Aligned National Action Programme

For

Grenada's Commitment under the United Nations Convention to Combat Desertification and Drought

State of Grenada

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Aligned National Action Programme for the State of Grenada

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FOREWORD

Embarking on the critical work of aligning the National Action Program (NAP) to the UNCCD Ten-year Strategy is both an obligatory and prudent undertaking. Roberts Caribbean Limited, the consultant firm on this assignment, began this project with a clear understanding that Grenada's limited land space is the foundation for sustainable development. This sentiment was shared by the diversity of stakeholders involved in the process. In this regard, it is the resolute belief of my Ministry that land resources must be managed systemically, in order to guarantee the provision of essential goods and services to our people.

The governance and management challenges associated with meeting our national development needs while protecting our limited land resources are well documented in this and related documents. The NAP presents a practical framework for addressing the drivers and pressures on our land that combine to create varying negative impacts and degrees of vulnerability. Included in the NAP are practical interventions and mechanisms, which when supported by enabling legislation and adequate organizational capacity, will serve as the vehicle for achieving the goal of integrated national development that is simultaneously environmentally sustainable.

It is envisaged that the impetus generated during the NAP Alignment process will be sustained through continued engagement of key stakeholders at all levels. What remains is the need to mobilize resources for the implementation of the Action Plan to support a movement from knowledge to practice.

The formulation of this NAP is rather timely, in light of the future expected challenges associated with climate change, especially those that can impact biodiversity. In this context, the NAP ensures that the inseparable links between Climate Change and Biodiversity are embedded through the integration of synergistic approaches. The challenges of climate change highlights the need for urgency at all levels, to take concerted action to ensure that our policy responses and land use actions lead to increased system resilience.

I trust that this work will be readily adopted as our primary guide in managing Grenada's land resources and that it will be integrated into a national strategic development framework.

Hon. Roland Bhola
Minister for Agriculture, Lands,
Forestry, Fisheries and the Environment

ACKNOWLEDGEMENT

The Alignment of Grenada's NAP was made possible through the leadership and support of the UNCCD National Coordinating Body, in particular the Chair and UNCCD National Focal Point Mr. Raymond Baptiste. We are grateful for the feedback provided by the cross section of stakeholders representing public and private sectors, especially the responsive civic minded individuals who attended the consultations and provided critical interventions. Importantly, the local stakeholder organizations, in particular the Grenada Community Development Agency (GRENCODA) through Ms. Judy Williams, the St. Patrick's Environmental and Community Tourism Organization (SPECTO) through Ms. Claudette Pitt, and the Grenada National Organization for Women (GNOW) through Ms. J. Lorice Pascal and Ms. Hyacinth Shervin must be given special commendation for their unwavering support and commitment to the cause.

Mrs. Dianne Roberts, environmental expert of Roberts Caribbean Ltd, who served as the lead consultant on the project management team, must be commended for her insightfulness, commitment and dedication to the project. The Roberts Caribbean team was grateful to have Mr. Augustus Thomas, the former UNCCD National Focal Point and an expert on forest, who provided insightful review and invaluable input into the Aligned NAP.

Special thanks must be extended to the GEF for providing the financial resources to undertake this exercise, and to the UNEP for providing tec hnical support, without which NAP alignment will still be a desire.

EXECUTIVE SUMMARY

Land degradation and drought represent major issues of concern affecting the development potential of Grenada. Cognizant of the tremendous importance of land resources to environmental sustainability and socio-economic advancement, the Government of Grenada raitified the United Nations Convention to Combat Desertification (UNCCD) in 1997. Subsequent to this significant decision, the country has made tremendous strides in fulfilling its obligation including development of its National Action Programme for sustainable land management in 2005. Albeit this, implementation of the NAP was constrained by a diversity of systemic, institutional and individual capacity challenges.

With the aim of fostering improvement and acceleration of NAPs globally, the Conference of Parties to the UNCCD adopted the Ten-year Strategic Plan (2008-2018) at its eight session (Decision 3/COP.8). The Strategy organized around four strategic and five operational objectives calls for country parties to align their NAP to facilitate successful implementation. Like many other Parties to the Convention, Grenada developed its NAP prior to elaboration of the Strategy. As a consequence, and in keeping with the mandate of the Convention, the Government of Grenada using a participatory approach took the bold and obligatory step of aligning its NAP to the Strategy to ensure conformity and consistency.

Developed by the Ministry of Agriculture, Lands, Forestry, Fisheries and the Environment (MoALFFE) with financial assistance from the Global Environment Facility, the Aligned NAP presents an integrated approach for land degradation reduction and drought mitigation within the State of Grenada. *It envisions healthy, productive and resilient land that supports life and sustains the environment*. The Aligned NAP symbolizes a powerful commitment of the Government and people of Grenada towards achieving land degradation neutrality, through people-centered sustainable land management approaches. Enshrined in this strategic document is an unambiguous acknowledgment of land as a vital national asset, the prudent management of which is both a necessary and important requirement for sustainable national development.

The vision and strategic directives of the NAP complement the targets of the Convention on Biological Diversity and the United Nations Framework Convention on Climate Change. In addition, it is congruent to the Growth and Poverty Reduction Strategy, Government's leading macro-economic framework, and other overarching national and sectoral instruments.

The Aligned NAP as presented in this document seeks to prevent *land degradation, and restore 10% of degraded land by 2020, and mitigate the effects of drought and other climatic shocks.*

It is structured around the five Operational Objectives as outlined below:

Operational Objective 1 - Advocacy, Awareness raising and Education: This Operational Objective seeks to actively influence relevant international, regional, national and community based processes and actors in adequately addressing land degradation and drought related concerns.

Operational Objective 2 - Policy Framework: This Operational Objective is designed to support the creation of an enabling environment for promoting solutions to combat land

degradation and mitigate the effects of drought. It therefore addresses existing deficiencies in the systemic framework for SLM, with specific emphasis on the policy, legislative and institutional arrangements.

Operational Objective 3 - Science, Technology and Knowledge: This Operational Objective advocates for changes that will position Grenada to become a leader on scientific and technical knowledge pertaining to land degradation and drought mitigation.

Operational Objective 4 - Capacity Building: Operational Objective 4 recommends priorities for curbing existing capacity related deficiencies.

Operational Objective 5 - Financing and Technology Transfer: This Operational Objective is designed to mobilize and improve the targeting and coordination of national, bilateral and multi-lateral financial and technological resources for NAP implementation.

Implementation of the Aligned NAP will be coordinated by the MoALFFE with direct oversight and monitoring provided by the UNCCD National Coordinating Body. All key stakeholders inclusive of government ministries, civil society organizations, science and technology institutions and the private sector will be engaged in implementing the specific interventions of the aligned NAP, with the aspiration of attaining zero net land degradation in the medium to long term.

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LIST OF ABBREVIATIONS

CARICOM	Caribbean Community
CBD	Convention on Biological Diversity
CIMH	Caribbean Institute for Meteorology and Hydrology
COP	Conference of Parties
CSOs	Civil Society Organizations
DRR	Disaster Risk Reduction
EIAs	Environmental Impact Assessments
GCEPC	Gravel and Concrete Emulsion Production Corporation
GDP	Gross domestic product
GLaDDMoN	Grenada Land Degradation and Drought Monitoring Network
GPRS	Growth and Poverty Reduction Strategy
IFS	Integrated Financing Strategy
LADA	Land Degradation Assessment in Drylands
LAPs	Local Areas Plans
LMMS	Land and Marine Management Strategy
LUS	Land Use System
MoALFFE	Ministry of Agriculture, Lands, Forestry, Fisheries and the Environment
GEF	Global Environment Facility
MoCPMA	Ministry of Carriacou and Petite Martinique Affairs
NAP	National Action Programme
NAWASA	National Water and Sewerage Authority
NBSAPs	National Biodiversity Strategy and Action Plans
NCB	National Coordinating Body
NEPMS	National Environmental Policy and Management Strategy
NPAC	National Parks Advisory Council
NPDP	National Physical Development Plan
SLM	Sustainable Land Management
STIs	Science and Technology Institutions
TPA	Terrestrial Protected Areas
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change

GLOSSARY OF TERMS

Arid, Semi-arid and Dry sub-humid Areas – Areas other than polar and sub-polar regions, in which the ratio of annual precipitation to potential evapotranspiration falls within the range from 0.05 to 0.65 (UNCCD, 1994).

Affected Areas – Arid, semi-arid and/or dry sub-humid areas affected or threatened by desertification (UNCCD, 1994).

Civil Society Organizations (CSOs) – A wide range of organizations and institutions excluding profit oriented businesses that are independent from government, working to advance common interests through collective action (WHO, 2015).

Climate Change – Change observed in the climate on a global, regional or sub-regional scale caused by natural processes and/or human activity (IPCC, 2001a).

Climate Change Adaptation - is an adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities (IPCC, 2001a).

Combating Desertification – Includes activities which are part of the integrated development of land in arid, semi-arid and dry sub-humid areas for sustainable development which are aimed at:

- Prevention and/or reduction of land degradation;
- Rehabilitation of partly degraded land; and
- Reclamation of desertified land (UNCCD, 1994).

Disaster – A serious disruption of the functioning of a community or a society, causing widespread human, material, economic or environmental losses that exceed the ability of the affected community/society to cope using only its own resources. Disasters are often classified according to their cause (natural or manmade) (UNISDR 2007).

Desertification – Land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities (UNCCD, 1994).

Disaster Risk Reduction (DRR) - Activities 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. DRR involves: (i) Risk awareness and assessment; (2) Knowledge development; (3) Public commitment and institutional frameworks; (4) application of multitude of measures, (5) Early warning systems, preparedness measures and reaction capacities (UNISDR 2007).

Drought – The naturally occurring phenomenon that exists when precipitation has been significantly below normal recorded levels, causing serious hydrological imbalances that adversely affect land resource production systems (UNCCD, 1994).

Early Warning System – 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 (UNISDR 2007).

Hazard – A potentially damaging physical event, phenomenon and or human activity, which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation (UNISDR 2007).

Land – The terrestrial bio-productive system that comprises soil, vegetation, other biota, and the ecological and hydrological processes that operate within the system (UNCCD, 1994).

Land Degradation – Reduction or loss, in arid, semi-arid and dry sub-humid areas, of the biological or economic productivity and complexity of rainfed cropland, irrigated cropland, or range, pasture, forest and woodlands resulting from land uses or from a process or combination of processes, including processes arising from human activities and habitation patterns (UNCCD, 1994).

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 (UNISDR 2007).

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 (UNISDR 2007).

Resource User - Key stakeholders that actively utilize and/or impact land resources as a result of livelihood and social activities to include farmers, construction workers, hunters, foresters, miners of aggregates, recreational users, and persons involved in craft making using non-timber forest products and other goods and services generated from land.

Risk – The probability of harmful consequences, or expected loss (of lives, people injured, property, livelihoods, economic activity disrupted or environment damage) resulting from interactions between natural or human induced hazards and vulnerable conditions. Conventionally, risk is expressed by the equation Risk = Hazard x Vulnerability (UNISDR 2007).

Sustainable Development – Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (UNISDR 2007).

Sustainable Land Management – The adoption of land use systems, through appropriate management practices, that enables land users to maximize the economic and social benefits from the land while maintaining or enhancing the ecological support functions of the land resources (TerrAfrica, 2005).

Vulnerability – The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard (UNISDR, 2007)

Farmland and mountainous landscape, Grenada

1. INTRODUCTION

This document presents the Aligned National Action Programme (NAP) for elaboration of Grenada's commitment under the United Nations Convention to Combat Desertification (UNCCD). Developed by the Ministry of Agriculture, Lands, Forestry, Fisheries and the Environment (MoALFFE), with financial assistance from the Global Environment Facility (GEF), and technical support from the United Nations Environment Programme (UNEP) the Aligned NAP presents an integrated approach for land degradation reduction and drought mitigation within the State of Grenada. It symbolizes a powerful commitment of the Government and people of Grenada to sustainable land management (SLM) and people-centered development. Enshrined in this strategic document is an unambiguous acknowledgment of land as a vital national asset. Its prudent management is therefore both a necessary and important requirement for sustainable national development.

The vision and strategic directives of the NAP complement the targets of the Convention on Biological Diversity (CBD) and the United Nations Framework Convention on Climate Change (UNFCCC). In addition, it is congruent with the Growth and Poverty Reduction Strategy (GPRS), which is Government's leading macro-economic framework, and other overarching national and sectoral instruments including inter alia, the National Environmental Policy and Management Strategy (NEPMS) 2005, Grenada National Climate Change Policy and Action Plan 2007-2011, the Land and Marine Management Strategy 2011, the National Physical Development Plan 2003, the National Hazard Mitigation Policy 2003 and Strategic Plan 2006, the National Water Policy (Draft) 2007, Grenada Protected Area System Plan 2009, the Forest Policy 1999, and other established national commissions.

The strategic programmatic framework as presented in this report is organized into four sections.

Section One contextualizes the aligned NAP by highlighting key socioeconomic and performance indicators of Grenada, including a summary of its biophysical and natural assets, and existing vulnerabilities and risks. An analysis of land degradation and drought, to include the nature and determinants of the former phenomenon is also elaborated.

Section Two presents an overview of the UNCDD, and the status and challenges regarding its implementation nationally. It also establishes the legal basis for aligning the original NAP to the UNCCD 10-year Strategic Plan. This section culminates with the methodology employed to undertake the important assignment of NAP alignment.

Section Three summarizes the enabling environment for SLM within the State of Grenada.

Section Four represents the most critical component of this document. It outlines the national strategic framework for land degradation reduction and drought mitigation within the context of the five Operational Objectives of the 10-Year Strategic Plan (Refer to Section 2.3). A five-year results framework including indicators for monitoring and evaluation, and an implementation plan are also elaborated.

1.1 COUNTRY OVERVIEW

1.1.1 Location

Grenada, a tri-island State, inclusive of Carriacou and Petite Martinique has a total area of 344 km^2 (Refer to Figure 1.1-1). The largest island, Grenada has an area of 312 km^2. The State is located at the southern end of the Lesser Antillean islands, at latitude 11^o 58' and 12^o 13' North, and longitude 61^o 20' and 61^o 35' West. To the north and south lie St. Vincent and the Grenadines and the Republic of Trinidad and Tobago respectively. Administratively, Grenada is divided into seven geographic areas referred to as parishes, six towns, four agricultural and 17 disaster management districts.

Figure 1.1.1-1: Map of Grenada
(fernandocandido.com)

1.1.2 Demography and Socio-Economic Context

The 2011 population census reported Grenada as having an almost gender balanced population of 105,538, 50.2% of which are below the age of 20 years (MoF, 2014). The main settlements are in the parishes of St. George (35.4%) and St. Andrew (25.04%).

The State is a high human development category country, with a Human Development Index ranking of 79 (UNDP, 2014). Estimated poverty and indigent levels are 37.7% and 2.4% respectively, concentrated mostly among persons aged 0-24 years (Kairi, 2008). Current unemployment is approximately 32.5% (MoF, 2014).

Grenada is a small, open economy that is extremely vulnerable to high impact hazards and changes in the global economic landscape. Important economic sectors include agriculture, tourism, higher education especially in medicine, and light manufacturing. Consistent with other Members States in CARICOM, Grenada's economy experienced a major downturn subsequent to 2005. In 2013, a structural adjustment program that includes a plan to increase tax revenue was implemented resulting in growth of 2.6% in 2014. Economic improvements of 2% are projected in 2015 (MoF, 2014).

1.1.3 Geophysical Characteristics

Grenada is predominantly of volcanic origin, although some sedimentary rocks of the Tertiary and Quaternary periods are present. The interior of Grenada is dominated by mountain peaks, steep ridges, pronounced hills, deep narrow valleys and few pockets of widely dispersed plain

and plateau surfaces. Of the land area, 77% of Grenada and 54% of Carriacou have slopes exceeding 20 degrees. Only 3% of the land area is classified as flat, which includes the main towns and many of the key infrastructural facilities (Land Use Division, 2013).

Fast flowing streams with high gradients occur in the valley bottoms. Relief tends to be very high, with a 2000 feet drop over a one-mile horizontal distance in some areas. The volcanic geology of the interior is the dominant factor that produced this landscape. The Mt. St. Catherine area with a highest peak of 840m is an excellent example of this phenomenon.

There are 35 soil families in the islands; six are unique to Carriacou, 23 are unique to Grenada and six are common to both islands. The soils of Grenada are dominated by highly erodible clay loams (84.5%), clays (12.6%) and sandy loams (2.9%). The three major types of clay loam are the Woburn, Capitol, and Belmont, which together constitute 77.8% of the island's soil. The soils of Carriacou are also dominated by Woburn clay loam (Land Use Division, 2014).

1.1.4 Land Use

Agriculture and forest are the dominant land use types in Grenada, occupying 55.57% and 22.99% of the land area respectively. In contrast, shrub and grassland (59.11%) and pasture and grazing (24.27%) are the main land use systems in Carriacou as illustrated by Table 1.1.4-1. Refer also to Figures 1.1.4-1 and 1.1.4-2, and Photo Plate 1.1.4-1 for graphical illustration of current land use. No current information however is available for Petite Martinique.

Table 1.1.4-1: Comparative land use for Grenada and Carriacou, 2009
(Land Use Division, 2013)

	Grenada		Carriacou	
Land Use Types	**Area/Hectares (Ha)**	**% of Total Land Area**	**Area/Ha**	**% of Total Land Area**
Abandon Cropland	6122.15	19.54	0.00	0.00
Annual Cropland	1583.69	5.05	21.59	0.68
Beach	50.66	0.16	8.39	0.27
Forest	7204.22	22.99	295.43	9.36
Mangrove	159.31	0.51	77.35	2.45
Pasture and Grazing	0.00	0.00	766.21	24.27
Perennials	9707.08	30.98	7.72	0.24
Protected Areas	2481.78	7.92	32.07	1.02
Shrub and Grassland	1718.13	5.48	1866.23	59.11
Urban and Build up Areas	2266.72	7.23	81.87	2.59
Water	40.05	0.13	0.55	0.02

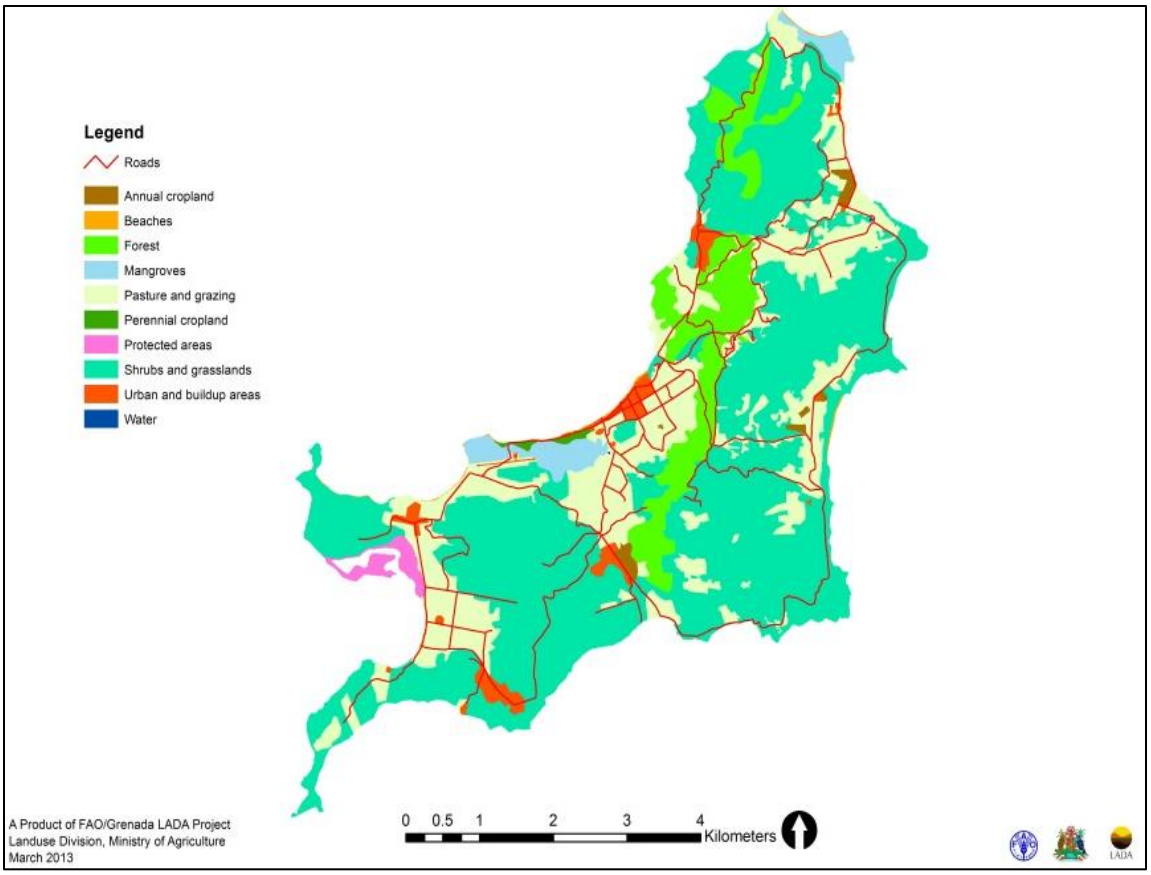

Figure 1.1.4-1: Land use system map, 2009, Carriacou (Land Use Division, 2013)

Photo Plate 1.1.4-1: Pasture and grazing, and fringing coastal forest, Carriacou

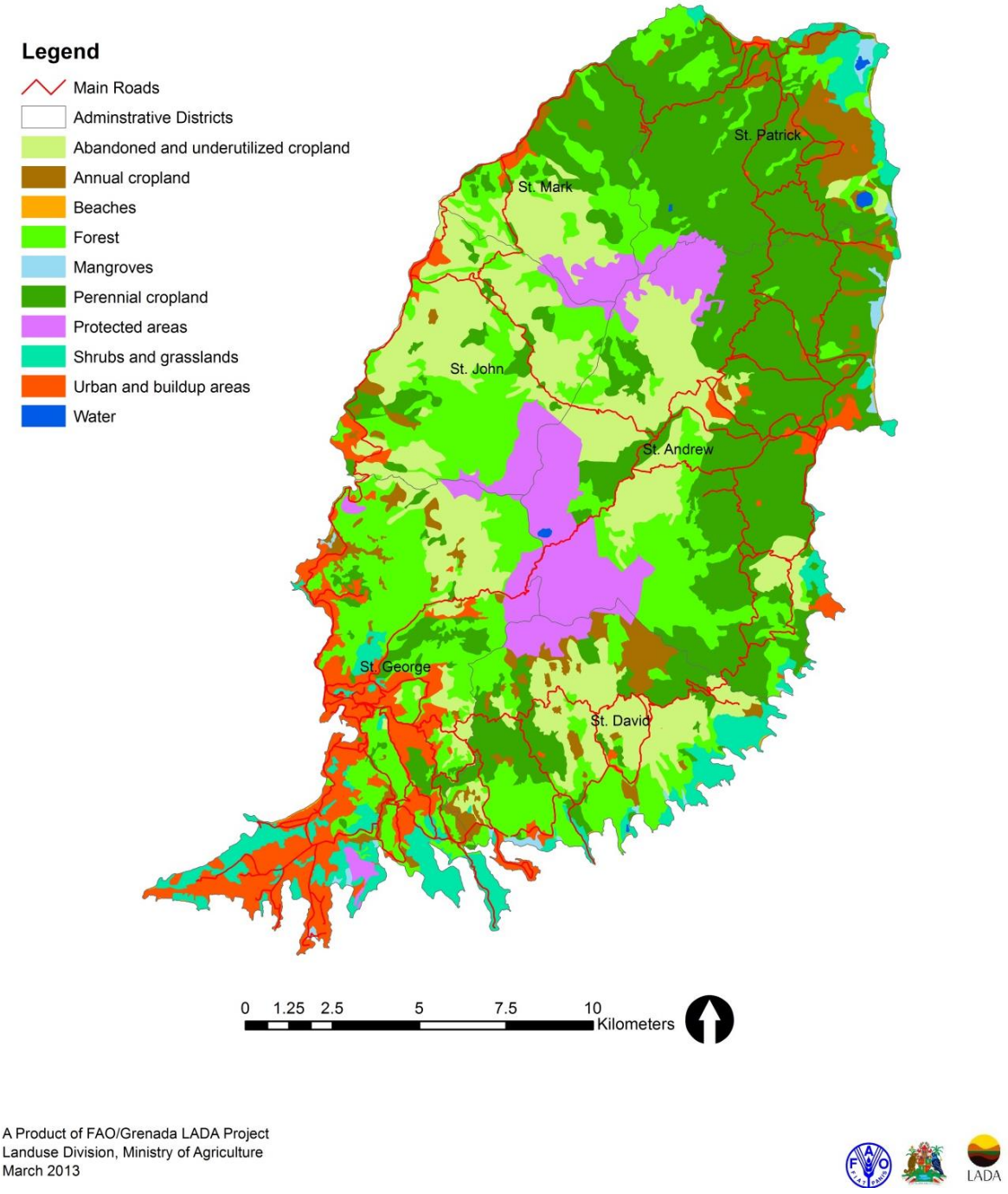

Figure 1.1.4-2: Map of land use system, 2009, Grenada (Land Use Division, 2013)

1.1.5 Natural Assets

Grenada's natural terrestrial assets include its vegetation, forest communities, aggregates, lakes and water resources.

1.1.5.1 Vegetation and Forest Communities

An estimated 1,068 vascular plants (Caribsave, 2012), including a number of ecologically significant species are found in Grenada (Refer to Box 1.1.5.1-1). No threatened or endangered plant species are reported.

Box 1.1.5.1-1: Ecologically significant plant resources in Grenada (Hawthrone et al, 2004)

- **Four endemic plant species**
  - ✓ Grenadian Gouti Tree (*Maytenus grenadensis*)
  - ✓ Grenadian Towel Plant (*Rhytidophyllum caribaeum*)
  - ✓ *Lonchocarpus broadwayi*
  - ✓ *Cyathea elliotti*
- **Almost endemic to Grenada**
  - ✓ 17 species, including Damsel (*Phyllanthus acidus*) and Mountain Cabbage (*Euterpe dominicana*), a slender palm found only on mountain ranges.

Grenada has six main forest types: Cloud, rain forests and lower montane rain forest, evergreen and semi-evergreen seasonal forest, deciduous forest and dry woodlands, littoral woodland, and mangrove forest. The majority of forest resources is utilized for biodiversity conservation (2320 Ha), protection of soil and water resources (560 Ha), and production (210 Ha) (FAO, 2010).

Four mangrove species exist within the tri-island State - Red (*Avenciana racemosa*), black (*Conocarpus erectus)*, button wood (*Rhizophora mangle) and w*hite mangrove (*Laguncularis racemosa).* Pockets of mangrove in Grenada and Carriacou is estimated at 172 and 112 Ha respectively (Helmer et al, 2008), with the largest stands sited in the Levera Pond, equivalent to one-fifth of total mangroves on the island (FAO, 2007). Other significant locations include the northeastern, eastern and southwestern parts of the coast.

Photo Plate 1.1.5.1-1: Red and button wood mangrove fringing the estuary on Petite Trou Beach

1.1.5.2 Protected Areas

Protected areas are increasingly been recognized at the national level as an important mainstay for biodiversity conservation and SLM. At present, there are five legally established terrestrial protected areas (TPA), namely Grand Etang, Annadale and High North Forest Reserves, Perseverance Protected Area and Pearls.[1] Together these sites cover an area of approximately 2200 Ha. Importantly, the Forestry Department, MoALFFE and the Agriculture Division, Ministry of Carriacou and Petite Martinique Affairs (MoCPMA) actively manage 12 terrestrial sites[2] including both legally designated and non-designated areas. Average annual current and projected[3] operational costs for these sites are estimated at EC$ 487,840.33 and EC$ 1,393,179.73 respectively, equivalent to an annual financial gap of EC$ 905,339.40 (Roberts, 2013).

The TPA estate is highly likely to increase in the medium to long term cognizant of the Grenada Declaration, which targets conservation of at least 25% each of terrestrial and near-shore marine areas by 2020 as part of the Caribbean Challenge Initiative. The Grenada Declaration is a commitment made by Caribbean Governments, including Grenada at the eight meeting of the Conference of Parties to the CBD to effectively conserve its key biodiversity assets through establishment of protected areas.

1.1.5.3 Terrestrial Fauna

There are thought to be 150 species of birds, indicating great ecological diversity in a relatively small area (FAO, 2000). Grenada's resident birds include two endemics, the critically endangered Grenada Dove (*Leptotilla wellsi*) and the Grenada Hook-billed Kite (*Chondrohierax uncinatus murus*) listed as endangered in the International Union for Conservation of Nature (IUCN) Red List. Four species of birds which are endemic to the Lesser Antilles are also found in Grenada: The Grenada flycatcher (*Myiarchus nugatory*), the Scaly-breasted Thrasher (*Margarops fuscus*), the Lesser Antillian Bullfinch (*Loxigilla noctis*), and the Lesser Antillian Tanager (*Tangara cucullata*).

Approximately 22 species of terrestrial mammals are found within the State (Troy, 2012), three of which are native, the Lesser Chapman's Murine Opossum, the Greater Chapman Murine Opossum and the Nine Banded Armadillo. Bats, characterized as Keystone Species represent 20% of all terrestrial mammals. Grenada has about 20 species of reptiles - eight species of lizards and five species of snakes, including one endemic. There are only four species of amphibians, one, the Grenada Whistling Frog *(Eleutherodactylus euphronides)* is endemic, and is among the most vulnerable in the West Indies (Henderson and Berg, 2011).

Invertebrates as a group are well represented on Grenada. However, further ecological surveys are required to determine the true status of these species on the island.

[1] Area to be determined.

[2] Five sites legally established; three pending designation (Beausejour Protected Area, Mt. Hartman National Park and Protected Area and Levera Pond Protected Area); and four undesignated without management plan (Mt. Gazo, Richmond Hill, Grand Bras and Mt. Moritz).

[3] Includes Mt. St. Catherine; not currently managed.

Photo Plate 1.1.5.3-1: The Grenada Dove, a national heritage

1.1.5.4 Water Resources

Grenada has a fairly abundant surface water resource base. There are three natural lakes on Grenada occupying a land area of 41.6 Ha (Land Use Division, 2014). The National Water and Sewerage Authority (NAWASA) taps 23 surface water and six ground water sources on mainland Grenada which yield 54,600 m^3/day in the rainy season and a maximum of 31,800m^3 in the dry season (UNDESA, 2012). This is in contrast to Carriacou and Petite Martinique which lack perennial streams and other surface water assets, due to low rainfall levels as a result of lower elevations and limited forest vegetation. Rainwater harvesting is therefore of paramount importance in the sister islands, and constitute almost 100% of their portable water needs. Plans are in place to improve the desalination capacity as part of a comprehensive plan for drought mitigation and climate change adaption.

Ground water resources in Grenada, which are not fully developed, have the capacity to supply about 10-15% of the portable requirement (ECLAC, 2011). Main ground water aquifers are found at Bailles Bacolet, the Great River, Duquesne, Chemin Valley, Paradise-Pearls, Beausejour and Woodlands. Current utilized ground water resources are 1890 m^3/day with potential capacity of 3973 m^3/day. In Carriacou, ground water is extremely important, particularly for the agriculture sector, despite its low quality and palatability (ECLAC, 2011).

The country through the leadership of the NAWASA has made major progress in ensuring nationwide access to portable water. During the period 2010-2012, 97% of the population was reported as having access to an improved water source. This refers to the percentage of the population with access to drinking water, which includes piped water on premises[4] and other augmented sources of drinking water (World Bank, 2015).[5] Of 12 Caribbean countries assessed, Grenada ranked seventh for improved access to portable water in the above period. The NAWASA continues to take action to augment its capacity to meet the portable water needs of the entire State consistent with Government's thrust for improved quality of life of all Grenadians.

Photo Plate 1.1.5.4-1: Grand Etang Lake, a major source of portable water

Photo Plate 1.1.5.4-2 Water harvesting facility in farming community, Ludbur, St. Andrews (Right**) and Pond Used for Watering animals, Carriacou (**left)

[4] Example piped water connection located inside the user's dwelling, plot or yard.

[5] Example, public pipes or standpipes, protected springs and wells, boreholes and rainwater harvesting facilities.

Photo Plate 1.1.5.4-3: Well used for agriculture purposes, Dumfries, Carriacou

1.1.5.5 Aggregates

Grenada has a large terrestrial deposit of red gravel which is used primarily for construction. There are currently three quarry sites located at Telescope, Queens Park and Mount Rush that are managed by the Gravel and Concrete Emulsion Production Corporation (GCEPC). Aggregates mined from these areas include gravel, un-sifted gravel, binding and bounders. Controlled sand mining was recently reinstated in 2012 after an absolute ban for about four years. The GCEPC now has the exclusive authority to mine sand on selected beaches.[6] It is critical that best practices for extraction of the resource is adopted to prevent coastal degradation, and associated reduction in the provision of ecosystem services in targeted areas.

1.1.6 Climate

The climate of Grenada is humid-tropical-marine, which is influenced by a constant northeast trade wind. Average temperatures range from 24°C to 30°C. Low temperatures occur between November and February. Due to its topography, climate varies with altitude. In the mountainous interior, annual rainfall ranges from 3,750 to 5,000 mm and in coastal areas between 990 to

[6] To include beaches located at Galby and Grand Bacolet, St. David's.

1,500mm. The northeastern and southern parts of the island receive the lowest rainfall, and experience the longest dry periods.

Traditionally, the dry seasons span from January to May, while the rainy season from June to December. However, between 2005 and 2014, there have been marked variations and unpredictability in both seasons, with the rainy season accompanied by dry season-like weather and vice versa. These variations and unpredictability have serious implications for agricultural productivity, land degradation and drought.

1.1.7 Hazards, Vulnerability and Risks

Natural and man-made hazards are widely recognized as major challenges to sustainable development in Grenada. The five major natural hazards of concern are landslide, hurricane, drought, flood and biological pathogens. These have historically caused significant casualties and property damage. The past three decades (1980-2010) have seen a significant upsurge in the frequency of natural hazards and disasters in Grenada, affecting 62,860 persons, with damages valued at US$ 899.8 million (UNISDR, 2014).

The recent experiences with hydrometeorological hazards such as Hurricane Ivan, and the increase incidence of infectious diseases have heightened the State's vulnerability. The following are important socio-cultural issues of concern that heighten the nation's susceptibility to critical hazards (Refer to Box 1.1.7-1).

Climate change is likely to magnify these vulnerabilities and risks, if proactive disaster risk reduction (DRR) actions are not implemented.

Box 1.1.7-1: Sociocultural issues that heightens Grenada's vulnerability to hazards (NaDMA, 2014)

- Unsustainable land use practices including inappropriate land use change, and land development in vulnerable locations (Refer to Photo Plate 1.1.7-1).
- Moderate to high percentage of informal land tenure arrangements among poor and displaced individuals.
- Insufficient adoption of disaster risk reduction (DRR) practices in prime economic sectors, and at the community level.
- Increase travel and trade resulting in heightened transmission of pathogenic organisms, with negative implications for the agriculture sector and human health.

Photo Plate 1.1.7-1: Houses exposed to flood waters along the lower reaches of the Little River, Gouyave, St. John's

1.2 LAND DEGRADATION AND DROUGHT IN THE STATE OF GRENADA

1.2.1 Nature and Extent of Land Degradation

Given the heavy dependence on the country's land resource for socio-economic growth and development, any loss of the productive capacity of land resulting from land degradation could have serious consequences for the well-being of its people. In recognition of this, the Government of Grenada with assistance from the Food and Agricultural Organization conducted a LADA study in 2012. The study was aimed at determining the types, extent, severity, causes and impacts of Land Degradation. Biological, chemical and physical degradation were assessed on soil, vegetation and water resources in different land use systems (LUS)[7] in at least one local area[8].

Land is our natural ally; but the natural conditions of land are not eternal and must be protected [Luc Gnacadja, Executive Director, UNCCD].

The main findings of the study are summarized below.

- Land degradation is widespread in the tri-island State; the extent and severity of which varies widely within LUS and parishes.
- Land degradation is most prevalent and extensive in Cropland LUS.
- With respect to land degradation on mainland Grenada, the following are key summary results:
  - ✓ Biological degradation, chiefly increase in pests within perennial and underutilized cropland, and reduction in vegetative cover within forested areas represented the most dominant types of land degradation, followed by loss of top soil in urban and built up areas and on farmlands (Refer to Figure 1.2.1-1).
  - ✓ Pest infestations were most prevalent along the eastern, southeastern and northwestern parts of Grenada.
  - ✓ Reduction of vegetation cover was observed mainly throughout the central and southwestern ends of the island. In contrast, loss of top soil was concentrated within the northern part of the island and along the western and southwestern coastline.
  - ✓ To a lesser extent, chemical deterioration of soil due to overuse of fertilizers and other agrochemicals, and reduced organic matter content were observed in annual croplands in select areas. Although not extensive, chemical degradation was documented in parts of St. David's, St. George's, St. Mark's and St. John's.

[7] Or land use type.
[8] A community or village.

- ✓ Generally land degradation is reported to be slowly increasing throughout approximately 75% of the mainland, with moderate increase in about 20% of the island predominantly along the southern and northern coast (Refer to Figure 1.2.1-2).

- ✓ Further analysis showed that about 15-20% of the areas affected by pest infestation were degraded.

- ✓ Only 5% of the central parts of Grenada with documented loss in vegetation cover were categorized as degraded. In contrast, about 15% of the areas affected by loss of vegetative cover in the south western parts of the island were characterized as degraded, due most likely to the impact of physical development activities.

- ✓ Loss of top soil in the northern parts of the island due principally to agriculture and large scale physical development occurred in about 20% of the affected areas. On the other hand, loss of top soil in the southwestern peninsula and surrounding areas were observed in 30% of the affected LUS (Refer to Figure 1.2.1.-3 and Photo Plate 1.2.1-1).

- ✓ As shown by Figure 1.2.1-4, the main impact of land degradation on the mainland is food and livelihood security.

Photo Plate 1.2.1-1: Severe soil erosion in Levera St. Patrick's due largely to clear cutting

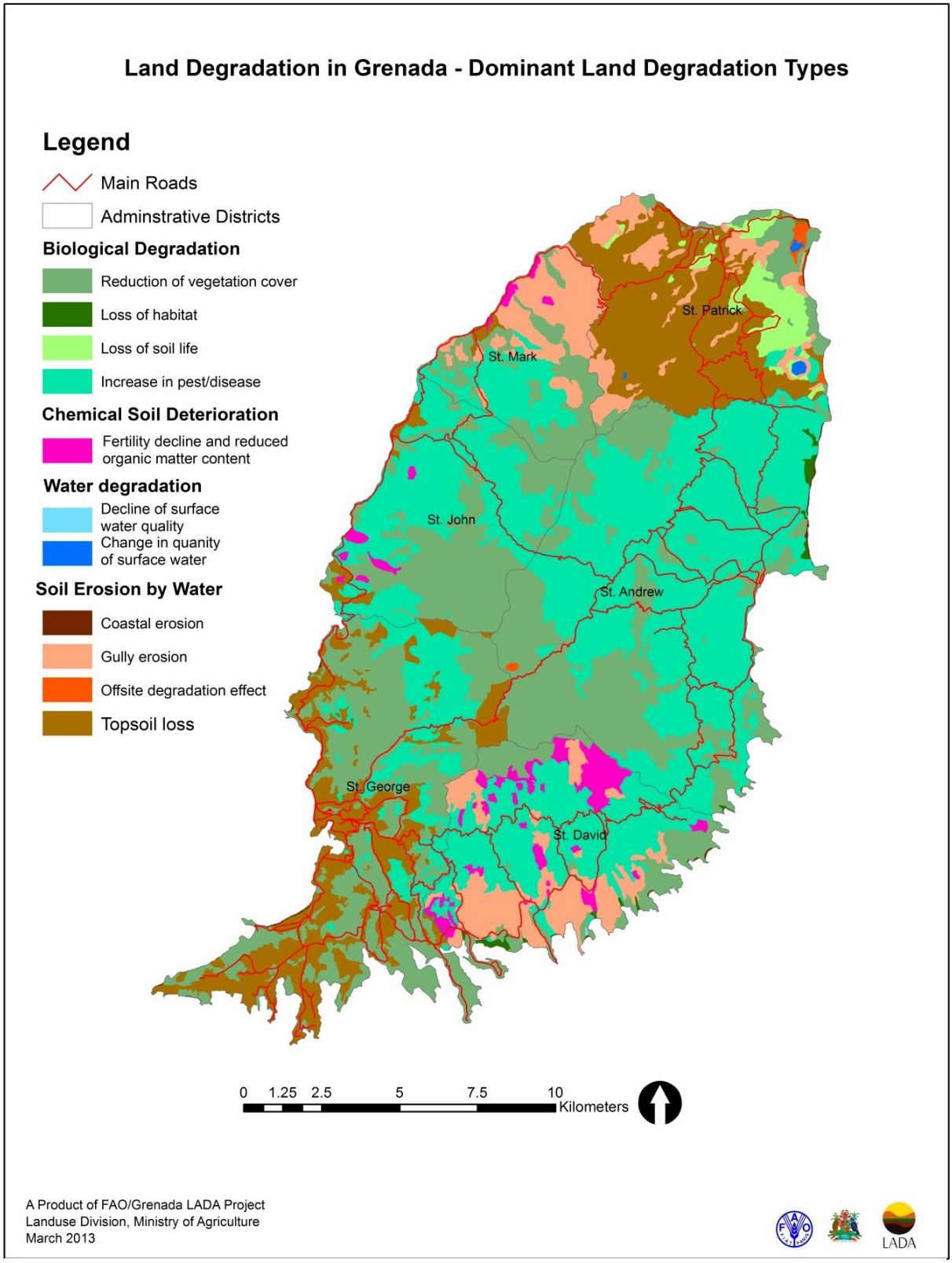

Figure 1.2.1-1: Land degradation types in Grenada (Land Use Division, 2013)

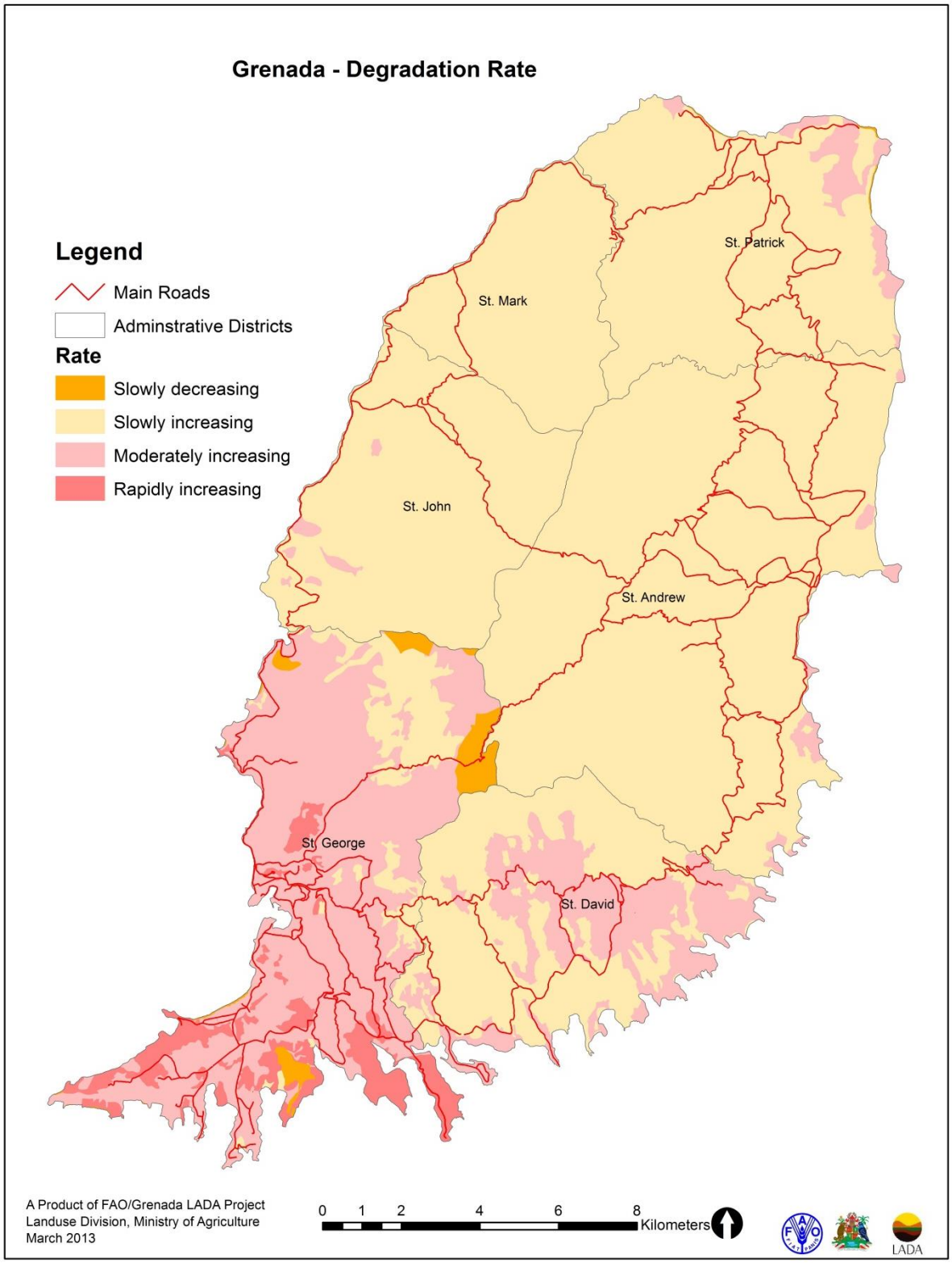

Figure 1.2.1-2: Rate of degradation in Grenada (Land Use Division, 2013)

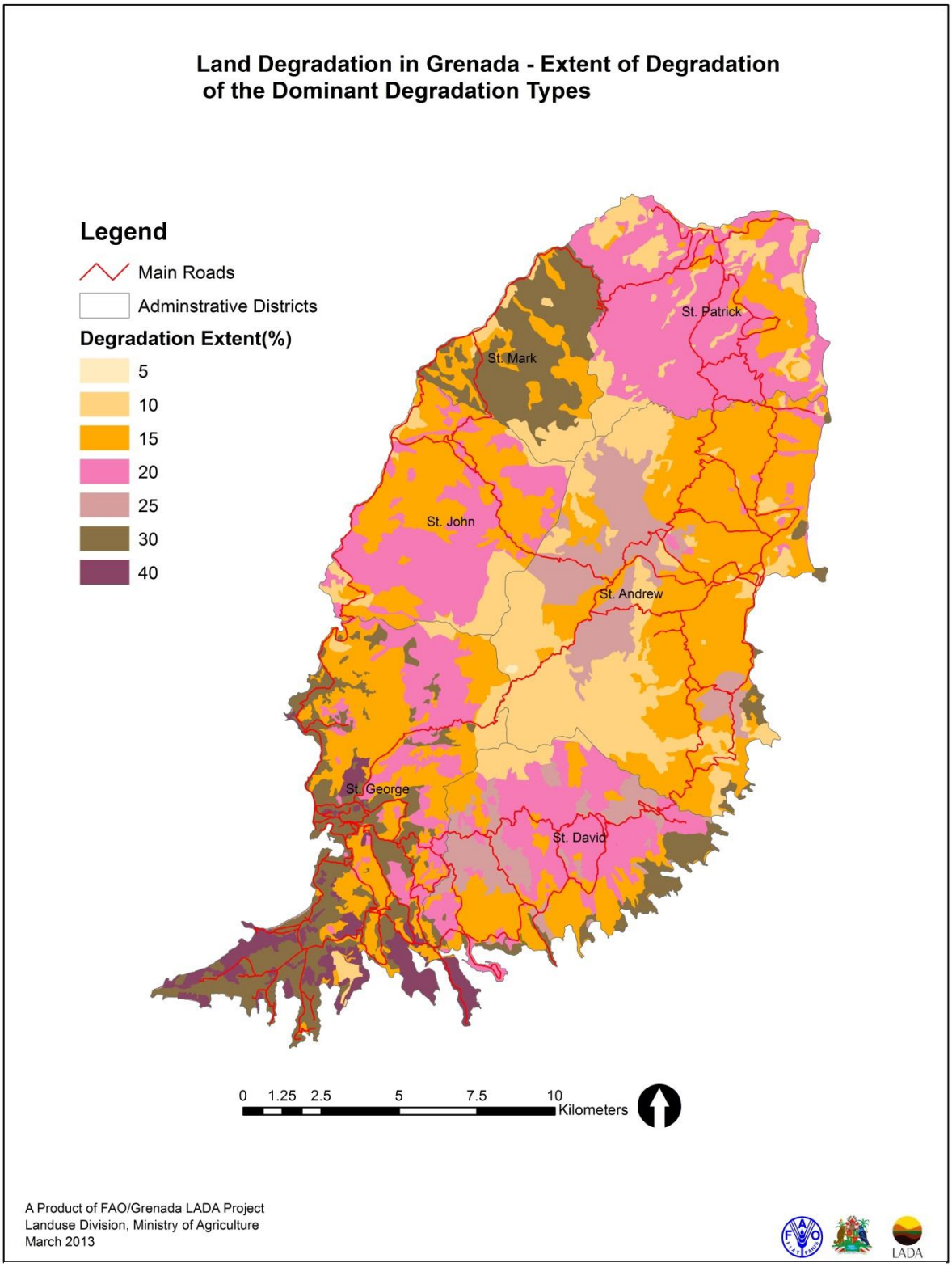

Figure 1.2.1-3: Extent of land degradation in Grenada of the dominant degradation types

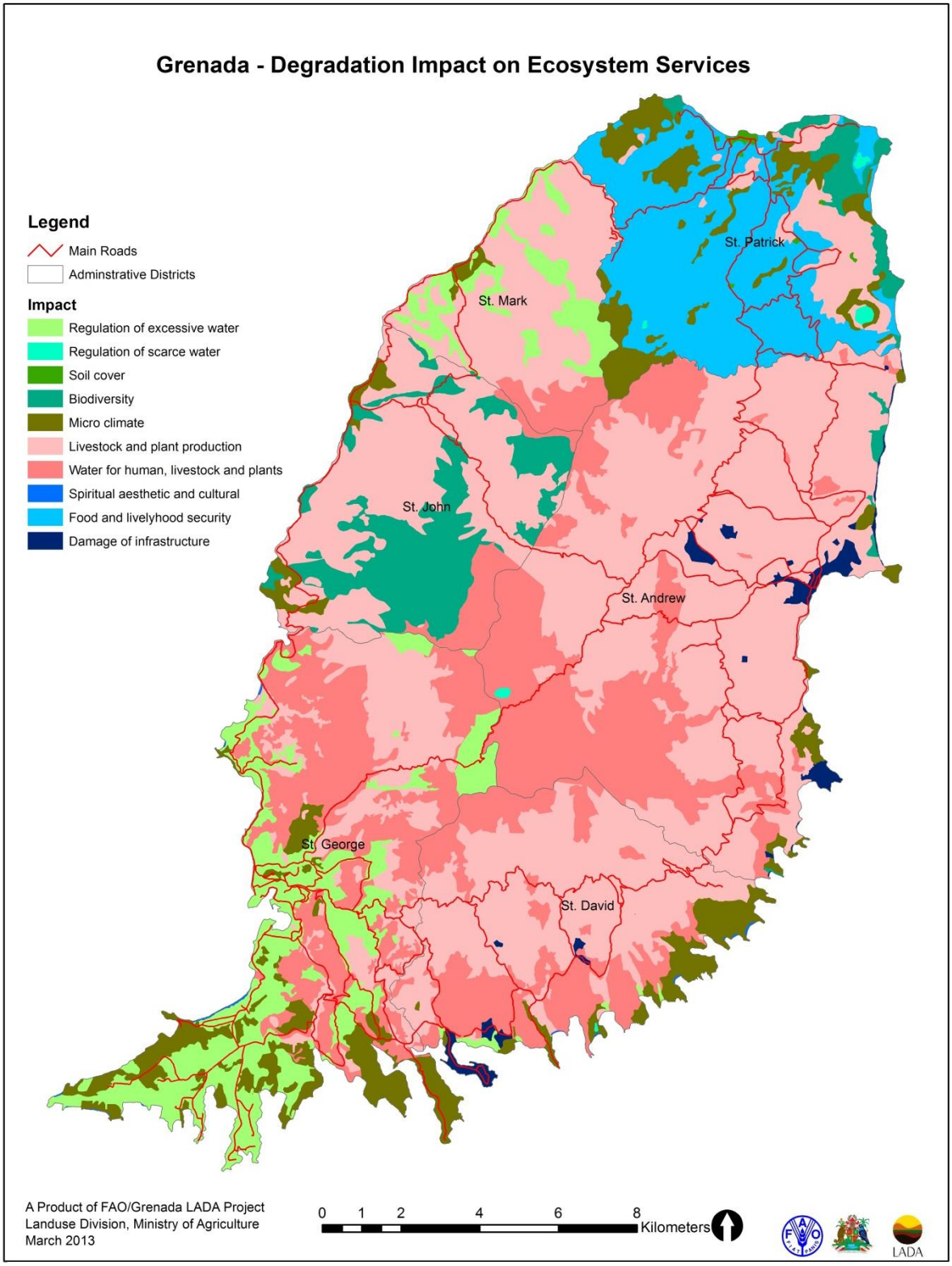

Figure 1.2.1-4: Impact of land degradation on ecosystem services (Land Use Division, 2013)

- With respect to land degradation on the sister island of Carriacou, the following are highlights of the results:

  - ✓ Reduction in vegetation cover was overwhelmingly the most dominant type of land degradation in Carriacou, found almost throughout the entire island.

  - ✓ Loss of habitat, gully and coastal erosion were documented in select areas. Importantly, loss of vegetation and gully erosion were shown to be extreme in the Belle Vue South local area of Carriacou, which can be considered, deserted (Refer to Figure 1.2.1-5). Overall, this is considered the worst case of land degradation in the State of Grenada (Refer to Photo Plate 1.2.1-2).

  - ✓ The greatest impact of land degradation in Carriacou similar to mainland Grenada is on food and livelihood security. Moreover, the impact of degradation on the regulation of scare water particularly in the northern, eastern and central parts of the island is of concern. An aggressive and sustainable approach to land degradation reduction and drought mitigation are of paramount importance, particularly within the context of climate variability and change on Small Island Developing States (Refer to Figure 1.2.1-6).

Figure 1.2.1-5: Area showing severe reduction in vegetation cover and gully erosion in Belle Vue South, Carriacou

Photo Plate 1.2.1-2: Soil and vegetation degradation, Belle Vue South, Carriacou

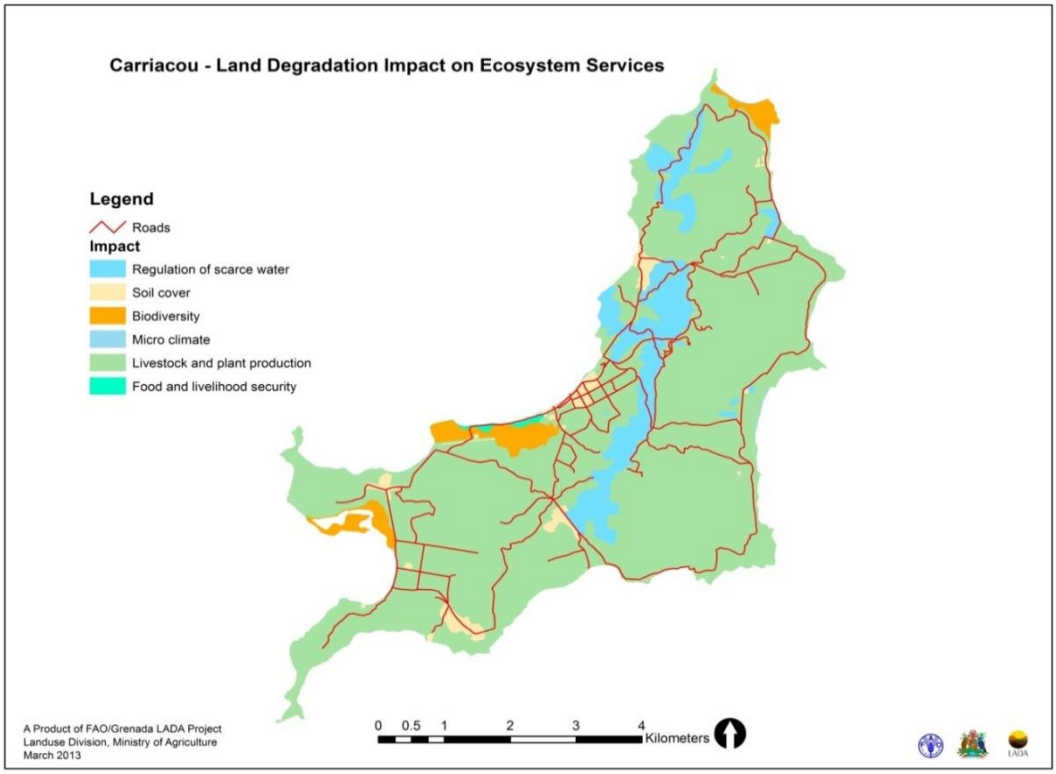

Figure 1.2.1-6: Impact of land degradation on ecosystem services in Carriacou (Land Use Division, 2013)

Although the LADA methodology was not implemented in Petite Martinique, review of satellite imagery showed serious degradation of land resources along the entire northeastern, eastern and south east coast of the island. The Madame Pierre area is of particular concern. Reduction in vegetation cover and loss of top soil were the main types of erosion observed in the aforementioned regions. Community residents and officials associated with the Ministry of Carriacou and Petite Martinique Affairs (MoCPMA) identified the following practices as the main contributors of land degradation:

- Overgrazing of animals,[9] aggravated by high carrying capacity of livestock per unit area;
- Deforestation to support boat building and agricultural activities, primarily livestock rearing;
- Severe drought which resulted in the death of undergrowth species, such as grass.

Extensive loss of land due to coastal erosion is also evident along north-western and western parts of the island moving from Sanchez to Belle Vue (Refer to Photo Plate 1.2.1-3 and Figure 1.2.1-7). Destruction of the protective reef system aggravated by climate change was highlighted as major causative factors.

Photo Plate 1.2.1-3: Extensive loss of land at Sanchez; the roadway to Madame Pierre is undermined

Cognizant of the smallness of the island, continued degradation of its land assets is highly likely to increase its socio-economic and ecological vulnerability, with long term negative implications for sustainable development within the jurisdiction. In an effort to reduce the risks associated with deterioration of land resources, the MoCPMA is seeking financing from the United Nations Development Programme (UNDP) Integrated Climate Change Adaptation Strategy (ICCAS) project to address the underlying root causes of degradation within Petite Martinique. Engagement of the community in this intervention, and integration of the major components of the project into the ongoing work of the MoCPMA and existing Community Based Organizations are critical to the success of this initiative.

[9] Animals are free roaming.

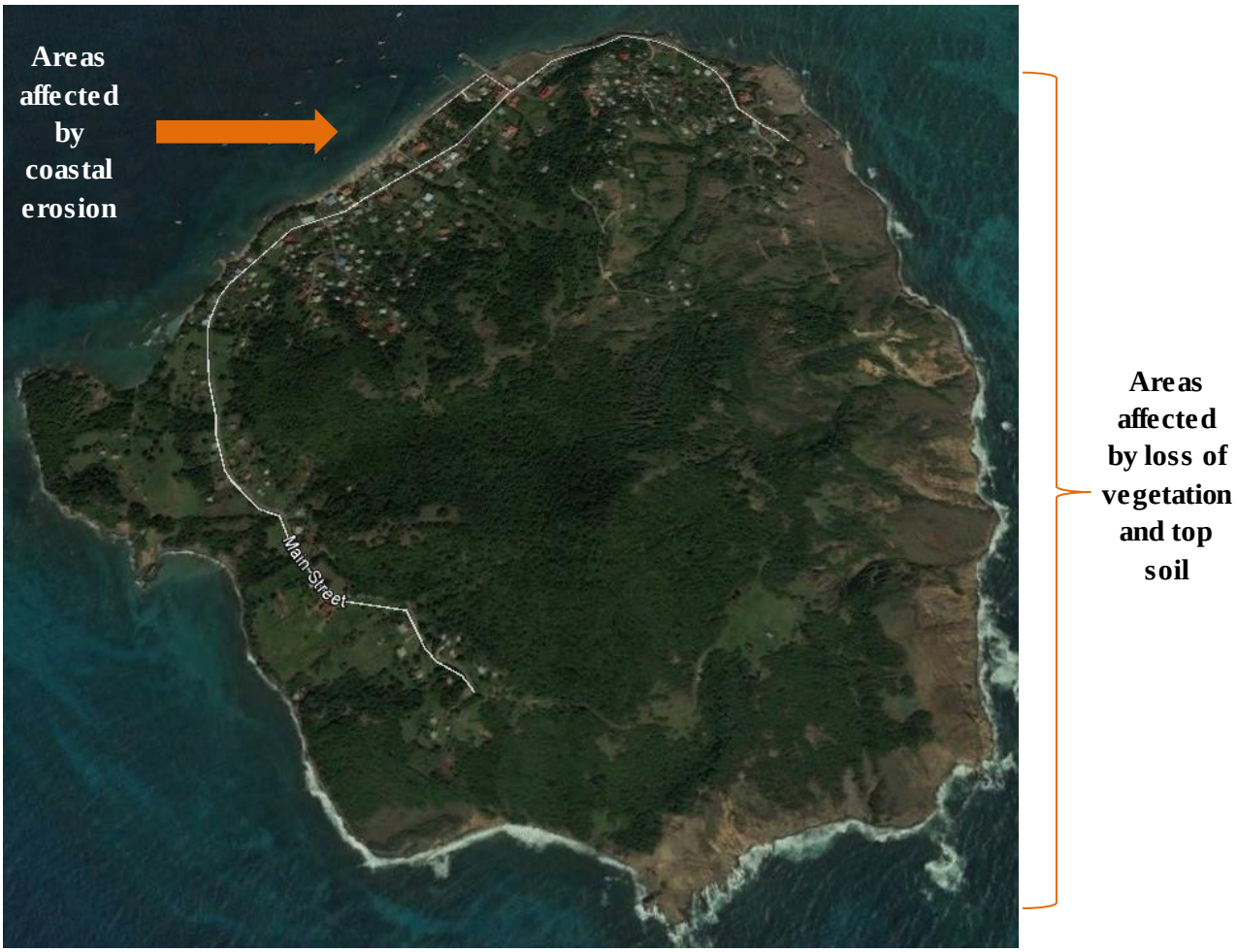

Figure 1.2.1-7: Main areas affected by land degradation in Petite Martinique

1.2.2 Analysis of the Determinants of Land Degradation

Combating land degradation through formulation of effective policies and programmatic interventions requires identification of the anthropogenic and natural causes of the phenomenon. This section of the report discusses the main determinants of land degradation, and establishes the underlying focus of risk reduction and rehabilitative measures.

1.1.2.1 Biophysical Determinants

The State's biophysical conditions including its topography, relief and soils predispose the resource to land degradation (Refer to Section 1.1.3). Although these parameters in isolation do not represent a sufficient basis for the deterioration of land, they serve as powerful catalyst particularly in the absence of wise or suitable land use practices. Within the context of these vulnerabilities, *no or low adoption of SLM measures is identified as the leading direct cause of land degradation within the State of Grenada*. This is of particular concern in the physical development and agricultural sectors where some stakeholders accredit insufficient importance

to land resources. The most predominant anthropogenic direct pressures of land degradation associated with activities in the aforementioned economic sectors are described below.

- **Overgrazing:** The intensive rearing of livestock, particularly ruminants on small areas of land using a free roaming management approach, results in significant reduction in vegetative cover. In addition, overgrazing compacts soil particles, thus restricting the movement of biotic and abiotic factors through the soil profile.[10] The consequence is an extremely bare, exposed area vulnerable to the erosive elements of weather. Similarly, the resultant "hard pan" within the sub-layer predisposes the soil to water logging, affecting its capacity to produce vital ecosystem services.

- **Deforestation, aggravated by clear cutting of natural vegetation:** Indiscriminate removal of vegetation is a major concern within the tri-island State, *particularly when large tracks of vegetation are eliminated, with little or no intervention to protect soils*. While this practice can occur at any scale, implementation of large land development projects has contributed to severe deforestation, and associated land degradation. The negative impacts of this practice are significant, and include inter alia loss of important habitats, reduced contribution to protection of water quality and quantity, increased sedimentation of marine areas, greater vulnerability of communities to natural and other hazards, and loss of valuable soils, vital for food and nutrition security.

Photo Plate 1.1.2.1-1: Deforestation in its early stages

- **Improper management of soil:** Optimal soil health is a necessary and important aspect of ecosystem functioning. No or inconsistent adoption of soil conservation practices have left soil bare, unstable and/or depleted of essential nutrients and organic matter. The result is increased incidence of soil erosion and other forms of mass movements, and a general unproductive resource, unable to support viable plant growth and other biodiversity, with limited capacities to support life in Grenada Inadvertently, poor soil management aggravates communities' susceptibilities, and restricts attainment of sustainable livelihoods and economic development.

- **Insufficient adoption of integrated pest management approaches, coupled with overuse of agrochemicals:** While the prevalence of pests affecting the agriculture sector continues to be a challenge, many within the farming community have not effectively prioritized the principles and practices of integrated pest management. Further to this, a number of farmers are over-reliant on pesticides and/or have not complied with the

[10] Such as water, micronutrients, the roots of plants and microorganisms.

recommended usage of these and other forms of agrochemicals. In select agro-ecosystems, the number and diversity of pest affecting the agriculture sector has therefore increased, with negative implications to vegetation health. Coupled with this, misuse of agrochemicals generally has increased soil toxicity with undesirable effects to ecosystem health and functioning.

- **Inadequate excavation practices:** Within the physical development sector, insufficient emphasis is placed on maintaining and/or improving the integrity of lands during excavation. In many instances, land is excavated by untrained individuals who do not sufficiently understand the inherent value of vegetation and/or soil. Moreover, lands are cut at very steep angles, sometimes up to 90^0, thus creating an unstable slope with increased susceptibility to landslides and other forms of mass movements. Failure to make allowance for drainage during the excavation process aggravates the above conditions.

Photo Plate 1.1.2.1-2: Land excavated at very steep slopes, Southern Grenada

- **Inappropriate waste management:** While major progress has been made with respect to solid waste management, select individuals and/or groups continue to dispose of domestic, construction, institutional and other types of solid waste in areas not sanctioned by the Grenada Solid Waste Authority. Inappropriate waste management has negatively affected the aesthetic of the landscape, and the associated contribution of land resources to the emotional wellbeing of societies. Similarly, failure to treat wastewater effluents is linked to serious biological degradation in coastal and marine ecosystems. An integrated approach to waste management is therefore an imperative for SLM.

- **Inadequate management of Invasive Alien Species (IAS):** As outlined in Box 1.1.21-1, IAS introduced through natural and/or anthropogenic means seriously threaten populations of native and endemic species. An integrated risk reduction strategy is of paramount importance in preventing and mitigating the impacts of IAS.

Box 1.1.2.1-1: Invasive Alien Species of concern in Grenada (Roberts, 2014)

Name	Origin and reason for introduction
Plant IAS affecting the agriculture sector	
Bamboo (*Bambusa vulgaris)*	Some species were brought into the island to aid in construction many years ago. Experts indicated that a few varieties are native aggressive.
Cane/Horse Grass (*Eragrostis infecunda)*	Imported from Trinidad in the late 1950's to feed horses.
Elephant Grass (*Pennisetum purpureum)*	Imported to feed cattle. The geographic origin is unknown. Reduction in cattle populations has led to an increased prevalence of this IAS (Refer to Photo Plate 1.1.2.1-3).
Animal IAS affecting the agriculture sector	
West Indian Fruit Fly *(Anastrepha oblique)*	Trafficking of fruits, vegetables and other products from Trinidad and Tobago is believed to be the main route of transmission. Introduced around 2002.
Red Palm Mite *(Raoiella indica)*	Introduced between 2006/2007 through wind dispersal.
Black Sigatoka Disease	Entered Grenada in 2005 through importation of planting material from an affected jurisdiction.
Invasive forest species	
Johnstone Frog *(Eleutherodactylus johnstonei)*	Competes with endangered Grenada Frog, thus threatening its survival (Berg, 2011)
Mongoose (Herpestes javanicus), feral (wild) cats and rats (Rattus spp)	Predation by the listed invasive species is without a doubt causing a reduction in the Grenada Dove *(Leptotilla wellsi)* population (Rusk, 2014).

Photo Plate 1.1.2.1-3: Elephant grass on farm in St. Marks

- **Poor and inadequately maintained drainage networks:** Insufficient and inconsistent adherence to best practices for drain construction and maintenance by all land users predisposes the soil to mass movements and waterlogging, characteristics which do not foster efficient and effective provision of ecological services.

- **Aggregate mining:** Uncontrolled mining of sand and other aggregates increases the vulnerability of ecosystems to erosion and natural hazards, habitat destruction, and loss of lives and livelihood. Little or no focus to rehabilitate mined-lands devalues the general landscape, and negatively impacts the capacity of land resources to deliver critical regulatory and cultural ecological services needed by society.

- **Planned or accidental bush fires:** Bush fires which occur principally during the dry season, peaking during the months of April to May, imposes serious stress on affected terrestrial ecosystems. During the period 2007 to 2010, an estimated 1,520 acres of land within the State of Grenada were affected by bush fires (Fire Department, 2014), caused mainly by inappropriate practices. Importantly, bush fire destroys soil microbial composition, forest health and related-habitats, predisposes the soil to water erosion, with medium to long term implication for ecosystem functioning.

In a study conducted in 2011, 19.6% (n=69) and 44.3% (n=39) of farmers and physical development contractors respectively reported that they contributed to land degradation. Similarly, 35.5% (n=49) of hunters also confirmed the practice of inappropriate land uses. Most commonly reported unsustainable practices are summarized in Table 1.1.2.1-1.

Table 1.1.2.1-1: Practices leading to unsustainable land management among farmers, contractors and hunters who believed that they contribute to land degradation (Roberts and Akpinar-Elci, 2011)

	Percent/%		
Inappropriate land use practice	**Farmers**	**Contractors**	**Game hunters**
Clear cutting of vegetation	38.7	67.6	-
Poor alignment/inadequate drainage	56.5	29.7	-
Exposure of soil and steep areas	16.1	32.4	-
Poor waste disposal	30.6	32.4	41.3
Poor excavation practices	0	21.6	-
Overuse of agro-chemicals	38.7	0	-
No/low use of soil and water conservation practices	25.8	18.9	-
Land preparation during the raining season	0	29.7	-
Closed season hunting	-	-	29
Disposal of cigarette butts in the forest	-	-	39.7
Destruction of important species of plants	-	-	57.1
Setting fire in forested areas			14.3
Other	4.8	8.3	-

The effects of natural hazards, a direct cause of land degradation, are also magnified under the above biophysical conditions, compounded by deficient SLM practices. All climax forest communities were severely affected by Hurricane Ivan (2004) and Emily (2005), with intense impairment to asset functioning. Similarly the devastating impacts of these disasters left a wave of soil erosion particularly on steep slopes with limited protection as shown by Photo Plate 1.1.2.1-4.

Photo Plate 1.1.2.1-4: Landslide due to Hurricane Ivan in hill slope area

1.1.2.2 Climatic Determinants

Climate change modeling for Grenada predicts the following outcomes (Government of Grenada, 2012; Simpson et al, 2012; UNDESA, 2012).

- Increase in average atmospheric temperature ranging from 2.4˚C to 3.2˚C annually by the 2080s.
- Increased sea surface temperatures with projected increases ranging from +0.9˚C and +3.1˚C by the 2080s.
- Potential for increase intensity of tropical storms.
- Rising sea level, with resultant reduction in the potential of ground water resources by 15-30% in the next 50 years.

Box 1.1.2.2-1: Linkages between land degradation, drought, climate change and biodiversity conservation

There is a natural and intricate link between land degradation, drought, climate change and biodiversity conservation, especially in small states like Grenada.

A degraded landscape reduces the primary productivity of land, and therefore its capacity to sequester carbon and adapt to the impacts of climate variability and change. Similarly, this can increase reduction in species abundance and change in ecosystem structure and diversity with negative implications for biodiversity.

This triad is therefore best addressed simultaneously due to mutually beneficial outcomes.

- Fluctuation in rainfall levels, with projections for reduction in average annual precipitation levels.

These changes are *very likely* to worsen land degradation, increasing communities' vulnerability to natural hazards, with lessened opportunities for sustainable livelihoods and poverty reduction. Consistent with Section 1.1.2.1, inadequate utilization of soil and water conservation practices can aggravate drought conditions, burdening the portable water and other social services. Capitalization of the linkages between SLM, biodiversity conservation and climate change adaption are therefore necessary to foster improved resilience of the State's terrestrial assets, while concurrently mitigating the effects of drought (Refer to Box 1.1.2.2-1).

1.1.2.3 Economic Determinants

The robustness of the national economy as measured by the gross domestic product (GDP) is an important underlying factor in land degradation improvement or acceleration. Analysis of the GDP from 2000 to 2012 showed an almost steady reduction. During the period, 2000 to 2005, GDP averaged about 5.5% per annum compared to a reduction of 0.4% per annum during 2006-2012 (Antoine, 2014). This below average performance of the economy was influenced heavily by the debilitating impacts of Hurricanes Ivan (2004) and Emily (2005) and global factors. Importantly, the majority of domestic financing is currently utilized to fund salaries and wages, and other recurrent operational costs.

This economic environment leaves limited room to engage in public investments and social spending, especially those that are essential for the promotion of SLM. Further to this, the country is currently saddled with a debt burden of EC$ 2.56 billion, equivalent to 107% of the GDP (GoG, 2014). Development of an integrated financing strategy (IFS) that maps out potential sources of funding is therefore an imperative.

The economic standing of land owners and/or developers can also impact decision making with respect to land conservation. Reduced profitability of enterprises and/or limited access to credit can seriously constrain efforts at investment in technologies to conserve or protect land resources. For instance, low affordability (30%) and no incentive or funding for implementation (26.4%) were the dominant deterrents reported by 34.9% of local farmers (n=124) who indicated that they do not regularly invest in soil and water conservation (Akpinar-Elci and Roberts, 2011). This low emphasis on prevention and/or mitigation is a strong indirect driver of land degradation and drought.

Taxes and subsidies are important drivers of land use. The Government of Grenada in an effort to stimulate economic activity provides a range of subsidies for the major engines of growth, inclusive of tourism, physical development and agriculture. Albeit their usefulness, many subsidies can substantially increase rates of resource consumption and negative externalities. For instance significant resources[11] are invested in subsidizing the cost of inputs example fertilizer for the agriculture sector. This can potentially reduce the efficient use of agrochemicals with

[11] Data was not obtained during preparation of study.

undesirable impacts on soil integrity and water quality. In contrast, a total of 570,043 plants[12] were produced by the MoALFFE propagating stations from 2004 to 2013, which were sold at subsidized rates to farmers and other land users (Agronomy Division, 2014). If optimally managed, establishment of these planting materials can substantially improve soil health and agricultural biodiversity. Low access to data on taxes and subsidies prevents further analysis.

Lack of research to accurately analyze the correlation between economic factors and land conservation or degradation at the national level however, limits the extent of generalization possible.

1.1.2.4 Socio-cultural Determinants

Population and Demographic Shifts

Population growth is a major driver of land degradation. Its proliferation can increase the demand of the ecological footprint on finite land resources, affecting its capacity to sustainably provide important ecological services. The direction of the effect however, depends on the types and intensity of land use, and a variety of institutional, ecological and socio-economic factors (Guyet Manh Vu et al, 2014).

An examination of the national population over the last 140 years, from 1871 to 2011 although fluctuating, shows an increase of 180% from the baseline year (CARICOM Secretariat, 2009). In contrast, the population increased by 24% within the last 20 years and only 2.3% within the last decade (2001-2011). Clearly the claims on the island's limited land resources have increased within recent decades evident by increase need for housing and economic development, coupled with observed land degradation.

Shifts in population constitute an even more relevant driver of land degradation. Historically, due to terrain constraints and the need for improved human welfare, the majority of the population was confined to settlements within low-lying coastal areas. However as these areas become fewer, more congested and expensive, settlements are shifting towards the hilly interior. Congruent with this trend is the heightened number of land subdivisions especially in rural inland areas, which represents one of the most intensive land development change post 2000 (Refer to Box 1.1.2.4-1). This alteration of demographics has resulted in serious encroachment particularly on prime agriculture lands, and is a cause for concern for the MoALFFE, due to the implications to national food and nutrition security. Land resource managers speculate that this trend will likely continue in the absence of a National Land Policy which is necessary to regulate haphazard, sporadic and unplanned

Box 1.1.2.4-1: Subdivisions in Grenada 2004-2013 (PPU, 2014)

- Forty six subdivisions approved by the PPU; only one refused.
- Majority 25 (54.3%) located in the parish of St. George's, followed by St. David's (17.4%), St. Andrew's (15.2%) and Carriacou and St. Patrick's (6.5%).
- Approved subdivisions in most cases attained slow housing growth, albeit partial or completed infrastructure.

[12] Fruits, spices, ornamental and cocoa; data does not include cocoa plants propagated by Grenada Cocoa Association during 2004 to 2009.

development.

Albeit this, credible data to quantify the impact of population growth on land resource health and functioning is lacking. Further analysis is therefore imperative to more accurately guide policy and programmatic interventions.

Land Tenure Insecurity and Related Issues

It is every Grenadian desire to be a freehold owner of land, for which the land registration and ownership system makes provision. Grenada has the lowest level of State-owned lands (10%) in the Organization of Eastern Caribbean States; the majority, 90% is privately held. While the freehold system provides some level of security to citizens, it has serious implications for holistic national development, including regulation of land use.

Tenure insecurity has long been known to limit long term investments in land, including conservation measures. Both formal and informal systems of tenure exist in both crown and private lands in Grenada. Although no reliable statistical information is available on the exact nature and extent of land tenure arrangements within the State, it is believed that freehold followed by leasehold/rent are the most prevalent types of systems operating within the State.

Family land represents the *most common* problem affecting land tenure in Grenada. Recent estimates states that this type of tenure accounts for at least 15% of interests held in land (Williams, 2003). While this is an issue of concern in mainland Grenada, it is particularly relevant in Carriacou and Petite Martinique where a significant percentage of lands are family owned. This type of tenure is not valued by financial institutions, which seriously constraints efforts at mobilizing financing for conservation and other land development interventions. Lack of awareness of the importance of land title to personal advancement, the value placed on maintaining the social welfare of generations and a mistrust of the legal and political system were advanced as possible reasons for this low propensity to regularize private lands (Roberts, 2012). Other challenges with land tenure in Grenada that have implications for SLM are listed below:

Photo Plate 1.1.2.4-1: Squatting on steep slopes in Grand Anse, St. George's

- Squatting, although not widespread, occurs primarily on crown lands. This type of tenure is capricious, and increases socio-economic and environmental vulnerability (Refer to Photo Plate 1.1.2.4-1);

- Weak and bureaucratic registration system, characterized by a manual record system and high legal fees and transfer tax associated with documentation of land;

- Poorly monitored land markets by Government; a failure which can encourage greater landlessness among lower income earners due to uncontrolled land prices aggravated by limited State ownership;

- Low capacity for maintaining the integrity of land surveys. This is due to inadequate densification of the national trigonometrical grid network and limited human resources in the Lands and Surveys Department to authenticate completed surveys as per policy and legislation. This provides the perfect setting for land use conflicts, which sometimes requires the services of the legal system. Inadequate quantification and verification of crown lands compounds the above deficiencies.

Notwithstanding the above, lack of evidence-base information on the linkages if any between tenure security and investment in SLM limits the validation of this claim.

Poverty

Poverty is considered a causal factor of land degradation. It impedes land owners and users ability to control land degradation. Persons who are poor typically lack or have limited access to the factors of production including credit, technology, labour and capital thus hindering investment in environmental conservation. Further to this, due to their focus on survival, any investment made requires quick returns which are uncharacteristic of SLM interventions. Quite notably however, is the notion that *the poor do not willfully engage in land degrading activities due to a strong stewardship ethic*. Vu et al (2014) posits that poor dependent resource users, if market conditions allow can have a strong incentive to invest their scarce capital into preventing and/or mitigating land degradation. In fact, it can be argued that land degradation contributes to poverty by limiting the capacity of the land to provided income generation services. Poverty reduction strategies as set out in the GPRS and other frameworks are therefore of paramount importance to attaining the national targets of zero net land degradation.

Photo Plate 1.1.2.4-2: Loss of mangroves in Tyrell Bay, Carriacou

Policy, Legal and Governance Determinants

An inadequate enabling environment, *inclusive of policy, legislative, and governance mechanisms constitutes the most important indirect catalyst of land degradation in Grenada.* This is manifested inter alia in inadequate human capacities for delivery of important risk reduction services; use

of highly marginalized land; adoption of practices that degrade the environment (Refer to Photo Plate 1.1.2.4-2); and encroachment on prime lands deemed important for conservation and/or for food production. A case in point relates to the implementation of large scale land development projects which in a number of instances seriously degrade lands (Refer to Box 1.1.2.3-1).

An assessment of the economics of land degradation, particularly the cost of action verses inaction is pivotal in communicating the value of SLM as an ally to national development. Within the context of the need to safeguard our scarce land resource base for current and future generation, prioritization of actions to eliminate the aforementioned systemic and governance deficiencies is of paramount importance.

Box 1.1.2.4-2: Large-scale land development projects as a threat to land resource health

Although the legislative and administrative mechanisms are in place for the conduct of environmental impact assessments, monitoring and enforcing compliance to recommended mitigation measures and environmental and social management plans are ineffective; an indicator of an unsatisfactory enabling environment.

This has led to vegetation degradation of forest communities, threatening habitats and provision of critical ecosystem services. The coastal woodlands and dry forest in the north, south and east coast are currently the most vulnerable forest ecosystems due to pressures from physical development both large and small. Mangrove forest particularly in Carriacou is at risk due to the impacts of major land development activities such as Tyrell Marina located within the Sandy Island Oyster Bed MPA.

These large-scale land development ventures have stimulated public clamour due to the ecological and socio-economic impacts. Strengthening the capacity for mainstreaming the precautionary principle in land resource management is therefore fundamental.

Inadequate Knowledge and Supportive Attitude

Public awareness and education continues to be one of the most important underpinning for successful integration of SLM in national development. In 2011, a general low level of knowledge among the general population[13] on land degradation and SLM was reported (Akpinar-Elci and Roberts, 2011). More than half of the inhabitants of the State reported having no knowledge of land degradation (64%) and SLM (52%). The natural outcome of this is an undervaluing of the resource, reduced propensity for wise land use management with concomitant inappropriate land use practices. Moreover, land owners and users who are not sufficiently convinced of the importance of land, perceives greater utility in the resources if its land use is changed to one that appears to create greater economic returns in the short to medium term.[14]

[13] Target groups for the study were: policy makers and senior government officials including all Cabinet ministers, farmers, contractors and communities – evaluated at the household level.
[14] Example fill mangrove forest to create a hotel or other development.

While it is highly likely that the populace is more knowledgeable about land degradation and prudent land management subsequent to implementation of the SLM Project, more aggressive sustained communication designed to foster attitudes and practices consistent with a stewardship ethic is required. Public awareness and education should no longer be viewed as an afterthought in resource management; but should be upgraded as a principal pillar in land degradation and drought reduction programming.

Land Use Change and Planning

Land use change and transformation are generally accepted as key drivers of biodiversity loss (Haines-Young, 2009). Researchers speculate that by 2100, the impact of land use change on global biodiversity is likely to be more significant than climate change, nitrogen deposition and species introductions (Chapin et al, 2000 & Sala et al, 2000 as quoted in Haines-Young, 2009). Land use change analysis for the period 2000 and 2009 showed little or no modification in Carriacou. In contrast noticeable changes are observed in LUS in Grenada as illustrated in Figure 1.1.2.4-1.

The area under agriculture declined by 11.86%; in contrast abandoned and underutilized agriculture land increased by 1619.7% due to a decline in the agriculture sector. Land under perennial production decreased drastically by 40.35%. Though less dramatic, land characterized as urban and buildup areas enlarged by 24.23%. This shift is of great concern, as poorly managed or unmanaged lands have serious implications for land degradation, livelihood protection and biodiversity conservation.

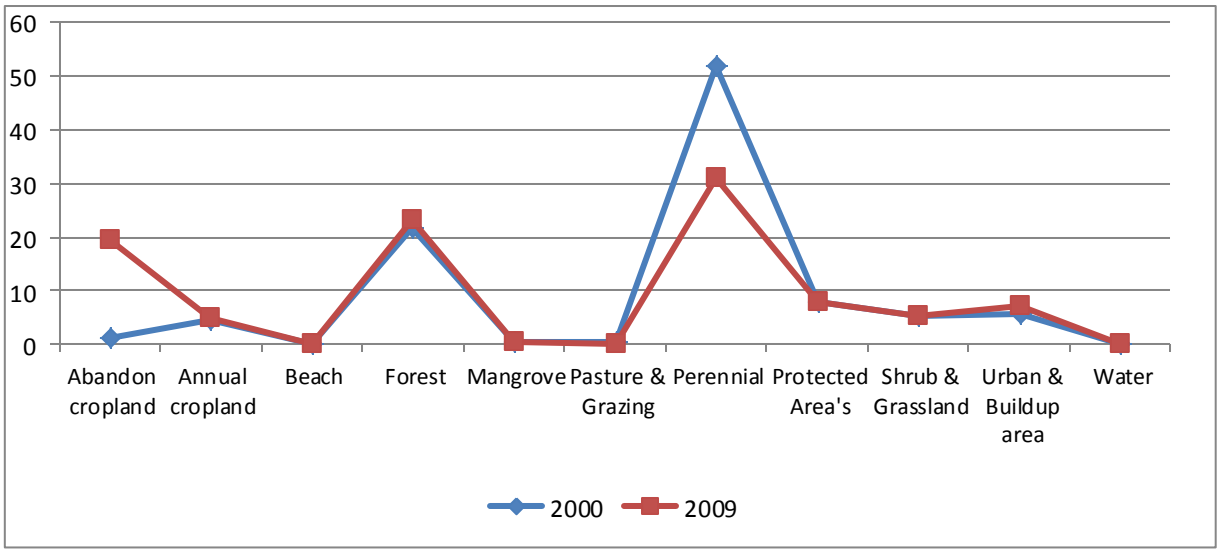

Figure 1.1.2.4-1: Land use system percent changes for Grenada, 2000 to 2009 (Roberts, 2014 based on data from Land Use Division)

Land is inarguably the most important resource to the people of Grenada. It is well recognized as the main stimulus for economic growth and development, a conduit for poverty reduction, and

the foundation of good governance and environmental sustainability, all of which are essential to a productive and prosperous nation.

Land use and land use planning in Grenada can be conservatively described as "chaotically haphazard". Evidence of this lies in the widespread mismatches between existing land use types and actual land suitability. It is common to find cultivation on excessively steep slopes or on the edge of riverbanks; the erecting of buildings in low-lying areas that are prone to flooding or below steep unstable slopes; and land development proposals in sensitive ecosystems. Gaps in the enabling environmental for SLM are principally responsible for this culture as discussed in Section 2.2.

1.3 CARBON IN GROUND BIOMASS

As illustrated by Table 1.3-1, carbon in above and below ground biomass in Grenada's forest decreased by 18.2% during the last 20 years, from 1990-2010. In contrast, subsequent to Hurricane Ivan and Emily, about ground biomass increased by 28.5% from 2005 to 2010, a probable indication of slow natural restoration of the forest resources.

Table 1.3-1: Carbon in biomass in Grenada's Forest (Forestry Department FAO, 2010)

FRA 2010 Category	Carbon (Million Metric Tonnes)			
	1990	**2000**	**2005**	**2010**
Carbon in above ground biomass	1.098	1.098	0.699	0.898
Carbon in below ground biomass	0.220	0.220	0.140	0.180
Subtotal	1.318	1.318	0.838	1.078

1.4 DROUGHT: PAST, CURRENT STATUS AND TRENDS

Drought is a normal, recurrent feature of climate. Significant variations in seasons and rainfall patterns are also quite evident over the past 20 years. Similarly, an average decline in annual rainfall over the past 15-20 years compared to preceding decades is documented (Refer to Box 1.4-1).

In 2009/2010, Grenada recorded its longest dry season in two decades and probably its worst drought in 50 years. The impact of this drought was widespread and severe. There was a historical record number of wild fires, which moved from 91 in 2009 to 457 in 2010, a 502% increase. This resulted in destruction of agricultural and forest vegetation, with potential increased vulnerability to land degradation. Severe water shortages for irrigated agriculture and domestic use were experienced. The NAWASA recorded reductions of 65% in its production

centers, creating challenges to meet portable water demands, necessitating enforcement of water conservation measures.

In wake of this event, Grenada developed a draft drought monitoring and response plan, under a regional project supported by the Caribbean Institute for Meteorology and Hydrology (CIMH). However, drought mitigation is constrained by a number of factors including inter alia inadequate policy and legislative framework, trained personnel, and data and information management; low public awareness and education; unsatisfactory research, monitoring and hydrological networks; and insufficient focus on integrated water resource management. Addressing these binding constraints is paramount in limiting the impact of water deprivation on human lives and livelihoods.

Box 1.4-1: Precipitation Trends in Select Key Agricultural Areas (MoALFFE, 2014)

Location of rainfall station	Precipitation change over time	Reduction /inches
Snell Hall, St. Patrick's	65.05 inches in 1992 to 56.04 inches in 2009	9.01
Ashenden, St. David's	90.46 inches in 1984 to 87.15 in 2013	3.31
Mirabeau Agricultural Station, St. Andrew's	1985 to 2013, rainfall decreased by 20.5%, 90.63 inches in 1985 to 72.02 inches in 2013.	18.61

Desertification in Belle Vue South, Carriacou

2. UNITED NATIONS CONVENTION TO COMBAT DESERTIFICATION

2.1 MANDATE, OBJECTIVES AND REQUIREMENTS OF THE UNCCD

Desertification, along with climate change and loss of biodiversity, were identified as the greatest challenges to sustainable development during the 1992 Rio Earth Summit. As an outcome of the summit, the UNCCD was established in 1994, as the sole legally binding international agreement linking environment and development to SLM. The Convention was adopted by the United Nations General Assembly on June 17th, 1994 and came into force on December 26th, 1996. Currently there are 196 parties to the Convention, including 15 independent states of the Caribbean Community (CARICOM).

The main objective of the Convention is to combat desertification and mitigate the effects of drought through effective action at all levels, supported by international cooperation and partnership (UNCCD, 1994). Achieving this objective involves long term integrated strategies that fosters improved productivity of land, and conservation of the resource leading to enhanced living conditions, particularly at the community level.

Parties to the Convention are obligated to implement the decisions of the Conference of Parties (COP) which constitute a critical component of operationalizing the mandates and targets of the Multilateral Agreement. Article eight of the Convention encourages coordination with other relevant international agreements, particularly the UNFCCC and the CBD. This is designed to optimize the benefits from activities under each agreement, while avoiding duplication particularly in the fields of research, training, systematic observation and information collection and exchange (UNCCD, 1994). Article nine specifies elaboration and implementation of NAPs, which provides a comprehensive framework to combat desertification and mitigate the effects of drought.

2.1-1: Organs of the UNCCD

Permanent Secretariat: Located in Bonn, Germany, the Secretariat makes arrangements for sessions of the COP and its subsidiary bodies. It also compiles and transmits reports submitted to it by country Parties, and provides assistance to affected developing countries Parties.

The Conference of the Parties (COP): Established by the Convention as the supreme decision-making body, the COP's main functions are as follows: Review reports submitted by the Parties detailing progress in implementing the Convention; advances recommendations on the basis of these reports; makes decisions, including amending the Convention as necessary.

The Committee for the Review of the Implementation of the Convention (CRIC): A subsidiary body to the COP that assists in regularly reviewing the implementation of the Convention.

The Committee on Science and Technology (CST): Established as a subsidiary body of the COP to provide information and advice on scientific and technological matters relating to combating desertification and mitigating the effects of drought.

Group of Experts: Plays an important institutional role regarding information dissemination, policy support and research recommendations.

The Global Mechanism (GM): Commissioned under Article 21 of the Convention, the GM is mandated to increase the efficiency and effectiveness of financial mechanisms to promote actions for mobilization and channeling of substantive financial resources to affected country Parties.

The GEF: Major source of funding for country Parties to implement their commitments under the Convention.

The main organs of the Convention are summarized in Box 2.1-1.

2.2 GRENADA'S IMPLEMENTATION OF THE UNCCD

2.2.1 Highlights of Grenada's Progress in implementing the Convention

Since ratifying the Convention in 1997, the country has made tremendous strides in fulfilling its obligation. There is a functional National Focal Point and a Science and Technology Correspondent, who operate from the MoALFFE, the Focal Ministry for the Convention. In addition, a National Coordinating Body (NCB), which comprises the Focal Points of the two Sister Rio Conventions is instituted (Refer to Appendix 1).

In 2005, Grenada prepared its first NAP for land degradation reduction. Further to this, national reports to the Convention were submitted in 2000, 2002, 2006, 2010 and 2014. The State participated in all COPs and other major meetings of the Convention. Moreover, it implemented the *Capacity Building and Mainstreaming of SLM* Project[15] from 2009 to 2012 and the *Land Degradation Assessment in Drylands (LADA)* intervention in 2012. Importantly, Grenada is the only Small Island Development State to have implemented the LADA initiative. Despite the tremendous progress in implementing the Convention, these achievements have not been without challenges, which can be summed up as outlined in Box 2.2.1-1.

Box 2.2.1-1: Barriers to SLM in Grenada

- Limited financial resources to implement critical programmes and plans;
- Insufficient national awareness and understanding of the importance of SLM to sustainable development;
- Absence of a national land policy to regulate land use and management;
- Lack of comprehensive zoning or spatial planning;
- Weak and ineffectively implemented legal instruments, aggravated by inadequate public knowledge of existing environmental enabling legislation;
- Inadequate regulations, codes of practice and standards for natural resource use;
- Public disregard for the observance of existing codes, practices and standards.
- Inadequate levels of human resources to effectively implement the MEA conventions Lack of a suitable succession plan within the public service to ensure that retired technical professionals are adequately replaced compounds this issue.
- Inadequate technical and technological capacity;
- Ineffective integration of environmental concerns, specifically SLM in development planning;
- Inadequate data collection to establish the requisite baseline information and data to facilitate effective planning;
- Fragmented environmental management – lack of an environment management authority, coupled with insufficient coordination among agencies responsible for the implementation of environmental initiatives;
- Inadequate participation and involvement of Civil Society.

[15] Herein referred to as the SLM Project.

2.2.2 Land Degradation Neutrality: Rationale and Approach

At the United Nations Conference on Sustainable Development (Rio+20), world leaders recognized the need for urgent action to reverse land degradation and agreed to *strive to achieve a land-degradation neutral world in the context of sustainable development by 2030*. However, the definition, conceptual framework and practical ways to achieve this "goal" are still to be clarified. While not yet finalized, LDN is referred to

> "as a state whereby the amount of healthy and productive land resources, necessary to support vital ecosystem services, remains stable or increases within specified temporal and spatial scales. LDN can occur naturally or as the result of improvement, management and ecosystem restoration" (IWG, 2014).

As a demonstration of leadership in this thrust, the UNCCD Secretariat, with funding from the Republic of South Korea is embarking on a global pilot LDN project initiative entitled *Towards achieving Land Degradation Neutrality: turning the concept into practice*. The project aims to deliver outcomes that would guide and encourage all affected countries to adopt their own national voluntary target by 2017 as a prerequisite to achieving land degradation neutrality. The following activities will be undertaken under the project:

1. Review of the assessment of land degradation and its drivers;
2. Review of national strategies to address land degradation;
3. Review of integrated investment frameworks;
4. SWOT analysis of the NAP;
5. Review of progress indicators;
6. Testing the UNCCD monitoring and evaluation framework in selected areas;
7. Setting voluntary national LDN targets and streamlining them into the NAP.

In demonstration of its commitment to the Convention, Grenada applied and has been accepted to be a participant in the LDN project. This makes Grenada the only small island among 14 countries to be participating in this venture. The project will be implemented in two pilot sites: Chamboard, St. Patrick's, Grenada and Belle Vue South, Carriacou.

2.2.3 Synergies with Sister Rio Conventions

The Secretariats of the UNCCD, CBD and UNFCCC established a Joint Liaison Group in 2001 in order to enhance coordination and strengthen cooperation among the three Rio Conventions. To be consistent with the UNCCD Secretariat, Grenada has ensured that the National Focal Points of the CBD and the UNFCCC sits on its UNCCD NCB. Since February 2013 the three Rio Conventions have been implemented by a single Ministry,[16] which has so far yielded the following benefits:

1. Enhanced efficiencies in the use of national human and material resources, by eliminating redundancies;

[16] MoALFFE.

2. Stronger coordination and cooperation among the Conventions.

3. Improved implementation of individual conventions through joint programme implementation.

Presently, all three Conventions have separate bodies to implement their National Action Programs. This is resulting in a huge wastage of human capital, as a large percentage of the same persons serve on all three committees. Plans are underway to establish a single NCB for all three Conventions, as a means of optimizing limited resources, while fostering enhanced synergies in programming.

2.3 THE UNCCD 10-YEAR STRATEGIC PLAN

With the aim of fostering improvement and acceleration of the overall implementation process, in 2007 the COP adopted the 10-year Strategic Plan and framework 2008-2018 at its eight session (Decision 3/COP.8). The Strategy is organized around four strategic and five operational objectives, and calls for Country Parties to align their NAP to facilitate successful implementation (Refer to Box 2.3-1). By this Decision, Parties to the Convention are expected to address the outcomes under the five operational objectives, and revise their implementation activities to comply with these outcomes.

Moreover, the COP at its ninth meeting endorsed a global target that 80% of all NAPs of affected Country Parties should be formulated, revised, finalized and aligned to the Strategy by 2014. To enable attainment of the above resolutions, Decision 2/COP.10 makes provisions for effective support from the UNCCD Secretariat and the GEF to all member Parties. Like many other Parties to the Convention, Grenada developed its NAP prior to the development of the Strategy. As a consequence, and in keeping with the mandate of the Convention, the NAP has to be aligned with the Strategy to ensure conformity and consistency. Within this context, the Government and people of Grenada are taking a bold

Box 2.3-1: Overview of the 10-year Strategic Plan

Vision

To forge a global partnership to reverse and prevent desertification/land degradation, and to mitigate the effects of drought in affected areas in order to support poverty reduction and environmental sustainability.

Strategic Objectives

- Improve living conditions of affected populations.
- Improve the condition of affected ecosystems.
- Generate global benefits through effective implementation.
- Mobilize resources to support implementation of the Convention through building effective partnerships between national and international actors.

Operational Objectives

- **Operational Objective 1:** Advocacy, awareness raising and education
- **Operational Objective 2:** Policy framework
- **Operational Objective 3:** Science, technology and knowledge
- **Operational Objective 4:** Capacity building
- **Operational Objective 5:** Financing and technology transfer

step to align the current NAP to more effectively streamline the domestic machinery for combating land degradation and drought.

2.4 DEVELOPMENT OF THE ALIGNED NAP: METHODOLOGY AND APPROACH

An informed participatory based approach, complemented by secondary literature review formed the core strategy for alignment of the NAP. The project commenced with an official launch which raised awareness of the key components of the alignment process. The existing NAP was reviewed within the context of the five Operational Objectives to determine the points of synergies and diversions. A rapid stocktaking and review of all relevant policies, plans and legislative instruments was subsequently conducted resulting in preparation of an Inception Report. The report analyzed the current situation for NAP implementation within the context of the five Operational Objectives of the 10-Year Strategic Plan, and provided an invaluable baseline to guide the alignment initiative. In addition, the UNCCD NCB played a critical role in assessing the Inception Report as part of the validation process.

The draft Aligned NAP was then prepared. A core group of members from the NCB followed by two national consultations with stakeholders in mainland Grenada and in the sister island of Carriacou were convened to discuss and finalize the draft NAP. This was supplemented by follow up meetings with representatives from the principal land management agencies, NGOS and representatives from the UNFCCC and CDB (Refer to Appendix 2 for a list of stakeholders consulted).

Healthy Mangroves, Grenada

3. ENABLING ENVIRONMENT FOR SLM

3.1 POLICY AND STRATEGIC PLANNING FRAMEWORKS

3.1.1 Macroeconomic Framework

The Growth and Poverty Reduction Strategy envisions a transformed "New Economy" established on the pillars of knowledge, technology, innovation and entrepreneurship (Antoine et al, 2014). At the heart of this new development paradigm is improved standard of living and poverty reduction; an indication of the nation's unwavering commitment to attainment of the Millennium and Sustainable Development goals.

In pursuit of this "New Economic Agenda," vulnerability reduction is recognized as one of four fundamental pillars for success. Cognizant of the debilitating risks associated with natural hazards and other shocks, the GPRS prioritizes four strategic areas for medium term action geared to reduce vulnerability. Environmental and sustainable natural resource management, with an emphasis on SLM constitutes a major aspect of this thrust. Clear synergies with the aligned NAP and the GPRS are asserted.

Sustainable economic development is premised on a deliberately rationale approach to the management of the nation's natural and environmental resources [GPRS, 2014].

3.1.2 National Environmental Policy and Management Strategy

The Government and people of Grenada articulated the National Environmental Policy and Management Strategy (NEPMS) in 2005 to provide a coherent framework to ensure environmentally sustainable development, while optimizing the contribution of the environment to economic, social and cultural development in the short, medium and long term (GOG, 2005). The policy pursues seven broad complementary objectives, all of which are foundational pillars for attaining SLM.

Successful implementation of the policy requires the establishment of effective coordination mechanisms; development of supporting policy instruments including the National Land and Climate Change Policies;[17] an integrated, efficient and effective legislative and regulatory framework; utilization of economic instruments; mobilization of financial resources; adoption of appropriate technology; research, communication, monitoring and evaluation.

3.1.3 Forest Policy and Strategic Plan

The Forest Policy elaborated in 1999, epitomizes excellence in participatory natural resource management. It is structured around four major objectives, all of which are principal pillars for SLM as listed below.

- Conserve species, ecosystems and genetic diversity;
- Maintain, enhance and restore the ability of forest to provide goods and services on a sustainable basis;

[17] Adopted in 2006.

- Optimize the contribution of forest resources to social and economic development; and
- Maintain a positive relationship with the Grenadian people and their forest environment.

To implement the objectives of the policy, nine strategic directions have been identified in the areas of biodiversity, mangroves, non-timber forest products (NTFP), recreation and eco-tourism, timber production, tree planting, watershed management, wildlife management and Carriacou and Petite Martinique. Although quite inclusive, the issue of climate change mitigation and adaptation was not mainstreamed in the policy, representing a major deficiency within the context of expected climate change impacts. A 10-year strategic plan (2001-2011) now outdated was articulated to buttress implementation of the Policy. Therefore revising these instruments is of prime importance.

3.1.4 Climate Change Policy and Action Plan

Grenada's national Climate Change Policy and Action Plan 2007-2011 envisioned *an empowered Grenadian population capable of managing the risks from climate change, at the individual, community and national levels*. Its strategic objective was to lay the foundation for an organized, long term response to climate change through pursuit of eight interrelated strategies. While all of the strategic directions of the Plan have not been attained, significant progress was achieved in each of the following areas:

- Climate proofing present and future development;
- Strengthening capacities for data management;
- Capacity development;
- Energy efficiency and use of renewable energy;
- Elimination of unsustainable livelihood and development practices;
- Public awareness and education;
- Foreign policy advocacy and partnership.

Maximizing opportunities for synergies between the aligned NAP and the above instrument is a central theme of this document.

3.1.5 Land and Marine Management Strategy

Within the context of integrated landscape management, the Government of Grenada elaborated a Land and Marine Management Strategy (LMMS) in 2011 which is designed to foster productive and optimal utilization of land, fresh water, coastal and marine resources in an environmentally sustainable manner (JECO Caribbean, 2011). The Strategy outlined four main outcomes to achieve its objectives that are centered on legislative and policy reform; establishment of network administration organization/s; utilization of tools for management of land and marine resources; and a framework for planning, implementation, monitoring and review.

Cognizant of the deficiency in coordination mechanisms for land and marine management, the Strategy calls for the establishment of an interactive tripartite institutional arrangement

comprising an Environmental Management Agency,[18] the Grenada Land Agency[19] and a Marine Management Authority to work in tandem with line ministries and civil society organizations.

3.1.6 National Physical Development Plan

The National Physical Development Plan (NPDP) 2003-2021 establishes an integrated instrument to guide development activity in Grenada, Carriacou and Petite Martinique in a sustainable manner. It is expected to provide a rationale approach for informing strategic land use and investment decisions through sustainable development and management of the physical environment (MoF, 2003). It is structured around six development objectives, four of which are directly related to SLM: Growth and environmental management, economic development, housing and economic infrastructure.

Incorporated in the NPDP is a proposed land use concept for the zoning of land to make provisions for the expansion of the built environment, designation and conservation of environmentally significant areas, and safeguarding the productive use of agriculture lands. Moreover, the PPU facilitated development of Local Areas Plans (LAPs) which allocated best use of land for the Sauteurs and Greater Grenville Areas.[20] Lack of Development Orders compounded by the high percentage of private lands ownership restricts operationalization of LAPs.

3.1.7 Grenada Protected Area Systems Plan

Consistent with the tenets of the Forest Policy and the Grenada Declaration to conserve national biological assets, the Systems Plan 2009 identifies potential sites for designation as protected areas on both crown and private lands. Equally revolutionary, the Plan specifies alternatives to the governance and management mechanisms currently in operation in an effort to address deep-rooted inefficiencies.

The following represents the key proposals of the System Plan (Turner, 2009):

1. Establish co-management institutional arrangements for protected area management, specifically the National Parks Advisory Council and Management Committees for terrestrial protected areas.

2. Develop strategic plans for the above structures that include business plan, policies for conservation of natural and cultural resources and management of visitors in protected areas, management plans for individual designated protected areas and partnerships with educational institutions and civil society.

3. Operationalize mechanisms for fostering financial sustainability of protected areas.

[18] Environmental Division, MoALFFE.
[19] Mandate to merge and streamline all land agencies to foster enhanced land administration and management.
[20] Plans are in place to develop LAP for the South West Peninsula.

4. Build capacity of human capital at the protected area system and area levels.

Implementation of the Ridge to Reef Project[21] is expected to advance each of the four priority actions.

A diversity of other policies and strategic frameworks impact on the management of land resources. These include inter alia: Draft Carriacou and Petite Martinique Land Use Policy 2013, Draft National Water Policy 2007; National Policy and Strategy for Modernizing Agriculture 2005; the National Hazard Mitigation Policy 2003 and Plan 2006; the National Solid Waste Management Strategy 2003; Biotechnology Policy; the Tourism Master Plan 1997; the Carriacou Physical Development Plan; and the Draft Plan and Policy for the System of National Parks and Protected Areas 1988.

3.2 LEGAL FRAMEWORK

A diversity of legislative instruments provides the basis for land management within the State of Grenada. The principal pieces of legislation are summarized in Table 3.2-1 below.

Table 3.2-1: Summary of legislative framework governing SLM

Thematic Area	Legislative Framework
Land use and development control	▪ Physical Planning and Control Act (PPDC) 2002 (revised draft regulations 2011) ▪ Waste Management Act, 2002 ▪ Environmental Levy Act 2000 (Amended) ▪ Grenada Solid Waste Management Authority Act, 1995 ▪ Carriacou Land Settlement and Corporation Development Control Act, 1976 ▪ Crown Lands Act, CAP 159 ▪ Beach Protection Act, CAP 29 ▪ Stock Trespass Act and the Road Ordinance ▪ Industrial Development Corporation Act, 1976 ▪ Land Acquisition Act, Cap 159
Forestry and protected area management	▪ Forest Soil and Water Conservation Act Cap 116 ▪ Forest Soil and Water Conservation Ordinance, No 1 (1949) and No 34 (1989) ▪ Bird and Other Wildlife Protection Act, CAP 34 ▪ Wildlife and Birds Sanctuary Act, CAP 339 ▪ National Parks and Protected Area Act, CAP 206 (1990) ▪ Draft Protected Area, Forestry and Wildlife Act
Land administration functions	▪ Deeds and Land Registry Act, Cap 79 ▪ Conveyancing and Law of Property Act Cap 64 ▪ Property Transfer Valuation Act 37/1998 ▪ Property Tax Act, 1997 ▪ Land Transfer Valuation Act, 37/1998 ▪ Land Acquisition Act

[21] Funded by the GEF, this project is designed to improved provision of ecosystem services in and around protected areas.

3.3 GOVERNANCE AND INSTITUTIONAL ISSUES

Sustainable land management is under the jurisdiction of six principal organizations, namely the Land Use, Extension and Environmental Divisions; Forestry Department; Lands and Survey Department and the PPU. These public sector entities deliver planned outputs in collaboration with an array of CSOs. While there are significant capacities among these agencies, unclear responsibilities, particularly within the context of protected area management; inadequate inter-sectoral collaboration; insufficient engagement of CSOs and STIs; and inadequate individual and institutional capacities constrained their ability to implement the requirements of the UNCCD. Addressing and removing the binding constraints in the governance and institutional framework constitute therefore a fundamental priority in the aligned NAP.

Coastal forest, Carriacou

Smallholder farmer in Ludbur, St. Andrew's

4. NATIONAL STRATEGIC ACTION PROGRAMME AND IMPLEMENTATION PLAN

This section presents the aligned NAP for Grenada, Carriacou and Petite Martinique. The directions included herein builds on the 2005 NAP, and incorporate aspects not sufficiently addressed, creating a more comprehensive and relevant approach to land degradation reduction and drought mitigation within the context of the UNCCD 10-year strategic plan.

4.1 The ALIGNED NAP

4.1.1 Vision

The Government and people of Grenada envisions

Healthy, productive and resilient land that supports life and sustains the environment.

The articulated vision conveys the following key messages:

- Recognition of the tremendous importance of land resources as a fundamental asset in improving the quality of life of each Grenadian. Fostering therefore an enabling environment that supports optimal functioning of the resource and the attendant provision of ecosystem services are central to this vision.

- Views land as a critical component of sustainable national socio-economic advancement and prosperity. Land is considered an imperative for each of the main engines of growth within the tri-island State. Its sustainable use and management is therefore paramount as Grenada makes strides to reduce poverty, and catalyze the attainment of a transformed, robust economy as set out in the GPRS.

If water is truly life, then land must be treated as the foundation of this life [Raymond Baptiste, Chief Land Use Officer].

- Asserts that a healthy, productive and resilient land resource base is the fundamental responsibility of each resident. Every occupant of this State is perceived as an invaluable team player. It speaks to effective mobilization of all groups, including grassroots, public and private sector organizations, land owners and developers, research and academic institutions, natural resource users, householders, youths and children to become active and conscientious stewards of this remarkable asset (Refer to Box 4.1.1.-1).

- The political directorate and policy makers commit wholeheartedly to the principles and practices of SLM. This is manifested through a conscious deliberate emphasis on mainstreaming SLM in national development planning, and allocation of requisite human and financial capital to land degradation risk reduction.

- Our leaders are ever cognizant of the need to prioritize sustainable use and management of our land resources as a principal element in all national decisions.

- Effective governance is deemed an imperative for successful implementation of the Aligned NAP and associated policies and strategic programmes.

- Creating opportunities for sustainable livelihoods, especially for groups and communities directly affected by land degradation and drought is crucial to this vision. This provides a powerful incentive for SLM at the community level, and fosters conservation of limited land resources for future generations.

- Climate proofing of land is an indispensible strategy enshrined in this vision, and highlights the interconnectedness of land degradation, climate change, biodiversity conservation and DRR. Integrating climate change adaption and biodiversity conservation policies and practices into the national collective response to preventing and reversing land degradation is of prime importance.

- In the final analysis, strengthening individual, institutional and systemic capacities for SLM is pivotal going forward. Also high on the agenda is improving the scientific basis for combating land degradation.

4.1.2 Aspirations of the NAP

The Government and people of Grenada therefore aspire to attain the following through implementation of the NAP:

- Sustainably managed land resources amidst immense pressure from competing uses, thereby enabling it to fulfill social and economic needs, while conserving the natural environment.

- A clear land policy and regulatory framework to enable sustainable land use and management.

- Greater consistency in the application of good land use principles and practices.

- Appropriate and effective stakeholder and local community involvement in land management decisions.
- Consistent and effective implementation of the UNCCD at the national level.

- Zero net land degradation within the Tri-island State.

4.1.3 Goal and Objective

The strategic goal of the Aligned NAP is to prevent *land degradation, and restore 10% of degraded land by 2020, and mitigate the effects of drought and other climatic shocks*.

Its overarching objective aims *to provide a coherent framework to guide SLM in Grenada.*

4.1.4 Guiding Principles

In the pursuit of this vision, a number of fundamental principles will be adhered to as outlined in Box 4.1.4-1.

Box 4.1.4-1: Guiding principles for NAP Development and Implementation

- **Participatory Approach:** Adoption of a participatory approach is deemed an essential pillar for development and implementation of the NAP. The voices and ideals of all groups, including those who depend exclusively on land for a livelihood; impact on land through their activities; and/or are responsible for planning and regulating land use are extremely valuable to the debate.

- **Partnership:** As Grenada forges ahead, its Government and people endorse the development of new and enhancement of existing partners to deliver on the elements of the NAP, mindful of the inadequate human, financial and technological capital within the State.

- **Precautionary Principle:** The complete value of Grenada's land has not been quantitatively determined, nor have risks associated with certain development activities been sufficiently studied. The precautionary principle is based on recognition of the fact that unsustainable land use practices and systems can lead to irreversible and detrimental impacts, with long term implications for national development, including future ecosystem benefits. Exercising caution in cases of uncertainty is therefore a fundamental element of the NAP.

- **Integrated Approach**: Cognizant of the multiple uses of land, and the diversity of players involved in its management, adoption of an integrated approach to land use planning and management that addresses all components of the ecosystem underpins the framework promoted through the NAP. Coordination of sectoral interventions is therefore particularly important to facilitate appropriate choices and trade- offs, thus maximizing opportunities for SLM.

- **Adaptive Planning:** Adaptive planning is viewed as a necessity, due to the changing circumstances in national policy, and the need to incorporate new information and lessons learnt to augment the planning and implementation processes.

- **Leadership and Results-Based Management:** Solid leadership is perceived by the Government and people of Grenada as the single most important factor necessary for effective and efficient implementation of the NAP. In like manner, a Results Based Management approach which encourages accountability will be a key component of programme implementation.

- **People centered:** The NAP clearly recognizes the value of improving the lives and livelihoods of our people as the driving element for heightened management of land resources.

- **Political commitment:** Political commitment is viewed by the Government and People of Grenada as an overarching principle to mainstreaming SLM in national development planning, and realizing the tangible benefits of the NAP.

- **Synergies:** Recognizing and maximizing opportunities for collaborative programming with the UNFCCC and CBD at the national level is of prime importance going forward.

4.1.5 Strategic Framework for the NAP

The framework elaborated below is congruent with the UNCCD 10-year Strategic Plan. It is structured around the five Operational Objectives as outlined in Section 1.1. These Operational Objectives will be achieved through the pursuit of seven interrelated, mutually supportive outcomes, viz.

1. Land degradation and drought mitigation, and the synergies with climate change adaptation and biodiversity conservation are effectively communicated among key constituencies at the national and community levels.

2. Civil society organizations and the scientific community are increasingly engaged as stakeholders in the Convention processes, and land degradation and drought are addressed in their advocacy, awareness-raising and education initiatives.

3. Policy, legal and institutional barriers to SLM are assessed and removed through the pursuit of appropriate actions.

4. Stronger linkages between land degradation, biodiversity and climate change are forged to enhance the impact of planned interventions.

5. Knowledge of the biophysical, climatic and socio-economic factors contributing to land degradation and drought mitigation in affected areas is acquired and applied to enable better decision making.

6. Action plans to develop the necessary capacity at individual, institutional and systemic levels conducted as part of the National Capacity Self-Assessment and other similar evaluations are implemented.

7. Capacities to mobilize substantial, adequate, timely and predictable financial resources to support domestic initiatives to reverse and prevent land degradation and mitigate the effects of drought are enhanced.

The subsequent section presents the main strategic priorities and interventions for each of the five Operational Objectives for SLM as stipulated by Decision3/COP.8.

OPERATIONAL OBJECTIVE 1: ADVOCACY, AWARENESS RAISING AND EDUCATION

Environmental awareness and education is critical for achieving skills, values, attitudes and behaviours consistent with sustainable development. Both formal and informal approaches are indispensible in stimulating development of a stewardship ethic that catalyzes diverse groups to solve environmental problems individually or collectively. This Operational Objective seeks to actively influence relevant international, regional, national and community based processes and actors in adequately addressing land degradation and drought related concerns.

Outcome 1: Land degradation and drought mitigation, and the synergies with climate change adaptation and biodiversity conservation are effectively communicated among key constituencies at the national and community levels.

Output 1.1: Populace empowered to develop attitudes and practices consistent with the principles of SLM.

Interventions:

- Develop and implement a communication strategy that stimulates proactive sustained action to address land degradation and drought, identifying clear synergies with climate change adaptation and biodiversity conservation.

- Promote sites demonstrating good land management practices with the object of stimulating adoption and wider replication among land users/target groups.

Outcome 2: Civil society organizations (CSOs) and the scientific community are increasingly engaged as stakeholders in the Convention processes, and land degradation and drought are addressed in their advocacy, awareness-raising and education initiatives.

Output 2.1: Capacities for advocacy, public awareness and education among CSO and science and technology institutions (STIs) strengthened.

Interventions:

- Elaborate a pragmatic, sustainable approach to mobilize CSOs and STIs involvement in the NAP implementation and Convention processes, while ensuring that the issues of land degradation and drought mitigation are adequately integrated into their routine work-programme.

- Build capacity among CSOs and STIs in effective advocacy and environmental communication.

OPERATIONAL OBJECTIVE 2: POLICY FRAMEWORK

This Operational Objective is designed to support the creation of an enabling environment for promoting solutions to combat land degradation and mitigate the effects of drought. It therefore addresses existing deficiencies in the systemic framework for SLM, with specific emphasis on the policy, legislative and institutional arrangements.

Outcome 3: Policy, legal and institutional barriers to SLM are assessed and removed through the pursuit of appropriate actions.

Output 3.1: Comprehensive and integrated policy and legislative framework for SLM developed.

Interventions:

- Mainstream SLM principles and practices and the Aligned NAP in national and sectoral development plans, work programmes and related strategies.
- Elaborate a National Land Policy for Grenada, and facilitate the formal adoption and implementation of the Carriacou and Petite Martinique Land Use Policy.
- Review and update the NPDP, and prioritize articulation of Development Orders for the LAPs already completed.
- Improve the legal and enforcement framework for environmental management and development control, including provisions for the conduct of Environmental Impact Assessments (EIAs), and monitoring compliance with recommended mitigation measures.
- Revise the National Forest Policy and strategic plan, and develop a cohesive policy framework for conservation of natural and cultural resources in TPAs.[22]
- Strengthen the legislative mechanisms for coastal zone management taking on board climate change projections for Grenada.
- Improve the legislative and enforcement capacities for forestry, watershed, wildlife and protected area management given the inter-relatedness of the respective portfolios with respect to SLM and water security.
- Develop a National Drought Management Policy with supporting legislative instruments.

Output 3.2: Institutional mechanisms for SLM at all levels improved.

Interventions:

- Implement the recommended administrative and institutional arrangements for land and marine management as contained in the LMMS (GLA, MMA and EMA).
- Establish the National Parks Advisory Council (NPAC) and Management Committees for TPAs as outlined in the National Parks and Protected Area Act 1990, the Grenada Systems Plan for Protected Areas (2009) and the draft Protected Area, Forest and Wildlife Act, including related recommendations for enhanced partnerships and financial sustainability.

[22] Clear demonstration of the linkages between protected areas, the wider catchment, key economic sectors and complementary MEAs are necessary components of the policy.

- Formulate and implement mechanisms for enhancing inter-sectoral collaboration between land management agencies.

- Enhance capacities for the delivery of physical planning services in Carriacou and Petite Martinique.

- Improve collaboration for programme implementation with CSOs through joint programme planning and implementation.

- Develop a mechanism to ensure youth involvement in the Convention.

- Convene an annual Accountability Seminar involving *all stakeholders* in land management to determine progress, needs and challenges experienced in implementing planned interventions that supports the UNCCD.

Outcome 4: Stronger linkages between land degradation, biodiversity and climate change are forged to enhance the impact of planned interventions.

Output 4.1: Programmatic synergies between SLM, biodiversity conservation and climate change adaptation augmented.

Interventions:

- Include NAP priorities into the UNFCCC National Adaptation Program of Action (NAPA) and the National Biodiversity Strategy and Action Plans (NBSAPs).

- Identify proven SLM practices and technologies with potential to increase resilience to adverse climate change impacts and biodiversity loss, and promote adoption and wide-ranging replication, especially among vulnerable groups.

- Build capacity of civil society and local communities to improve integration of biodiversity conservation, SLM, and disaster risk reduction in development programmes and projects.

- Commission a consolidated NCB for the three Rio Conventions to support joint programming.

OPERATIONAL OBJECTIVE 3: SCIENCE, TECHNOLOGY AND KNOWLEDGE

Very limited utilization of the scientific method to quantify key indicators of land health and the relationship to socio-economic factors is undertaken at the national level. In addition, there is a dearth of information on the interactions between land degradation, climate change adaptation, drought mitigation and biodiversity conservation. This Operational Objective advocates for changes that will position Grenada to become a leader on scientific and technical knowledge pertaining to land degradation and drought mitigation and management.

Outcome 5: Knowledge of the biophysical, climatic[23] and socio-economic factors contributing to land degradation and drought mitigation in affected areas is acquired and applied to enable better decision making.

Output 5.1: The scientific basis for documenting and monitoring the biophysical and socioeconomic determinants of land degradation and SLM established.

Interventions:

- Working in partnership with local, regional and international research and technical cooperation institutions, develop and implement the Grenada Land Degradation and Drought Monitoring Network (GLaDDMoN). This medium term priority action should be designed to accomplish the following objectives as outlined below.

    - ✓ Quantify the extent of land degradation in each land use system;
    - ✓ Understand the specific direct and indirect causes, consequences and impacts of land degradation and drought occurrences;
    - ✓ Develop vulnerability and risk maps for land degradation ;
    - ✓ Establish a network of national observatory sites representative of the major ecosystems, for a continuous and in-depth study of key biophysical and socio-economic factors on land health, in particular the impacts of climate change and human activity;
    - ✓ Evaluate the impacts of land degradation and drought on macro-economic indicators and people's livelihood.
    - ✓ Coordinate drought related research to strengthen decision making.

- Deepen engagement with science and technology networks and institutions relevant to land degradation, drought and SLM to support UNCCD implementation.

- Strengthen the national hydrological networks to measure and monitor fresh and coastal water quality and quantity.

- Improve capacity for data and information management, and knowledge sharing systems,[24] for land degradation, SLM and drought mitigation.

- Enhance the technical capabilities of the NCB and NFPs of the Rio Conventions through the provision of an institutional and coordinated scientific back-up programme. This can be done through the establishment of a unified national or regional scientific advisory committee, with the mandate as listed below:

    - ✓ Identify and facilitate access to, and use of relevant local, regional and international knowledge;
    - ✓ Provide support and guidance for informed decision-making;

[23] This parameter is highlighted because of the immense likely adverse impacts of climate change on land resources.

[24] Including traditional knowledge.

- ✓ Facilitate coordination and concerted action amongst the various conventions.

Outcome 6: Measures to mitigate land degradation and drought, and rehabilitate degraded lands are implemented.

Output 6.2: Risks associated with environmental change, human action and natural hazards reduced.

Interventions

- Strengthen capacity for hazard mapping, vulnerability and risk assessments, and link to the development control planning processes.
- Involve community members to prevent and mitigate degradation of land resources through adoption of SLM practices, including use of traditional knowledge, with specific emphasis on the key economic sectors.
- Actively engage key stakeholders to rehabilitate degraded lands using culturally appropriate management practices.
- Identify critical habitats and infrastructure that are vulnerable to climatic and non-climatic shocks, and implement risk reduction measures to protect them.
- Facilitate full implementation of SLM-related policy and other measures from the National Communication on Climate Change and the NBSAP.
- Augment and increase drought early warning systems, and implement drought risk reduction measures, especially in vulnerable communities and sectors.
- Establish an integrated solid waste management system to reduce the negative impacts on limited land resources.

OPERATIONAL OBJECTIVE 4: CAPACITY BUILDING

While significant improvements have been attained in augmenting individual and institutional capacities for SLM, major deficiencies in competencies are evident. This Operational Objectives recommends priorities for curbing existing deficiencies.

Outcome 6: Action plans to develop the necessary capacity at individual and institutional levels as outlined in the National Capacity Self-Assessment and other similar evaluations are implemented.

Output 6.1: Individual and institutional capacities for SLM among public sector agencies, CSOs and resource users developed and strengthened.

Interventions

- Build and enhance capacities of land management professionals, CSOs and resource users in required competencies to foster wise management of terrestrial assets.
- Improve the capacity to manage crown lands.
- Develop human capital within the protected area system at both national and site levels.
- Strengthen capacities for drought mitigation and preparedness.
- Pursue adoption of approaches to recognize SLM champions working in the public sector, CSOs and in the private sector.
- Allocate financing to CSOs through externally funded national projects and other avenues to implement SLM interventions at the community level.
- Augment technological hardware and software to support SLM.

OPERATIONAL OBJECTIVE 5: FINANCING AND TECHNOLOGY TRANSFER

Availability of financing for SLM is a critical limiting factor. This scarcity of financial resources for SLM has resulted in key services and/or interventions such as research, monitoring, evaluation, public awareness and education not been implemented. In addition, while some limited transfer of technology has been provided primarily through technical cooperation agreements and other south-south arrangements, there is no structured system to mobilize technologies from national, bilateral and multilateral sources. This Operational Objective is designed to mobilize and improve the targeting and coordination of national, bilateral and multi-lateral financial and technological resources for NAP implementation.

Outcome 7: Capacities to mobilize substantial, adequate, timely and predictable financial resources enhanced to support domestic initiatives.

Output 7.1: A comprehensive investment framework for SLM elaborated.

Interventions

- Develop and implement an integrated financing strategy for leveraging national, bilateral and multilateral resources. This should include mobilization of financial resources from international financial institutions, facilities and funds, and innovative sources of financing.[25]

[25] Example market based mechanisms, trade, foundations, CSOs, financing mechanism from innovative climate financing, biodiversity conservation and poverty reduction.

Output 7.2: Access to, and use of appropriate technology improved.
Interventions

- Elaborate a plan to facilitate access to and transfer of technology through national, bilateral, regional, south-south, north-south and international collaborative mechanisms.

- Improve transfer of technology to foster the development of alternative livelihood initiatives in areas vulnerable to or affected by land degradation and drought.

4.1.6 Results Framework for the Aligned NAP 2015-2020

The results framework is a component of the monitoring and evaluation process, and serves as a dynamic tool to monitor progress in achievement of the five operational objectives during the period 2015-2020. It also improves the capacity for communication and reporting on the Aligned NAP to all key stakeholders.

Table 4.1.6-1: Results framework for Grenada's Aligned NAP, 2015-2020

Operational objective 1: Advocacy, Awareness Raising and Education				
Outcome 1: Land degradation and drought mitigation, and the synergies with climate change adaptation and biodiversity conservation are effectively communicated among key constituencies at the national and community levels.				
Output	**Expected Results**	**Indicators**	**Target**	
			Baseline (2013)	**2020**
1.1 Populace empowered to develop attitudes and practices consistent with the principles of SLM.	The profile and visibility of the NAP is elevated among the population through improved access to knowledge and information.	Percentage of the population who believed they know the meaning of the term land degradation.	29.4%	70%
		Percentage of the population who believed they know the meaning of the term SLM.	39.7%	50%
		Percentage of the populace reporting good knowledge of land degradation.	10	50%
		Percentage of the populace reporting good knowledge of SLM.	14	50%
		Percentage of populace reporting that SLM is very important to Grenada's development.	33.4%	50%
		Percentage of the population informed about DLDD and/or DLDD synergies with climate change and biodiversity.	50	50%

Output	Expected Results	Indicators	Target	
			Baseline (2013)	2020
Outcome 2: CSOs and the scientific community are increasingly engaged as stakeholders in the Convention processes, and land degradation and drought are addressed in their advocacy, awareness-raising and education initiatives.				
		Number of information events	35	50
		Total estimated participants in these events.	7325	12,000
		Number of mass media articles and/or radio and television programmes about the events.	13	25
		Estimated number of people reached.	35,000	55,000
		Number of CSOs involved in DLDD related programmes/projects.	15	17
		Number of women groups involved in the DLDD related programmes/projects	0	2
		Number of youth groups involved in the DLDD related programmes/projects	1	7
		Number of STIs involved in DLDD related programmes/projects.	7	8
		Number of DLDD initiatives implemented by CSOs in the field of education.	19	30
		Number of DLDD initiatives implemented by STIs in the field of education	13	25
		Number of media houses disseminating information on land degradation and SLM on a pro bono basis at least four times per year.	6	15
		Number of research findings on land management communicated through the mass media or other national or community forum.	1	3
		Number of community groups involved in land conservation and climate change adaptation initiatives.	10	20
2.1 Capacities for advocacy, public awareness and education among CSO and STIs strengthened.	Improved engagement of CSOs and STIs in the Convention Processes, including increased integration of the principles of SLM in their advocacy and education interventions.	Number of CSOs trained in effective advocacy and environmental communication.	3	17
		Number of STIs trained in effective advocacy and environmental communication.	0	8

Output	Expected Results	Indicators	Target	
			2013	2020
Operational Objective 2: Policy Framework				
Outcome 3: Policy, legal and institutional barriers to SLM are assessed and removed through the pursuit of appropriate actions.				
3.1 Comprehensive and integrated policy and legislative framework for SLM developed.	Improved systemic capacity for SLM at the national level.	Number of national and sectoral policies and strategic plans integrating the principles of SLM.	14	18
		Number of Development Orders for LAPs.	0	2
		Number of legislation and/or regulators for SLM.	41	47
3.2 Institutional mechanisms for SLM at all levels improved.	Enhanced governance for SLM.	Number of management committees for TPAs.	0	4
		Number of joint programme planning sessions with CSOs.	0	5
Outcome 4: Stronger linkages between land degradation, biodiversity and climate change are forged to enhance the impact of planned interventions.				
4.1 Programmatic synergies between SLM, biodiversity conservation and climate change adaptation augmented.	Enhanced use of limited human and financial capital in fulfilling the mandates of the three Conventions.	Number of new SLM technologies adopted with potential for climate change adaptation and biodiversity conservation.	4	8
		Number of joint planning/programing initiatives for the three Rio Conventions.	2	5
		Number of operational mechanisms that facilitated joint implementation of the three Rio Conventions.	2	5
Operational Objective 3: Science, Technology and Knowledge				
Outcome 5: Knowledge of the biophysical, climatic and socio-economic factors contributing to land degradation and drought mitigation in affected areas is acquired and applied to enable better decision making.				
Output 5.1: The scientific basis for documenting and monitoring the biophysical and socioeconomic determinants of land degradation and SLM established.	Improved evidence-based information on land degradation and SLM and associated indicators.	Area in the State of Grenada affected by water related land degradation	16,131	10,000
		Number of vulnerability and risks maps for land degradation.	0	3
		National monitoring system for land degradation, drought and SLM.	0	1
		Number of completed research on land degradation, drought and SLM.	1	5
		Number of initiatives to improve the technical capacity of the NCBs and NFPs.	0	5

Outputs	Expected Results	Indicators	Targets	
			2013	2020
Operational Objective 4: Capacity Building				
Outcome 6: Action plans to develop the necessary capacity at individual and institutional levels as outlined in the National Capacity Self-Assessment and other similar evaluations are implemented.				
Output 6.1: Individual and institutional capacities for SLM among public and private sector agencies, CSOs and resource users developed and strengthened.	Enhanced capacities for delivery of SLM services as outlined in the NAP and other documents.	Number of training initiatives for SLM.	4	20
		Number of CSOs trained to integrated SLM, climate change adaptation, biodiversity conservation and DRR in projects and programmes.	0	15
		Number of resource users trained in wise management of land.	175	250
		Number of persons technically[26] trained in DLDD, climate change and biodiversity conservation.	6	15
Output 6.2: Risks associated with environmental change, human action and natural hazards reduced.	Reduced area affected by land degradation in each land use system.	Number of initiatives which involved community groups in preventing and/or mitigating land degradation and drought.	3	20
		Number of sectors with DRM plans that addressed drought	0	2
Operational Objective 5: Financing and Technology Transfer				
Outcome 7: Capacities to mobilize substantial, adequate, timely and predictable financial resources enhanced to support domestic initiatives.				
Output 7.2: Access to, and use of appropriate technology improved.	Greater number of communities benefiting from technology transfer, especially those affected by land degradation and drought.	Number of initiatives to transfer technology in the support of livelihood development.	2	20
		Number of communities benefiting from technology transfer.	2	20

[26] Trained to at least the certificate level.

4.1.6 Implementation Framework

The implementation, monitoring and evaluation plan for the period spanning 2015-2020 is illustrated in Table 4.1.6-1. It outlines doable specific actions linked by strategic priorities to be undertaken and/or coordinated by the MoALFFE and its allied partners **(FS denotes secured funding).**

Table 4.1.6-1: Implementation Plan for the Align NAP 2015-2020

Outputs	Specific Actions	Lead Agency	Collaborating Agency	Budget Estimates US$ & SOF	Timeline/Years					Means of verification
					1	2	3	4	5	
Outcome 1: Land degradation and drought mitigation, and the synergies with climate change adaptation and biodiversity conservation are effectively communicated among key constituencies at the national and community levels.										
Output 1.1: Populace empowered to adopt attitudes and practices consistent with the principles and of SLM.	1.1.1 Implement the 5-year Communication Plan to support NAP operationalization.	NCB	Land management agencies, media, CSOs, STIs, consultants, NFPs UNFCCC & CBD	216,000.00	X	X	X	X	X	Communication materials, participant attendance and evaluation sheets, receipts from media houses for airing materials, CSOs and STIs reports on communication and advocacy activities
	1.1.2 Establish the Drought Public Awareness, Education and Outreach Committee	NaDMA	CSOs and land management agencies	In kind	X					Cabinet Conclusion, attendance sheets, awareness and education plan/reports
	1.1.3 Develop and implement a public awareness campaign on sustainable agriculture practices.	Project Management Team, Ridge to Reef Project	MoALFFE, 4H groups, Farmers, farmers groups and relevant stakeholders	68,000 GEF **FS**		X	X	X	X	Communication materials, reports, participant lists, receipts from media houses, media stories
Outcome 2: Civil society organizations and the scientific community are increasingly involved as stakeholders in the Convention processes, enabling them to include land degradation and drought in their advocacy, awareness-raising and education initiatives										
Output 2.1: Capacities for advocacy, public awareness and education among CSO and STIs strengthened.	2.1.1 Train CSOs and STIs in effective advocacy and environmental communication.	MoALFFE, NCB	Consultant, CANARI, Nature Conservancy	3,000.00			X	X		Attendance sheet, training materials and evaluation report

Outputs	Specific Actions	Lead Agency	Collaborating Agency	Budget Estimates US$ & SOF	Timeline/years					Means of verification
					1	2	3	4	5	
Output 2.1: Capacities for advocacy, public awareness and education among CSO and STIs strengthened (cont'd).	2.1.2 Establish the Grenada Young Enthusiast of Land for Life (GYELL) initiative.	NCB	Land management agencies, CSOs, youth groups, Ministries of Youth and Education, UNCCD Secretariat	5,000.00		X				Articles of incorporation of entity, minutes of meeting, annual workplan and progress reports
	2.1.3 Ongoing advocacy, public awareness and education programming undertaken by CSOs and STIs.	CSOs and STIs	Land management agencies	Undetermined amount	X	X	X	X	X	Media stories, communication materials, stakeholder attendance sheets
OPERATIONAL OBJECTIVE 2: Outcome 3: Policy, legal and institutional barriers to SLM are assessed and removed through the pursuit of appropriate actions.										
Output 3.1: Comprehensive and integrated policy and legislative framework for SLM developed.	3.1.1 Develop procedural guidelines for mainstreaming the Aligned NAP in development planning.	MoALFFE, NCB	Key stakeholders in the public and private sector, STIs, CSOs, UNCCD Secretariat, NFPs UNFCCC & CBD	6,000.00		X				Approved guidelines.
	3.1.2 Integrate the main principles and strategic priorities of the NAP into national and sectoral instruments as necessary.	MoALFFE, NCB	Key stakeholders in the public and private sector, STIs, CSOs, UNCCD Secretariat, NFPs UNFCCC & CBD, Consultant	10,000			X	X	X	Policy and strategic planning documents, Terms of Reference for assignment re mainstreaming, consultants contracts and invoices
	3.1.3 Develop a Land Policy for the State of Grenada	Land Use Division	NCB, land management agencies, CSOs, STIs, land owners and resource users, NFPs UNFCCC & CBD, private sector	22,000 European Union FS		X	X			Approved Land Use Policy
	3.1.4 Submit draft Carriacou Land Policy to Cabinet for approval.	Min of Carriacou and PM Affairs	Cabinet Secretary	In kind	X	X				Approved Land Policy document
	3.1.5 Review and update the NPDP to include emerging issues in environment and development.	PPU	Land management agencies, CSOs, STIs, land owners and users, private sector	20,000.00			X	X		Approved updated NPDP, Contract ual documents for assignment with supporting invoices

Outputs	Specific Actions	Lead Agency	Collaborating Agency	Budget Estimates US$ & SOF	Timeline/years					Means of verification
					1	2	3	4	5	
Output 3.1: Comprehensive and integrated policy and legislative framework for SLM developed (Cont'd)	3.1.7 Elaborate Development Orders (DO) for one LAPs.	PPU	See above	140,000.00				X	X	Approved DOs, stakeholder attendance sheets
	3.1.8 Update the National Forest Policy and Strategic Plan to include a focus on carbon sequestration and other emerging issues.	Department of Forestry, Project Manager, R2R Project	Land management agencies, related NGOs, forest resource users, STIs, general public	48,300.00 GEF **FS**		X	X			Revised Forest Policy and Strategic Plan document, stakeholder attendance sheets
	3.1.9 Develop a Drought Management Policy with supporting legislative instruments.	Drought Early Warning and Information System Committee (DEWISC)	Land management agencies, CSOs, STIs, NAWASA, CIMH, land users	5,000.00 plus in-kind contribution from DEWISC		X	X	X		Policy document and gazette legislation
	3.1.10 Review and finalize the draft Protected Area, Forest and Wildlife with statutory rules and orders.	Department of Forestry, Project Management Team R2R Project	Ministry of Legal Affairs, land management agencies, related NGOs, forest resource users, general public, STIs	41,250.00 GEF **FS**			X	X		Gazette legislation and SROs, stakeholder attendance sheets, consultant contracts and invoices
	3.1.11 Review and finalize the draft Environmental Management Bill.	MoALFFE/ Environmental Department	Ministry of Legal Affairs, land management agencies, CSOs	25,000.00				X	X	Gazette bill, stakeholder participant list, consultant contract and invoices.
	3.1.12: Train at least 25 natural resource managers in enforcement of biodiversity, SLM and SFM regulations.	Project Management Team, R2R Project	MoALFFE, PPU, other public sector agencies	32,700.00				X		Prosecution and Enforcement Manual for SLM, SFM and biodiversity conservation regulations, participant attendance sheet
Output 3.3: Institutional mechanisms for SLM improved.	3.3.1 Establish the Grenada GLA.	Ministry of Finance	Land Use Division, Valuation Division, Deeds and Land Registry, PPU and Lands and Survey	Undetermined amount		X	X			Terms of reference for GLA and job descriptions, minutes of meeting of the GLA, annual workplan

Outputs	Specific Actions	Lead Agency	Collaborating Agency	Budget Estimates/US$	Timeline/years					Means of verification
					1	2	3	4	5	
Outcome 4: Stronger linkages between land degradation, biodiversity and climate change are forged to enhance the impact of planned interventions.										
	3.1.2 Develop and implement a campaign to raise awareness of the Natural and Cultural Heritage Authority.	PPU	MoALFFE, Legal Affairs, CSOs, STIs, the general public	In kind				X		Media stories, awareness plan, participant attendance sheets
	3.1.3 Formally establish the NPAC for TPAs.	Department of Forestry	National Parks Programme - Ministry of Culture, Civil Aviation and Culture, land management agencies, CSOs, STIs	50,000.00			X	X		Terms of reference for NPAC with related job descriptions, minutes of meeting, and annual workplan
	1.2.4 Convene the annual Accountability Seminar to discuss work programme, progress and challenges	NCB	All key stakeholders	4,000.00	X	X	X	X	X	Seminar reports
Output 4.1: Programmatic synergies between SLM, biodiversity conservation and climate change adaptation strengthened.	4.1.1 Establish a consolidated NCB for the three Rio Conventions.	NFPs UNCCD, UNFCCC, CBD	NCB for the UNFFCC and CBD	In kind		X				Terms of reference of consolidated NCB, minutes of meeting, workplan/programme
	4.1.3 Train 40 representatives from CSOs and STIs on best practices to integrate climate change, SLM, biodiversity conservation and DRR in development projects and programmes.	MoALFFE, NCB	CSOs, STIs	5,000.00				X		Training materials,
OPERATIONAL OBJECTIVE 3: Outcome 5: Knowledge of the biophysical and socio-economic factors contributing to land degradation and drought mitigation in affected areas is improved to enable better decision making.										
Output 5.1: The scientific basis for documenting and monitoring the biophysical and socioeconomic drivers of land degradation and SLM established.	5.1.1 Implement the SIDS Adopted LADA Methodology at the local level in at least two sites – Beausejour Watershed and Petite Martinique.	National LADA Team	Communities, land management agencies, STIs and CSOs, GLADDMON	55,000.00			X	X	X	Land degradation and SLM maps, LADA report
	5.1.2 Develop and implement a participatory monitoring system for land degradation and drought – train at least 30 officials	Land Use Division	National LADA TEAM, GLaDDMON, NaDMA, local communities	9,000.00 **Part funded by the GEF through the R2R project**			X	X	X	Approved protocol, training programme and participant lists, minutes of the GLADDMON, monitoring reports

Outputs	Specific Actions	Lead Agency	Collaborating Agencies	Budget Estimates/US$	TimeLine/years					Means of Verification
					1	2	3	4	5	
	5.1.4 Develop a research strategy for land degradation and SLM and the synergies with climate change and biodiversity conservation.	MoALFFE, NCB	Land management agencies, CSOs, STIs, technical cooperation agencies	5,000.00			X	X	X	Approved research strategy, two new research partnerships, 3 research undertakings
	5.1.5 Establish and commission the Drought Research Working Group.	MoALFFE, NaDMA	DEWISC, public and private sector agencies, STIs	In kind		X				Terms of Reference, Cabinet Conclusion, minutes of meeting, work programme
	5.1.7 Train 25 resource managers in the use and application of geographic related practices and technologies in SLM.	Project Management Team, R2R Project	Land management agencies	20,000.00 **FS - GEF through the R2R project**				X		Training manual, participant list, contracts and invoices
	5.1.8 Procure appropriate technologies to set up and/or strengthen GIS systems in the Ministry of Carriacou and Petite Martinique.	MoALFFE	MoCPM	5,000.00			X			Hardware and software, training materials, attendance sheets
	5.1.9 Develop the National Spatial Data Infrastructure (NSDI) Policy and Strategic Plan.	PPU	Public sector agencies, STIs, CSOs	35,000.00			X	X		Approved policy, contracts and invoices
	5.1.11 Establish database of crown land records linked to payment requirements.	Lands and Survey Department	Ministry of Finance	10,000.00			X	X		Hardware and software of system, Department reports
	5.1.13 Commission two Continual Observation Reference System (CORS)	Lands and Survey Department	PPU	Undetermined amount		X	X			System functional database
	5.1.14 Establish and implement a drought monitoring system in Carriacou and Petite Martinique and train 20 persons to administer system.	MoALFFE	MoCPM, CSOs, STI	30,000.00 PPRC			X	X	X	Weather stations, data and information system

Outputs	Specific Actions	Lead Agency	Collaborating Agency	Budget Estimates/US$	TimeLine/years					Means of verification
					1	2	3	4	5	
OPERATIONAL OBJECTIVE 4: Outcome 6: Action plans to develop the necessary capacity at individual, institutional and systemic levels as proposed in the National Capacity Self Assessment and other similar evaluations are implemented.										
Output 6.1: Individual and institutional capacities for SLM and drought mitigation among public sector agencies, CSOs and resource users developed and augmented.	6.4.1 Train at least two officials at the professional level in climatology and hydrology.	MoALFFE	CIMH, World Meteorology Organization, Regional and international universities	60,000.00			X	X	X	Certificates of completion
	6.4.2 Set up at least 4 demonstration sites of good agricultural practices, train 50 extension officers and resources users, 400 farmers and 30 farmer trainers in the Beausejour Watershed.	Ridge to Reef Project Management Unit	Extension Division, MoALFFE, CSOs, farmers	177, 200.00 GEF **FS**		X	X	X	X	Demonstration sites, training material, participant lists
	6.4.3 Implement the sustainable livestock (SL) management activities as set out in Component two of the Ridge to Reef Project in the BW.	Veterinary and Livestock Division	Forestry Department, Land Use and Extension Divisions, NGOs working within the watershed.	75,600.00 GEF **FS**			X	X	X	Report on grazing impacts on carrying capacity, data collection tool to monitor SL practices adopted, protection of 210 Ha of riparian zone, training materials and attendance sheets for 40 livestock farmers, trained in land degradation risk reduction and animal husbandry
	6.4.4. Implement the sustainable forest management activities as outlined in Component two of the Ridge to Reef project (removal of IAS in 40 Ha and re-vegetation of 150 Ha degraded lands, 110 community members and forest officials trained in enrichment planting and NTFP).	Ridge to Reef Project Management Unit	Forestry Department	93,250.00 GEF **FS**		X	X	X	X	Fields planted, project reports, training materials, attendees list

Outputs	Specific Actions	Lead Agency	Collaborating agencies	Budget Estimates/ US$	Timeline/years					Means of verification
					1	2	3	4	5	
	6.4.5 Conduct an inventory of crown lands within the State.	Lands and Survey Department	Land management agencies	20,000.00			X	X		Database of crown lands
	6.4.6 Develop guidelines for transfer of crown lands to private individual and private lands in the hands of the State.	Lands and Survey Department, Ministry of Legal Affairs	Land management agencies, CSOs	20,000.00			X			Approved guidelines, stakeholders participation sheet
Output 6.2: Negative impacts of environmental change, human action and natural hazards prevented and mitigated.	6.2.1 Implement the Mapping Soil Fertility for Durable Agriculture in Grenada.	MoALFFE	Kingdom of Morocco	486,266.00 Kingdom of Morocco **FS**	X	X	X	X	X	Soil fertility maps, training material on soil sampling and GIS, soil fertility information and expert system
	6.2.2 Establish an inter-sectoral committee to manage the Beausejour Watershed and developed catchment management plan.	Project Management Team, R2R Project	CSOs, private and public sector agencies, STIs	42,250.00 GEF **FS**		X	X	X		Terms of reference of committee, minutes, approved catchment management plan
	6.2.3 Implement the pilot land rehabilitation project in Belle Vue South Carriacou.	MoCPM	Land Use Division, CSOs, PISLM	175,000.00		X	X	X	X	Field based changes, project reports
	6.2.2 Develop a standardize gender sensitive methodology for multi- hazard mapping and vulnerability and risk assessments (VRAs).	Ministry with responsibility for works, Community development	University of Twente, World Bank, Caribbean Development Bank (CDB), public sector agencies, and CSOs			X	X			Approved methodology, VRAs
	6.2.3 Train national stakeholders in the techniques and application of multi hazard mapping and VRAs.	Ministry of Works	World Bank, British Geological Survey, public sector agencies, CSOs and The Nature Conservancy				X	X		Training material, participants trained
	6.2.6 Conduct an assessment to determine options for a sustainable debushing programme.	Ministry of Works	Land management agencies, CSOs	1,000.00			X	X		Reports outlining options

Outputs	Specific Actions	Lead Agency	Collaborating Agencies	Budget Estimates/US$	Timeline/Years					Means of Verification
					1	2	3	4	5	
Output 6.2: Negative impacts of environmental change, human action and natural hazards prevented and mitigated (Cont'd).	6.2.7 Implement the desalination plants project.	NAWASA	Ministry of Carriacou and Petite Martinique	2.2 million EU, Caribbean Community Climate change Center **FS**			X	X	X	Two solar powered desalination plant, project reports, number of communities served
	6.2.8 Restore the coastal area in Madam Pierre in Petite Martinique	Petite Martinique Organization	MoCPM, MoLFFE, land owners and resource users	50,000 UNDP ICCAS **FS**	X	X	X	X		Specified acreage of coastline re-vegetated
	6.2.9 Implement the mangrove restoration project in Petite Martinique.	GIZ	Petite Martinique Fishermen Cooperative	Amount not yet determined GIZ **FS**		X				Area of mangrove rehabilitated, project reports
	6.2.9 Train at least 60 forest rangers, farmers and community members on forest fire management, and procure five fire-fighter extinguisher backpacks with accessories.	Project Management Team, R2R Project	Forestry Department	10,700.00 GEF **FS**				X	X	Training materials, attendance sheets, fire-fighting equipment
	6.2.10 Implement the rainwater harvesting project in Northern Grenada.	Land Use Division	CSOs and target communities	US$ 600,000 **FS**		X	X	X		Rainwater cisterns with capacity of 4000 m^3, increased storage capacity for irrigation water, renewable energy technology in small farm irrigation, training materials
	6.2.11 Implement the Grenada Integrated watershed rehabilitation and coastal area management for climate change adaptation and environmental conservation project.	Land Use Division	Land management agencies, CSOs and target communities	250,000.00		X	X	X	X	20 acres of degraded forests in two watershed rehabilitated, project reports, communities perspectives of project benefits
	Implement CSOs intervention to improve land management.	People in Action, GRENCODA, GFC, ART, and other CSOs	CSOs, MoALFFE, STIs	Undetermined amount	X	X	X	X	X	Training materials, communities perspectives of interventions, field based improvements

Outputs	Specific Actions	Lead Agency	Collaborating Agencies	Budget Estimates/US$	Timeline/years					Means of Verification
					1	2	3	4	5	
OPERATIONAL OBJECTIVE 5: Outcome 7: Capacities to mobilize substantial, adequate, timely and predictable financial resources to support domestic initiatives to reverse and prevent land degradation and mitigate the effects of drought enhanced.										
Output 7.1: A comprehensive investment framework for SLM developed and implemented.	7.1.1 Develop the integrated financing strategy for SLM.	MoALFFE, NCB	Ministry of Finance, Land Management Agencies, CSOs, STIs, private sector, NFPs – UNFCCC and CBD	50,000.00		X				Approved strategy
	7.1.2 Implement the apiculture interventions under Component One of the Ridge to Reef project targeting farmers.	Project Management Team, R2R Project	St. George's University East Caribbean Bee Research and Extension Center, Grenada Association of Beekeepers	46,500.00 GEF **FS**			X	X	X	250 improved beehives sold to 50 farmers, training material on beekeeping
	7.1.3 Implement the product development/value added component of Component Two of the Ridge to Reef Project.	Project Management Team, R2R Project	Grenada Bureau of Standards, MAREP, IICA, MNIB, North East Farmers Organization (NEFO)	40,950.00 GEF **FS**			X	X	X	At least two products developed for exports, equipment and labeling, training material, participant sheets, marketing plan

4.1.6.1 Implementation Strategy

The MoALFFE will be the lead coordinating agency for implementing the Aligned NAP. Direct oversight and monitoring of the implementation process will be the responsibility of the NCB. Subsequent to the establishment of the consolidated NCB, chairmanship will be alternated annually among the focal points of each of the three Rio Conventions. Effective engagement of government ministries, CSOs and STIs in the implementation process is critical. A joint Accountability Seminar incorporating all key stakeholders involved in land management will be convened annually to monitor progress in NAP implementation, and to provide a forum for discussing planned and current interventions relating to the UNCCD. The NCB will facilitate the submission of biannual reports to the COP. Similarly, annual reports regarding implementation of the NAP will be delivered to policy makers and senior administrators in the MoALFFE.

4.1.7 **Conclusion and Next Steps**

1. Submit the Aligned NAP to Cabinet for official endorsement
2. Finalize the aligned NAP based on feedback from Cabinet
3. Prepare, print and circulate final aligned NAP to Stakeholders
4. Officially launch the aligned NAP
5. Commence implementation of the five year plan
6. Use the project concepts as presented in Appendix three to develop full financeable proposals
7. Guided by the Results Framework, evaluate progress of attaining the five operational objectives as outlined in the NAP.

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Appendix 1: Members of the UNCCD NCB

Name	Representing Organization	Interest Served
Judy Williams	Grenada Community Development Organization (GRENCODA)	NGO
Simeon Granger	National Disaster Management Agency (NADMA)	Public sector
Daniel Lalgie	Physical Planning Unit, Ministry of Works	Public sector
Acarlijuan Fleary	Ministry of Carriacou & Petite Martinique	Public sector
Augustus Thomas	Former UNCCD National Focal Point	Private sector
Wayne Hazzard	St. David's Organization for Development	NGO
Trevor Thompson	Land Use Division, Ministry of Agriculture	Public sector
Hyacinth Shervin	Grenada National Organization for Women (GNOW)	NGO
Michael Mason	Land Use Division, Ministry of Agriculture	Public sector
Gordon Patterson	Forestry Department Ministry of Agriculture	Public sector
J. Lorice Pascal	GNOW	NGO
Dianne Roberts	Roberts Caribbean Ltd	Private sector
Anthony Roberts	National Water and Sewerage Authority (NAWASA)	Public sector
Venance Msacky	Lands & Surveys Department, Ministry of Agriculture	Public sector
Dr. Malachy Dottin	Research Director, Ministry of Agriculture	Public sector
Raymond Baptiste	Chairman & UNCCD National Focal Point Land Use Division	Public sector
Claudette Pitt	St. Patrick's Environmental & Community Tourism Organization (SPECTO)	NGO
John Auguste	Energy Department, Ministry of Finance	Public sector
Sandra Ferguson	Agency for Rural Transformation	NGO
Derek Charles	Director - Inter-American Institute for Cooperation on Agriculture	Technical Cooperation Agency
Martina Duncan	*UNFCCC Focal Point* Environment Unit, Ministry of Agriculture	Focal Point, Sister Rio Convention
Aria Johnson-St. Louis	CBD Focal Point Environment Unit, Ministry of Agriculture	Focal Point, Sister Rio Convention
Sherry-Ann Noel	Grenada Media Workers Association	Private sector

Appendix 2: Persons consulted for NAP development

Name	Position	Representing Organization
Judy Williams	Executive Director	Grenada Community Development Organization (GRENCODA)
Simeon Granger	Community Programme Officer	National Disaster Management Agency (NADMA)
Daniel Lalgie	Senior Building Inspector at	Physical Planning Unit, Ministry of Works
Acarlijuan Fleary	Forestor II	Ministry of Carriacou & Petite Martinique
Augustus Thomas	Former UNCCD National Focal Point	Private sector
Wayne Hazzard		St. David's Organization for Development
Trevor Thompson	Land Use Officer	Land Use Division, Ministry of Agriculture
Hyacinth Skervin	CDB Country Gender Assessment Research Assistant	Grenada National Organization for Women (GNOW)
J. Lorice Pascal	Project Manager	Grenada National Organization of Women (GNOW)
Michael Mason	Land Use Officer	Land Use Division, Ministry of Agriculture
Gordon Patterson	Senior Forestry Officer & Head of the Watershed Management Unit	Forestry Department Ministry of Agriculture
Anthony Roberts	Land Surveyor Supervisor	NAWASA
Fabian Purcell	Unit Head	PPU
Dr. Malachy Dottin	Director, Research	MoALFFE
Raymond Baptiste	Chairman & UNCCD National Focal Point Land Use Division	MoALFFE
Claudette Pitt	Member	St. Patrick's Environmental & Community Tourism Organization (SPECTO)
John Auguste	Senior *Energy* Officer	Energy Department, Ministry of Finance
Sandra Ferguson	Director	Agency for Rural Transformation
Derek Charles	National Specialist	Inter-American Institute for Cooperation on Agriculture
Venance Msacky	Director	Lands and Surveys Department, MoALFFE
Aden Forteau	Chief Forestry Officer	Department of Forestry, MoALFFE
Albert Fortune	Personal Assistant to the Minister	Ministry of Carriacou and Petite Martinique Affairs
Dexter Miller	Executive Officer	Ministry of Carriacou and Petite Martinique Affairs
Edwin Duncan	District Agriculture Officer	Ministry of Carriacou and Petite Martinique Affairs
Franklyn Scott	Facility Manager for Multipurpose Center	Ministry of Carriacou and Petite Martinique Affairs
Davon Baker	Chairman/Board Chair	Sandy Island Oyster Bed MPA
Felix Mendes	Cultural Officers	Division of Culture, Ministry of Carriacou and Petite Martinique Affairs
Jermonne Adams	Assistant Publication Relation Officer	Ministry of Carriacou and Petite Martinique Affairs
John Gabriel	Land owner	Carriacou

Name	Position	Representing Organization
Kazar Lawrence	Farmer	Ministry of Carriacou and Petite Martinique Affairs
Lisa Walker	Veterinary Field Assistant	Petite Martinique
Rodney Noel	General Contractor	R P Noel Construction
Samuel Tyson	Farmer	Carriacou
Shenelle George	Planning Officer	Ministry of Carriacou and Petite Martinique Affairs
William Guadeloupe	Senior Health Officer	Environmental Health, Ministry of Carriacou and Petite Martinique Affairs
Kesroy DeRocheau	Sports Officer	Ministry of Carriacou and Petite Martinique Affairs

Appendix 3: Proposed Project Concepts

Project 1: In Response to Operational Objective 1

Proposed initiative	Development of a Draft National Land Policy for the State of Grenada
Location (s) of initiative:	Grenada
Total duration of initiative (months)	8 months
Cost of initiative (US$)	22,000
Objectives of the initiative	▪ To guide the rational and wise use of land in Grenada.
Lead Agency	Land Use Division and the NCB, UNCCD
Collaborating Agencies	All land management agencies, CSOs, STIs
Main activities	▪ Review and assess the current housing policies and schemes ▪ Review the land taxation system ▪ Formulation of zoning guidelines and plans ▪ Establishment and management of conservation areas ▪ Rationalize the institutional arrangements for land management and administration, through inter alia, establishing a land authority within the Ministry of Agriculture.
Targets	▪ Policy completed by end of Year 2.

Project 1: In Response to Operational Objective 2

Proposed initiative	Grenada Integrated Watershed Rehabilitation and Coastal Area Management for Climate Change Adaptation and Environmental Conservation.
Location (s) of initiative:	Grenada
Total duration of initiative (months)	24 months
Cost of initiative (US$)	93,000.00
Objectives of the initiative	Rehabilitation of two degraded watersheds for climate change adaptation and increase coastal ecosystem resilience.
Lead Agency	Forestry Department
Collaborating Agencies	All land management agencies, CSOs
Main activities	▪ Rehabilitation of degraded slopes; ▪ Rehabilitation of nursery; ▪ Implementation of contour drains; ▪ Stream bank protection through vegetative cover; ▪ Installation of hydro-met equipment for data collection and management;
Targets	▪

Project 3: In Response to Operational Objective 3

Proposed initiative	Implementation of a pilot land rehabilitation intervention in Belle Vue South, Carriacou.
Location (s) of initiative:	Carriacou
Total duration of initiative (months)	12 months
Cost of initiative (US$)	175,000.00
Objectives of the initiative	▪ To rehabilitate extremely degraded lands in Belle Vue South, Carriacou. ▪ To strengthen capacities for restoration and rehabilitation of land resources.*
Lead Agency	Ministry of Carriacou and Petite Martinique Affairs
Collaborating Agencies	Land Use Division, Forestry Department, CSOs
Main activities	
Targets	▪ At least 5 acres of land rehabilitated by end of year 4.

Project 4: In Response to Operational Objective 2

Proposed initiative	**Elaboration of Development Orders for LAP, Grenada.**
Location (s) of initiative:	Grenada
Total duration of initiative (months)	24 months
Cost of initiative (US$)	140,000.00
Objectives of the initiative	▪ To develop Development Orders or zoning rules and guidelines to govern implementation of the LAPs.
Lead Agency	PPU
Collaborating Agencies	All land management agencies, CSOs, STIs
Main activities	▪ Review relevant secondary literature' ▪ Conduct a series of community based consultations targeting all persons with interest in land within the targeted local area; ▪ Prepare draft Development Orders; ▪ Host technical working group sessions and follow up community consultations to discuss and finalize Development Orders; ▪ Draft final Development Orders.
Targets	At least 18 community based consultations, five technical working group sessions and one information dissemination seminar conducted. Pilot Development Orders approved by end of Year 5.

Project 5: In Response to Operational Objective 5

Proposed initiative	Development of a national Integrated Investment Framework for SLM.
Location (s) of initiative:	Grenada
Total duration of initiative (months)	8 months
Cost of initiative (US$)	35,000
Objectives of the initiative	▪ To foster adequate, predictable and sustainable financing for SLM, including national, external and innovative for implementation of the aligned NAP.
Lead Agency	Land Use Division
Collaborating Agencies	NCB – UNCCD; all land management agencies, MoF, CSOs, STIs
Main activities	▪ Examine the environment for SLM financing, including assessing the current UNCCD financing situation and the limiting factors; ▪ Develop and promote the coordination of arrangements among different potential financing sources (internal, external, public and private), financial instruments and mechanisms; ▪ Design enabling measures to support the process of change, particularly in relation to policy and legislative frameworks, stakeholders' capacity, governance mechanisms, coordination and organizational matters.
Targets	National IFS for SLM completed and approved by end of year 2.