and management mechanisms to ensure effective planning for and responses to Climate Change.
4. Foster the development of appropriate economic incentives to encourage public and private sector adaptation measures.
5. Establish and institutionalise a National Climate Change Committee.

POLICY PRINCIPLES

The Government of Dominica will:

- Integrate climate change development policies, plans, and projects and incorporating appropriate adaptive responses;
- Ensure that adaptive responses are consistent with national social, economic, and environmental developmental goals;
- Take adaptive action where State property, resources, and services are likely to be adversely affected by climate change;
- Fulfil to the greatest extent possible, its commitments under the *United Nations Framework Convention on Climate Change*, to which Dominica is Party;
- Participate to the fullest extent possible in negotiations on various aspects of the Convention, its protocol, articles etc. insofar as these will meaningfully impact on the ability of Dominica to address issues relating to Climate Change or the country's development in general;
- Collaborate where appropriate and feasible, with other regional and international countries and organizations, which pursue confluent agendas in Climate Change.
- Endeavour to obtain, to the greatest extent possible, the involvement and participation of all stakeholders at the national level in addressing issues related to Climate Change.
- Endeavour to ensure that such involvement and participation are planned and coordinated, thus minimizing conflicts and duplication of efforts and ensuring the creation of positive synergies and efficient use of resources.
- Endeavour to foster/create an institutional, administrative and legal environment which engenders/supports the effective implementation of Climate Change adaptation activities.
- Promote and support research and information gathering at the national and regional levels on aspects of Climate Change and its impacts as they pertain to Dominica.
- Ensure that society, at all levels and in all sectors is adequately informed on Climate Change issues and their implications for the nation;
- Ensure that adequate planning (physical, socio-economic etc.) is undertaken on a continual basis to address the impacts of Climate Change. Such planning should be undertaken, not in isolation but in the wider context of sustainable development.
- Endeavour, where possible and necessary, to develop national human and institutional capacity in all aspects of Climate Change research, response, planning etc.
- Create an enabling environment for the adoption of appropriate technologies and practices that will assist in meeting national and international commitments with respect to the causes and effects of Climate Change.

- Procure/allocate adequate financial and other resources to ensure that Climate Change issues are effectively addressed.
- Recognizing that the resilience of the natural environment is key to coping with climate change, do all possible to enhance and maintain the integrity of ecological processes of ecosystems and landscapes.
- Recognizing that economic resilience is key to coping with climate change, do all possible to promote the development of a strong and diversified economy.

APPLICATION

This policy shall guide the work of all Governmental, Statutory, Non-governmental and Civil entities which are involved in or which may seek to become involved in addressing Climate Change issues and their impacts on Dominica. The Government of Dominica recognizes that if the Dominica Climate Change Adaptation Policy is to be effective, there must be aggressive and effective involvement by all stakeholders at all levels of society.

POLICY DIRECTIVES

The following policy directives with regard to Coastal and Marine Resources, Agriculture, Human Settlement, Forestry and Terrestrial Resources, Water Resources, Health, Tourism, and the Financial Sector outline the responsibility of the Government of the Commonwealth of Dominica, in mitigating the impact of Climate Change in those sectors.

Coastal and Marine Resources

The Government of Dominica recognizes the fact that Coastal and Marine resources are at greatest risk from the effects of climate change impacts, most particularly, sea level rise. Impacts are expected to include:

- Inundation of coral reefs, sea grass beds and mangrove swamps as sea level rise;
- Erosion of beaches and coastal Islands due to sea level rise and changing coastal processes;
- Loss of fishery production;
- Fish kills and coral die-off due to increase seawater temperatures **(fig 1.3).**

Fig.1.3 climate change impact on marine environment

In order to address impacts of climate change on coastal on coastal and marine resources, the Government of Dominica will:

1. Ensure the continuation, expansion and strengthening of coastal monitoring and data collection activities in order to improve decision making;
2. Undertake, a national assessment of coastal areas and resources at risk;
3. Adopt short medium and long-term measures to protect coastal lands and to increase the resilience of coastal ecosystems and resources;
4. Develop measures to restore or "replace" damaged or destroyed coastal resources (artificial reefs and wetlands);
5. Develop a comprehensive national land and natural resources management plan, which *inter alia*, incorporates Climate Change concerns and which based upon such concerns, makes prescriptions regarding the location of coastal developments;

6. Identify and promote alternative fishery and resource use activities (e.g. mariculture) where impacts on ecosystems and natural resources preclude the continuation of traditional activities;
7. Foster increases awareness and knowledge on the part of the general public regarding Climate Change impacts on the coastal and marine environment.

Agriculture

It is recognized that Climate Change may seriously impact agricultural production and threaten food security. Risks to agriculture are likely to result in the following impacts to the agricultural sector:

- Reduced productivity in relation to fresh water biodiversity, crops, livestock and wildlife due to increased drought conditions;
- Increased soil erosion resulting in increased siltation of marine environment;
- Increased occurrence of agricultural pests;
- Changes in vegetation, deforestation and loss or degradation of habitats as a result of increased forest fires, increased hurricane intensity and earth movements (landslides);
- More frequent economic setbacks and prolonged recovery periods due to overall destruction of infrastructure and agriculture from more intense hurricanes.

In order to establish appropriate adaptation response to such impacts, the Government of Dominica will:

1. Provide an enabling environment for developing mechanisms for:
    - The use of agro forestry movement systems to include the establishment of buffer zones along waterways and between forests and savannahs, and reforestation programmes.
    - The implementation of soil and water conservation measures.
    - The implementation of Integrated Crop Management Systems to include the use of drought resistant varieties, systematic crop development programmes and increased efforts at agricultural diversification.
2. Establish and maintain a database network that will allow for the processing and analysis of information on the impacts of climate change on agricultural practices that will assist in informed decision-making.
3. Develop a Disaster Preparedness Strategy for the agricultural sector to address impacts over the short, medium and long term.

4. Incorporate the Disaster Preparedness Strategy for the agricultural sector into the National Disaster Preparedness Programme.
5. Adopt appropriate measures to address areas of immediate need which do not jeopardize or contradict the development of long-term, sustainable strategies for the agricultural sector. Such measures may include construction of water storage and irrigation facilities for crop production and construction of suitable housing for livestock.
6. Establish mechanisms to address agricultural activities that reduce the resilience of natural systems to adapt to climate change impacts by, amongst other matters, developing mechanisms to reduce land-based pollution on coastal systems, propagating coral artificially and procuring resources for the construction of sea defence structures.
7. Encourage collaboration between tertiary institutions and regional organizations for the conducting of more detailed research on climate change issues and their impact on agricultural activities within regional states.
8. Ensure adherence to building codes by providing mechanisms for enforcement.

Human settlements

It is recognised that Climate Change is likely to impact negatively on human settlements. Possible consequences include:

- Damage to coastal property and infrastructure due to storms surges;
- Damage to houses, business and other properties due to increased intensity and frequency of cyclonic events.

In order to address such impacts and to promote the implementation of appropriate adaptation measures, the Government of Dominica will:

1. Develop or improve the basis for sound decision making by promoting and fostering the developing of capacity to undertake research into and analysis of the relevant Climate Change processes, which may affect coastal settlements. These may include, inter alia, sea level rise;
2. Undertake a comprehensive assessment of human settlement and related infrastructure at risk from the effects of Climate Change;
3. Develop a comprehensive national land use and management plan, which inter alia, incorporates Climate Change concerns and which based upon such concerns, makes prescriptions regarding the location of future settlements and urban development without compromising water supply and other such requisites for the sustainability of settlement;

4. Develop and implement a plan for the relocation or protection of settlements and infrastructure at risk from the effects of Climate Change;
5. Ensure the incorporation of Climate Change considerations into existing or proposed national emergency plan;
6. Promote the development and enforcement of a building code, which addresses Climate Change considerations including hurricane resistance; energy/heat efficiency and "flood resistance";
7. Ensure that the national infrastructure standards (jetties, roads, bridges. etc.) are adequate to withstand the effects of climate change;
8. Ensure the passage and enforcement of EIA legislation and incorporate climate change considerations into the EIA process;
9. Implement fiscal measures where appropriate to encourage the adaptation of building codes and other relevant measures;
10. Foster increased public awareness of Climate Change and its effects on human settlements.

Forestry and Terrestrial Resources

The Government of Dominica accepts the scientific evidence indicating the likelihood of significant impacts on terrestrial resources including soils, forests and biodiversity. These impacts are expected to include, *inter alia*:

- Changes in the composition of natural vegetation due to changing climatic, hydrologic and edaphic conditions;
- Loss of Dominica's terrestrial biodiversity due to changing climatic, hydrologic and edaphic conditions;
- Increased soil fragility and hence, erosion;
- Change in ecological interactions between animal's species.

Government is fully cognizant of the fact that terrestrial resources are essential for the continued existence of human populations and in addressing these and other related issues, the Government of Dominica will:

1. Develop or improve the basis for sound decision making by promoting and fostering the developing of capacity to undertake research into and analysis of the relevant Climate Change processes (including forecasting and data collection) on Dominica's terrestrial biodiversity;

2. Undertake measures in the short term to increase the resilience of terrestrial biodiversity - measures could include soil conservation, agro-forestry and the establishment of conservation areas;
3. Develop a comprehensive national land use and management plan, which *inter alia*, incorporates Climate Change concerns and which based upon such development without compromising water supply and other such requisites for the sustainability of developments;
4. Ensure the implementation of strategies and plans including the: *National Biodiversity Strategy and Action Plan*; the *National Report on Desertification*, and the *National Forest Action Plan*.

Water Resources

Scientific research strongly suggests that water resources worldwide will be affected by Climate Change. Likely effects include:

- Changes in temporal and spatial distribution due to increased climate variability and occurrence of temporal and spatial distribution of severe events such as cyclones and droughts;
- Contamination of ground water due to increased soil erosion arising from the greater frequency of extreme rainfall events;
- Water shortages due to increased drought.

In addressing these and other related issues, the Government of Dominica will:

1. Develop or improve the basis for sound decision making by promoting and fostering the developing of capacity to undertake research into and analysis of the relevant climatic changes/processes (including forecasting and data collection) on surface and underground water resources;
2. Promote the strengthening of national water management agencies to ensure the sound management of the island's water resources
3. Develop a long term national water management plan which incorporates and addresses climatic change concerns;
4. Undertake reforestation and other desirable watershed management practices to increase the ability of watersheds and catchments to maximize water availability, as well as to reduce soil erosion and sedimentation;
5. Assess and address needs for improved water storage and distribution infrastructure to ensure water availability during drought periods;

6. Promote initiatives to identify and, where necessary, exploit non-traditional water sources such as ground water;

Health

The Government of Dominica recognizes the fact that Climate Change is likely to have implications for human health in Dominica. Climate Change is expected to result in, *inter alia*:

- The increased occurrence of dengue fever and other vector borne diseases as higher temperatures favour the proliferation of mosquitoes and other disease carriers;
- A higher occurrence of heat and stress related illnesses;
- An increase in water borne diseases, especially following extreme rainfall events.

In an effort to promote appropriate and adequate adaptation to the health implications of Climate Change, the Government of Dominica will:

1. Ensure the conduct of necessary research and information gathering in order to strengthen the basis for sound decision making;
2. Formulate or improve a national health plan to ensure that appropriate short, medium ad long term measures are implemented to address health related climate Change issues;
3. Sensitise and educate the public and health personnel about Climate-Change related health matters;
4. Ensure that to the extent possible preventive measures and curative resources such as vaccines and medications available as needed.

Tourism

The Government of Dominica recognises the fact that Climate Change is likely to have serious negative impacts on the tourism sector especially the developing eco-tourism sub-sector. These impacts are expected to include *inter alia:*

- Reduced tourist arrivals as a result of warming temperatures in the major metropolitan markets
- Adverse impacts on the forest, coral reefs, rivers and other natural attractions that form the basis for the country's tourism industry.
- Facilitate the establishment of a reliable quantitative database in support of widespread observations of the impacts of current climate variability. This is important to the creation of a

factual understanding of climate change issues in the Dominican context and for determining and planning for the potential impacts of future climate change.

- Conduct research into appropriate traditional knowledge and skills, which can be utilized in identifying cost effective, flexible, and easily replaceable adaptations to climate change impacts.
- Create new or revise existing hazard maps, which will define the extent of impact prone areas and inform strategies for sustainable land use and tourism development.
- Conduct research on the use of flexible, cost effective and easily replaceable measures for coastal protection, which would reduce vulnerability through better incorporation of the long-term environmental consequences of resource use.

Financial Sector

The Government of Dominica recognizes the potential effects of Climate Change on the financial sector including:

- The effects of catastrophic events such as hurricane damage on lending institutions, insurers, reinsures and property owners;
- The diversion of financial resources from productive investment to restorative and productive activities.

In an effort to ensure appropriate approaches to adaptation in the financial sector, the Government of Dominica will where feasible:

1. Implement fiscal and financial measures in order to achieve equitable distribution of the economic burden between stakeholders;
2. Ensure the adaptation and implementation of building codes and other standards in order to minimize risk from Climate Change;
3. Sensitise stakeholders about the effects and implications of Climate Change.

PLANNING AND MANAGEMENT MECHANISMS

The Government of Dominica ensures the following actions will be take in order to accomplish the goals, objectives, principles, and directives detailed in this policy document:

1. The establishment of an effective legal and institutional framework for the conservation and enhancement of the country's natural resources.
2. The establishment of a national Climate Change database and information system to be used by all relevant agencies.

3. The development and enforcement of building codes, which address the issues of Climate Change.
4. Government budgetary support provided for programs and projects developed to address Climate Change issues.
5. Collaboration between the Ministries of Agriculture, Planning and Education, and other stakeholders for the formulation and implementation of a comprehensive national public awareness and education program addressing issues of Climate Change.
6. Strengthen the Fisheries Division of the Ministry of Agriculture to undertake appropriate monitoring and risk assessment, and to formulate appropriate response adaptation measures.
7. The development and adoption of appropriate engineering standards for roads, jetties, and other such infrastructure, which take into consideration Climate Change impacts.
8. The development and implementation of joint programs for the monitoring and conservation of coastal ecosystems and resources through collaboration between the Division of Fisheries, communities, and resource users.
9. The development and use of appropriate monitoring methods and indicators by the Public Health Department, to determine the impacts of Climate Change on human health.
10. The development of an Agricultural land use and land zoning policy by the Ministry of Agriculture, which addresses Climate Change concerns.
11. The inclusion of Climate Change issues and their expected impacts in the National Disaster Preparedness Office plans and response programs
12. Collaboration between the Meteorology Unit of Government ministries in order to improve data collection, management, and analysis.

ACCOUNTABILITY

The Ministry of Agriculture and the Environment shall have administrative oversight and responsibility for Climate Change initiatives. The Environmental Coordinating Unit of the ministry shall have overall responsibility for the implementation of the national policy. However, other Ministries or agencies may be given responsibility for implementing specific activities or programmes and, if so, will report as required to the NCCC or to the MoAE. In this regard, the Ministry of Agriculture will serve as a secretariat to the National Climate Change Committee.

MONITORING AND REVIEW

The broad –based National Climate Change Committee or its successor body shall monitor the implementation of this Climate Change Adaptation Policy. The Government shall periodically review the mandate, Terms of Reference and composition of this entity with a view to better equipping it to fullfill its mandate. The committee shall report to the cabinet of Minister through the Minister of Agriculture and The Environment on a semi-annual basis, as well as at any other time deemed necessary. The National Climate Change Committee shall keep this policy under regular review, and shall monitor implementations of the directives of this policy. The National Climate Change Committee shall present to cabinet an annual report on measures that have been undertaken to implement this policy. On the fifth anniversary of the date of this policy, the National Climate Change Committee shall conduct a public review of this policy to determine its effectiveness in achieving its goals and objectives.

FRAMEWORK

FOR

DOMINICA NATIONAL CLIMATE CHANGE

ADAPTATION POLICY

Coastal Zone

Strategy and Actions	Rational	Priority	Time frame	Resource Needs	Remarks	Institutions
Improve/upgrade relevant coastal monitoring and data collection systems and hazard mapping for coastal zones	To obtain data to guide decision-making	Very High	Short-term	Consultants Financial Human Equipment	Limited ongoing monitoring and data collection. There is need for specialized monitoring and data collection equipment	Fisheries Div., LAMA, Ocean Caribes, Coast Guard, Forestry Div., ITME Meteorology Unit, MACC, CCCC, Planning Div., ECU, Statistics Unit Office of Disaster Management
Review existing institutional and legislative frameworks	To identify inefficiencies, address gaps and overlaps recommend suitable frameworks	Very High	Short to Medium-term	Consultants Financial Human	To ensure compatibility with signed Conventions. To Investigate enforcement mechanism	Ministry of Legal Affairs, Fisheries Div., Forestry Div., Division of Agriculture, ECU
Incorporation of research findings into national decision-making processes	To ensure that coastal zone issues are integrated into national planning and decision-making	Very High	Short-term	Financial Human	Presently, no formal mechanism exist for incorporating research findings into national decision-making process. IDP process is on-going and results will feed into the IDP	Ministries of Tourism, Physical Planning & Economic Planning, Fisheries Div., Forestry Div., NDC, ECU

Strategy and Actions	Rational	Priority	Time frame	Resource Needs	Remarks	Institutions
Development and implementation of a coordinated public education and awareness campaign on coastal resources	To sensitize society at all levels on the impacts of climate change on coastal resources	Very High	Short-term	Financial Human Equipment	Opportunities exist locally for mass dissemination of public awareness material. Deficiency in production of relevant material for broadcasting	Media houses, GIS, ECU, Fisheries Div., Forestry Div. Physical Planning, Disaster Management Unit, DAIC, Min. of Education, Min. of Agriculture, and Community Development, DHTA
Develop a holistic and integrated, sustainable coastal resources management system	To efficiently manage coastal resources at risk to climate change impacts To upgrade coastal monitoring and data collection systems	Very High	Short-term	Consultants Financial Human Equipment	Presently coastal resource management is spread across individual ministries and units	Forestry Div., Fisheries Div., Ministry of Tourism, Min. of Health, DAIC, DHTA, ECU
Build institutional capacity for climate change responses	To strengthen linkages between climate early warning systems and coastal management systems	Very High	Short-term	Financial Human	Need to integrate and coordinate efforts of the different public and private sector institutions involved – special training required	ECU, Min. of Agriculture & The Environment, Min. of Health, Physical Planning Unit, Disaster Management Office

Human Settlements

Strategy and Actions	Rational	Priority	Time frame	Resource Needs	Remarks	Institutions
Identify vulnerable settlements and produce hazard maps for them	To fill data gaps and assist in the preparation of suitable adaptation strategies	Very High	Short-term	Consultants Financial Human Institutional	Information already exist for some communities	Ministry of Agriculture & The Environment, Physical Planning Div., Red Cross, ECU, Office of Disaster Management, NEPO
Implement appropriate adaptation measures for existing vulnerable settlements and future developments including strengthened disaster management capabilities	Minimize negative impacts of climate change	Very High	Short-term	Consultants Financial Human	Resettlement/ relocation where possible is urgently required	Ministry of Agriculture & The Environment, ECU, DAIC, DSA, DAPE, Min. of Communications & Works, Office of Disaster Management
Development and implementation of integrated, sustained and coordinated public education and awareness program regarding human settlement	To sensitize the general public as to the impacts of climate change	Very High	Short-term	Financial Human Equipment	Opportunities exist locally, for mass dissemination of public awareness material. Deficiency in production of relevant material for broadcasting	Assoc. of Architects, Physical Planning, Media houses, GIS, ECU, Fisheries Div., Forestry Div.

Strategy and Actions	Rational	Priority	Time frame	Resource Needs	Remarks	Institutions
Review and strengthen existing institutional and legislative frameworks for physical planning	To identify inefficiencies, address gaps and overlaps and recommend suitable frameworks	Very High	Short-term	Consultants Financial Human	To ensure compatibility with signed Conventions. To Investigate enforcement mechanism	Ministry of Legal Affairs, Fisheries Div., Forestry Div., Division of Agriculture, ECU
To encourage and promote the wide use of traditional knowledge in the development of adaptive strategies	To access and incorporate knowledge of local people	High	Medium-term	Financial Human	Some traditional knowledge and techniques are currently utilized, example in construction	Min. of Communication & Works, Div. of Culture, DSA, DAPE, Draftsmen, ECU
To conduct research into impacts of climate change on human settlements	To obtain data for decision-making	High	Medium-term	Consultants Financial Human Institutional	Special focus to be placed on employment, transportation, utilities, energy	DAPE, DSA, ECU, Physical Planning Unit, MACC, CCCC, Min. of Com-munciations & Works, Trade Unions, DEF
Build institutional capacity for climate change responses	To strengthen linkages between climate early warning systems and human settlement management systems	Very High	Medium to Long-term	Financial Human	Need to integrate and coordinate efforts of the different public and private sector institutions involved – special training required	ECU, Min. of Agriculture & The Environ-ment, Min. of Health

Water Resources

Strategy and Actions	Rational	Priority	Time frame	Resource Needs	Remarks	Institutions
Undertake inventory of water resources in an effort to maximize availability	To determine availability of resources and guide future management decisions	Very High	Short-term	Consultants Financial Human	Presently, an incomplete inventory of the resource available	DOWASCO, Ministry of Agriculture, Health, Div. of Forestry, ECU
To determine availability of resource and guide future management decisions	To efficiently manage water resources as a consequence of potential climate change impact	Very High	Short-term	Financial Human Institutional	To combine resource enhance-ment and conservation management activities	DOWASCO, Ministry of Agriculture, Health, ECU
Development and implementation of integrated and coordinated public education awareness program with emphasis on water conservation	To sensitize society at all levels on the impacts of climate change	Very High	Short-term	Financial Human Equipment	Opportunities exist locally for mass dissemina-tion of public awareness material. Deficiency in production of relevant material for broadcasting	Media houses, GIS, ECU, Fisheries Div., Forestry Div.
Review existing data, research and maintain systems for monitoring, data collection and analysis	To determine the effects of climate change on freshwater resources	High	Short-term	Financial Human		Div. of Forestry, DOWASCO, CEHI, ECU, Division of Agriculture, Min. of Health

Strategy and Actions	Rational	Priority	Time frame	Resource Needs	Remarks	Institutions
Develop a national water conservation program	Conserve and protect the drainage basin and manage the utilization of water	Very High	Medium	Financial Human	Prevention of pollution to water resources. Manage the utilization of water	DOWASCO, Div. of Forestry, Division of Agriculture, private sector, petroleum producers, ECU
Investigate opportunities for water exportation viz. reduction in regional availability	To satisfy foreign market demands	Very High	Long-term	Financial Human	Opportunity exist for revenue generation through exportation of water	Min. of Trade, Div. of Forestry, ECU, Division of Agriculture, Bureau of Standards, DAIC, DOWASCO
Build institutional capacity for climate change responses	To strengthen linkages between climate early warning systems and water resource management systems	Very High	Short to medium-term	Financial Human	Urgent need for the establishment of a National Water Commission and a Department of Hydrology	ECU, Min. of Agriculture & The Environ-ment, Min. of Health
Review existing institu-tional and legalization framework	To identify inefficiencies, address gaps and overlaps recommend suitable frameworks	Very High	Short to Medium-term	Consultants Financial Human	Urgent need to review the existing relationship between stake-holders and institution involved in water management	Ministry of Legal Affairs, DOWASCO, Min. of Health, DAIC, Bureau of Standards, ECU

Agriculture

Strategy and Actions	Rational	Priority	Time frame	Resource Needs	Remarks	Institutions
Develop program for the introduction of saline, wind/storm, heat, and drought resistant crops	For research on climate change impacts as alternative types	High	Medium	Financial Human	Based on the introduction of Regionally tested and proven varieties	Division of Agriculture, CARDI, DBMC IICA, Private sector, ECU
Establish a system for improvement, monitoring and research of conven-tional crop and livestock production systems and processes	To determine the effects of climate change on agriculture production systems	High	Short-term	Consultants Financial	Will involve enhancement of capacity of existing research institutions and facilities	Division of Agriculture, DBMC, Lands & Surveys Div., Ministry of Health, P.C.B., ECU, Bureau of Standards, CARDI, IICA
Carry-out risk assessment of vulnerable farms and infrastructure	To reduce the negative effects of climate change on agricultural production	High	Long-term	Financial Land	Relocation of vulnerable farms depending on the availability of alternative lands	DBMC, ECU, Division of Agriculture, Land & Surveys Div., Office of Disaster Mgmt.
To implement conservation programs and improve natural resource management - agro forestry, watersheds, soils	To maintain integrity of the natural resources	Very High	Short-term	Financial Human	A major component will be the promotion and re-introduction of wind breaks	Div. of Forestry, Division of Agriculture, ECU, DBMC, CARDI, Office of Disaster Management

Strategy and Actions	Rational	Priority	Time frame	Resource Needs	Remarks	Institutions
Development of a national food security program	To guarantee food production for local consumption and export given potential negative impacts of climate change	Very High	Short-term	Human	Some initiatives already ongoing - FAO preparing regional food security program; SPAT – pigeon peas production	ECU, Min. of Health, DBMC, Min. of Agriculture, Food & Nutrition Council, FAO, Bureau of Standards, NGO
Development and implementation of a coordinated public education and awareness campaign on agriculture	To sensitize society and farmers in particular on the impacts of climate change on agriculture	Very High	Short-term	Financial Human	Opportunities exist locally for mass dissemination of public awareness material. Deficiency in production of relevant material for broadcasting	Media houses, GIS, ECU, Fisheries Div., Forestry Div. Physical Planning, Disaster Management Unit, DAIC, Min. of Education, Min. of Agriculture, and Community Development, DHTA, NGOs

Strategy and Actions	Rational	Priority	Time frame	Resource Needs	Remarks	Institutions
Promotion of agricultural diversification	To reduce the negative impact of climate change on the agricultural sector	High	Medium	Financial Human Institutional Markets	Ongoing but needs to be intensified, given the vulnerability of the economically important banana crop. However, potential conflicts with the private sector need to be resolved	Division of Agriculture, DBMC, NGOs, Private sector, Food & Nutrision Council, ECU
Introduction of appropriate production systems and technologies for enhanced, sustainable production	To increase food production and maintain consistency of supply	Very High	Short-term	Financial Technological	Utilization of Agro meteorological data in production planning	Division of Agriculture, DBMC, private sector, ECU
Build institutional capacity for climate change responses	To strengthen linkages between climate early warning systems and agricultural management systems	Very High	Medium to Long-term	Financial Human	Need to coordinate and integrate efforts of the different public and private sector institutions involved	ECU, Min. of Agriculture & The Environment, public sector/DAIC, NGOs

Forestry and other Terrestrial Resources

Strategy and Actions	Rational	Priority	Time frame	Resource Needs	Remarks	Institutions
Development and enforcement of land use policy	To ensure the sustainable use of the available land resources	Very High	Short-term	Financial Human	Available locally trained personnel and literature utilized to facilitate the process	Division of Agriculture, Land & Surveys Forestry Div., Physical Planning Div., ECU, ESPWA
Review, strengthen, and enforce legislation and regulations governing forest management	To maintain integrity of terrestrial and forestry resources	Very High	Short-term	Consultants Financial Human	Presently, enforcement of existing laws remains a major challenge. Will greatly assist in management of recreational use of the forest (eco-tourism)	Division of Forestry, Ministry of Legal Affairs, Min. of Tourism NGOs, NDC, ECU
The implementation and promotion of agro forestry systems	To prevent land degradation while providing land for agricultural production	Very High	Short to medium-term		These will be researched and analysed	Division of Agriculture, Div. of Forestry, ECU

Strategy and Actions	Rational	Priority	Time frame	Resource Needs	Remarks	Institutions
Develop formal mechanism of collaboration with private land owners situated in and adjoining watersheds	To protect and ensure the quality of the national water supply	Very High	Short-term	Financial	In areas of high risks of soil erosion and chemical pollution from land-based sources	DOWASCO, Min. of Legal Affairs, Div. of Agri., Farmers' Organizations Lands & Surveys Div., Div. of Forestry, Physical Planning Unit, PCB, ECU, Min. of Community Development
Reforestation of critical watersheds, deforested, and severely degraded lands	To enhance the integrity and resilience of watersheds, deforested, and severely degraded lands	Very High	Short-term	Financial Human	Enhancement of Dominica's carbon sink potential	Division of Forestry, Min. of Education, Community Development, COMPACT, ECU
Encouragement of urban forestry	To help alleviate urban environmental stresses, particularly heat stress	High	Short-term	Human Financial	To encourage new developments do to take green areas into consideration.	DAPE, DSA, Div. of Forestry, Min. of Community Develop., NGOs, Physical Planning Unit, Media, ECU

Strategy and Actions	Rational	Priority	Time frame	Resource Needs	Remarks	Institutions
Implementation of a coordinated public education and awareness campaign on forestry and other terrestrial resources	To sensitize society at all levels on the impacts of climate change on Forestry, and its impacts on sinks	Very High	Short-term	Financial Human Equipment	Opportunities exist locally for mass dissemination of public awareness material. Deficiency in production of relevant material for broadcasting	Media houses, GIS, ECU, Fisheries Div., Forestry Div.
Implement Biodiversity Strategy and Action Plan and initiate the development of a regional approach to critical habitat management	To develop an understanding of tropical ecosystem responses to climate change	High	Long-term	Financial Human	Biodiversity action plan presently being reviewed by Cabinet for endorsement	MACC, CARICOM, CEHI, ECU
Build institutional capacity for climate change responses	To strengthen linkages between climate early warning systems and forestry & terrestrial management systems	Very High	Medium to Long-term	Financial Human	Need to coordinate and integrate efforts of the different public and private sector institutions involved	ECU, Min. of Agriculture & The Environment, Min. of Health, Physical Planning Unit, Disaster Management Office Forestry Div., COMPACT

Fisheries

Strategy and Actions	Rational	Priority	Time frame	Resource Needs	Remarks	Institutions
Undertake review of existing ecosystem, monitoring and data collection systems	To determine the strengths and weaknesses of current systems	Very High	Short-term	Consultants Financial Human	Monitoring work ongoing by the Fisheries Division and Min. of Health	Div. of Forestry Division of Fisheries, Min. of Health, Min. of Communications & Works, ECU, Central Statistics Office
Development and implementation of a coordinated public education and awareness campaign on marine resources	To sensitize society at all levels on and fishers in particular on the impacts of climate change	Very High	Short-term	Financial Human	Opportunities exist locally for mass dissemination of public awareness material. Deficiency in production of relevant material for broadcasting	Media houses, GIS, ECU, Fisheries Div., Forestry Div. Physical Planning, Disaster Management Unit, DAIC, Min. of Education, Min. of Agriculture, Community Development, Hotel Assoc.
Strengthening of fisheries legislation	To conserve and maintain integrity of marine resources	Very High	Short-term	Consultants Financial Human	Cabinet presently considering draft Fisheries legislation	OECS NRMU, Min. of Legal Affairs, Fisheries Div., Min. of Community Development, Cooperative Division, ECU

Strategy and Actions	Rational	Priority	Time frame	Resource Needs	Remarks	Institutions
Introduction of modern fishing equipment and techniques	In order to maximize production and target offshore pelagics	High	Medium-term	Financial	Use of fish aggregating devices is presently being promoted and accepted by Fisheries	Fisheries Div., Fisheries Cooperatives, ECU
Development of an integrated plan for management of the country's fisheries resources.	To ensure that climate change considerations are incorporated into planning of all aspects of fisheries management	Very High	Short-term	Consultant Human	Presently there is little management of the Fisheries resources	ECU, Fisheries Div. Ministry of Agriculture & The Environment
To develop additional processing/storage facilities	To add value to and maximize the utilization of fish resources	High	Medium-term	Financial Technical Equipment	A major constraint to expansion of the sub-sector is inadequate processing and storage facilities	Fisheries Div., Fisheries Cooperatives Banks, Min. of Community Development, ECU
Build institutional capacity for climate change responses	To strengthen linkages between climate early warning systems and fisheries management systems	Very High	Medium to Long-term	Financial Human	Need to coordinate and integrate efforts of the different public and private sector institutions involved	ECU, Min. of Agriculture & The Environ-ment, Min. of Health, Physical Planning Unit, Disaster Man-agement Office Forestry Div., COMPACT

Tourism

Strategy and Actions	Rational	Priority	Time frame	Resource Needs	Remarks	Institutions
Review existing hazard mapping taking into consideration possible climate change scenarios	To determine the extent of impact prone areas and inform strategy for tourism development	High	Medium-term	Financial Human Technical	Dominica's tourism package is based mainly on eco-tourism focusing on its natural resources	Physical Planning Unit, Div. of Forestry, Div. of Agriculture, Min. of Tourism N.D.C., ECU
Research on the use of appropriate multi-purpose, cost effective measures for protection of coastal development	Reduce vulnerability through incorporation of research findings in decision-making	High	Medium-term	Consultants Financial Human	Presently, protection measures focus mainly on the construction of sea walls	Fisheries Div., ECU, Min. of Communication & Works, Ocean Caribes, DHTA, Min. of Tourism
To review and enforce existing development control legislation	To reduce the negative impact of land-based activities on the tourism product	Very High	Short-term	Financial Human	Land-based activities, such as quarrying are having serious impact on the tourism product, e.g., sedimentation of coral reefs	Physical Planning Unit, Min. of Legal Affairs, ECU
Sensitize stakeholders in the tourism industry to the impacts of climate change	To facilitate climate change sensitive decision- making	High	Short-term	Financial Human	Dominica's tourism base is the natural resource which are very vulnerable to climate change	Media, ECU, DHTA, Ministry of Tourism

Strategy and Actions	Rational	Priority	Time frame	Resource Needs	Remarks	Institutions
Development and implementation of a coordinated public education and awareness campaign on tourism	To sensitize society at all levels of the impacts of climate change	Very High	Short-term	Financial Human Equipment	Opportunities exist locally for mass dissemination of public awareness material. Deficiency in production of relevant material for broadcasting	Media houses, GIS, ECU, Fisheries Div., Forestry Div. Physical Planning, Disaster Management Unit, DAIC, Min. of Education, Min. of Agriculture, Community Development, Hotel Assoc.
Implementation of hard and soft coastal engineering measures	To protect beachside Structures and properties	Very High	Short-term	Financial Human	Majority of tourist facilities are located on the island's vulnerable western coast	Min. of Communications & Works, Finance, Legal Affairs, Fisheries Div., Prof. Engineers, Ocean Caribes, N.D.C., ECU
Build institutional capacity for climate change responses	To strengthen linkages between climate early warning systems and tourism management systems	Very High	Medium to Long-term	Financial Human	Need to coordinate and integrate efforts of the different public and private sector institutions involved	ECU, Min. of Agriculture & The Environment, Min. of Health

Human Health

Strategy and Actions	Rational	Priority	Time frame	Resource Needs	Remarks	Institutions
Development and implementation of a coordinated public education and awareness campaign on health matters	To sensitize society at all levels on the impacts of climate change on human health	Very High	Short-term	Financial Human Equipment	Opportunities exist locally for mass dissemination of public awareness material. Deficiency in production of relevant material for broadcasting	Media houses, GIS, ECU, Fisheries Div., Forestry Div. Physical Planning, Disaster Management Unit, DAIC, Min. of Education, Min. of Agriculture, and Community Development, DHTA
Build institutional capacity for climate change responses	To strengthen linkages between climate early warning systems and health management systems	Very High	Medium to Long-term	Financial Human	Need to coordinate and integrate efforts of the different public and private sector institutions involved	ECU, Min. of Agriculture & The Environment, Min. of Health
Improve surveillance, research, and monitoring of health/ environmental parameters	For filling data gaps and assisting in decision-making	High	Medium to Long-term	Human Financial	Efforts to assess impact on climate change on health is not well developed as other areas of climate change research	Min. of Health Environmental Health, Meteorological Depart., ECU

Strategy and Actions	Rational	Priority	Time frame	Resource Needs	Remarks	Institutions
Strengthening environment health services	To reduce the impacts of climate change on human health	High	Medium-term	Human Financial	Through vector control, environmental engineering, and public awareness	Min. of Health Environmental Health, ECU
Promotion of developmental control, which reduces health sector vulnerability	To mitigate disaster and health risks associated with climate change	Very high	Short-term	Financial Human	Hurricanes and storm surges already contribute to health sector vulnerability by increasing the risk of death and injury	Physical Planning Unit, Environmental Health, ECU
Review and strengthen existing institutional and legislative framework for the health sector	To identify inefficiencies, address gaps, and overlaps and recommend suitable framework	Very High	Short-term	Consultant Financial Institutional	Present legislation does not consider potential impacts of climate change	Min. of Legal Affairs, Min. of Health, ECU, Environmental Health, DSWM

Financial Sector

Strategy and Actions	Rational	Priority	Time frame	Resource Needs	Remarks	Institutions
Provision of fiscal incentives by government to the financial sector, for injection of capital for implementation of appropriate adaptation measures	To encourage the financial sector to become more responsive to the needs of persons affected by negative climate change impact	Very High	Medium-term	Financial Institutional	The present lack of concessionary financing presents a major constraint to implementation of adaptation measures	DAIC, NDFD, Min. of Finance & Planning, Min. of Legal Affairs, private sector, insur-ance agencies, commercial banks, develop-ment banks, credit unions, NDFD, ECU
Government to actively source concessionary financing from donor agencies for on-lending for climate change adaptation activities	To ensure soft loans for lending to the local financial sector	Very High	Medium-term	Financial Institutional	The NDFD Building Retrofitting Project can be used as a model in this regard	Min. of Finance & Planning Banks, Donor Agencies, DAIC, financial institutions, credit unions, NDFD, ECU

Strategy and Actions	Rational	Priority	Time frame	Resource Needs	Remarks	Institutions
Development and implementation of integrated and coordinated public education and awareness program	To sensitize the general public, and the financial sector in particular, to the impacts of climate change	Very High	Short-term	Financial Human Equipment	Opportunities exist locally for mass dissemination of public awareness material. Deficiency in production of relevant material for broadcasting	Media houses, GIS, ECU, Fisheries Div., Forestry Div. Physical Planning, Disaster Management Unit, DAIC, Min. of Education, Min. of Agriculture, and Community Development, DHTA
Build institutional capacity for climate change responses	To strengthen linkages between climate early warning systems and financial management systems	Very High	Medium to Long-term	Financial Human	Need to coordinate and integrate efforts of the different public and private sector institutions involved	ECU, Min. of Agriculture & The Environment, Min. of Health, Physical Planning Unit, Disaster Management Office, financial institutions
Sensitize insurance sector to potential negative impacts, as well as, opportunities arising from climate change	To increase the awareness of insurance companies to the increasing potential risk posed by climate change	Very High	Medium-term	Financial Human	Presently low level of awareness of climate change impacts by insurance agencies	DAIC, commercial banks, development banks, credit unions, insurance companies, ECU

PRIORITIZATION OF ACTIVITIES

The most critical and urgent national projects are outlined in Table 1 below, with their associated cost.

Table 1

ACTIVITY/STRATEGY	RANKING	INDICATIVE COST US$
Multi-Sectoral		
Development and implementation of a coordinated public education and awareness campaign on Climate change, targeting all sectors and relevant stake holders	1 1	$150,000
Implement a national program for capacity building for climate change	1	200,000
Coastal and Marine Resources		
Review existing institutional and legislative framework	1	200,000
Develop a holistic and integrated system for the sustainable management of coastal resources	1	75,000
Human Settlement		
Development and implementation of a coordinated public education and aware-ness campaign on health matters	1	100,000
Build institutional capacity for climate change responses	1	36,000,000
Water Resources		
Develop and implement an integrated multi-sectoral national water resources management plan	1	60,000
Agriculture		
Establish a system for improved monitoring and research of conventional crop and livestock production systems and processes	1	60,000
Forestry		
Development and enforcement of land use policy	1	70,000
TOTAL		36,915,000

1 = highest priority 5 = lowest priority

List of Acronyms

ITME	Institute for Marine Ecology
LAMA	Local Area Management Authority
MACC	Mainstreaming Adaptation to Climate Change
CCCC	Caribbean Climate Change Centre
IDP	Integrated Development Plan
NDC	National Development Corporation
GIS	Government Information Service
DAIC	Dominica Association of Industry and Commerce
DHTA	Dominica Hotel and Tourism Association
ECU	Environmental Coordinating Unit
NEPO	National Emergency Planning Organization
ESPWA	Environmental Services Project Waitikubuli
DSA	Dominica Society of Architects
DAPE	Dominica Association of Professional Engineers
DEF	Dominica Employers Federation
DOWASCO	Dominica Water & Sewerage Company
CEHI	Caribbean Environmental Health Institute
IICA	Inter-American Institute for Cooperation on Agriculture
DBMC	Dominica Banana Marketing Corporation
CARDI	Caribbean Agricultural Research & Development Institute
NGOs	Non-governmental Organizations
FAO	Food and Agriculture Organization
COMPACT	Community Management of Protected Area Conservation Project

OECS NRMU	Organization of Eastern Caribbean States National Resource Management Unit
DSWM	Dominica Solid Waste Management
NDFD	National Development Foundation of Dominica
PCB	Pesticide Control Board
ODM	Office of Disaster Management
CSO	Central Statistics Office

ANNEX I

DEFINITIONS

Adaptation refers to measures, which countries should undertake to respond to the adverse impacts of global climate change and sea level rise.

Annex I countries are those so-called "developed" countries which have ratified the UNFCCC and have undertaken certain obligations under the Convention to reduce their emissions of greenhouse gases and to assist developing country Parties in adapting to the adverse impacts of global climate change and sea level rise.

The Clean Development Mechanism (CDM) is one of the flexibility mechanisms established by the Kyoto Protocol to enable non-Annex I Parties to participate in climate change projects with Annex I Parties to reduce the net global emission of greenhouse gases. A portion of the proceeds of CDM projects should fund adaptation projects in non- Annex I countries.

CPACC is the Caribbean Planning for Adaptation for Adaptation to Global Climate Change project. It is a Stage I climate change adaptation project funded by GEF implemented in CARICOM States from 1997 to 2001.
Three flexibility mechanisms have been established in the Kyoto Protocol to assist Annex I Parties to meet their assigned emission reduction targets.

1. Joint implementation allows two or more Annex I Parties to enter into joint ventures, which reduce their net emissions of greenhouse gases. The credits for emission reductions will be based upon mutual agreement.
2. Annex I Parties are permitted to trade in emission reduction units, which can be used to meet their emission reduction targets.
3. The CDM permits non-Annex I Parties to participate in projects with Annex I Parties to meet their emission reduction targets.

The rules under which these flexibility mechanisms will operate are still being negotiated.

Global climate change refers to changes in the global climate produced by the emission of greenhouse gases into the atmosphere through energy production and use, land use patterns, agriculture, industry , and waste management. Climate change also occurs naturally and it is difficult to make a clear distinction between the two.

Greenhouse gases are those gases in the atmosphere, which limit the earth/atmosphere system from emitting long-wave radiation, and results in global warming.

The Intergovernmental Panel on Climate Change (lPCC) is the international mechanism established by the United Nations Environmental Programme (UNEP) and the World Meteorological Organization (WMO) to assess available information on the science, impacts and the economics of climate change and of the mitigation options to address it.

The Kvoto Protocol to the UNFCCC assigns emission reduction targets that Annex I Parties are required to meet within the period 2008 to 2012. It also specifies the means by which those targets are to be met.

Mitigation refers to actions to reduce the net emission of greenhouse gases into the atmosphere.

Non-Annex I countries are the developing country parties to the UNFCCC which are under no obligation to reduce their emission of greenhouse gases, but are vulnerable to the adverse impacts of global climate change.

Sea level rise is the rise in relative sea level produced by the expansion of water as a result of rising temperatures and the additional water produced as the permanent ice fields melt.

The United Nations Framework Convention on Climate Change (UNFCCC) is the international response to climate change. Its objectives are to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system within a timeframe sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.