



# GEF-6 PROJECT IDENTIFICATION FORM (PIF)

PROJECT TYPE: FULL-SIZED PROJECT  
TYPE OF TRUST FUND: GEF TRUST FUND

## PART I: PROJECT IDENTIFICATION

Project Title:	Climate Resilient Agriculture for Integrated Landscape Management		
Country(ies):	Grenada	GEF Project ID: <sup>1</sup>	9577
GEF Agency(ies):	UNDP	GEF Agency Project ID:	4970
Other Executing Partner(s):	Ministry of Agriculture, Lands, Forestry, Fisheries and Environment	Submission Date:	4 January 2017
GEF Focal Area(s):	Multi Focal Areas	Project Duration (Months)	48
Integrated Approach Pilot	IAP-Cities <input type="checkbox"/> IAP-Commodities <input type="checkbox"/> IAP-Food Security <input type="checkbox"/>		Corporate Program: SGP <input type="checkbox"/>
Name of parent program:	NA	Agency Fee (\$)	347,679

### A. INDICATIVE FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES

Objectives/Programs (Focal Areas, Integrated Approach Pilot, Corporate Programs)	Trust Fund	(in \$)	
		GEF Project Financing	Co-financing
LD-1 Program 2	GEF TF	2,075,910	8,713,000
LD-3 Program 4	GEF TF	634,438	2,980,000
BD-4 Program 9	GEF TF	804,295	1,707,000
BD-2 Program 4	GEF TF	145,132	293,000
<b>Total Project Cost</b>		<b>3,659,775</b>	<b>13,693,000</b>

### B. INDICATIVE PROJECT DESCRIPTION

**Project Objective: To operationalize integrated agroecosystem management through mainstreaming biodiversity conservation in the production landscape and increasing resilience of agricultural system**

Project Component	Type	Project Outcomes	Project Outputs	Trust Fund	(in \$)	
					GEF Project Financing	Co-financing
1. Systemic and institutional capacity for integrated landscape management at national level.	TA	<p>Improved systemic and institutional capacity for landscape management for biodiversity conservation, indicated by mainstreaming of biodiversity conservation in land use planning and management practices, and in the agricultural sector policies and legislation.</p> <p><i>Indicator: GEF BD tracking tools.</i></p> <p>Strengthened systemic and institutional capacity for promoting SLM evidenced by: (i) strengthened cross-sectoral collaboration for land use planning and management; (ii) operationalization of five</p>	<p><b>1.1 Information management database and monitoring system established and operationalized within a land use planning process</b>, with comprehensive land use survey to support land use planning, baseline terrestrial biological/ecological assessment, assessment of existing of key biodiversity areas (KBAs), and a profile of water sources. A central spatial biodiversity, ecosystem and land use database developed including a Land Use and Biodiversity Monitoring and Tracking Tool, with monitoring programmes developed and initiated.</p> <p><b>1.2 Regulatory, coordination and planning framework strengthened</b>, integrating Sustainable Land Management (SLM), Climate Smart Agriculture (CSA) and biodiversity conservation with improved management of Grenada's 7 KBAs and threatened species of national and global significance (i.e. 2 single island endemics).</p> <p><b>1.3 Biodiversity conservation and land use management capacities improved</b> through training of personnel from the Forestry and National Parks Department, Land Use Division,</p>	GEF TF	820,407  LD-3: 375,512  BD-4: 444,895	2,477,781

<sup>1</sup> Project ID number will be assigned by GEFSEC and to be entered by Agency in subsequent document submissions.

		integrated watershed management plans; and (iii) institutionalized training system for integrated natural resource management.  <i>Baseline and target will be confirmed during the PPG.</i>	Ministry of Carriacou and Petit Martinique in biodiversity conservation and land use management based on needs assessment. Training in biodiversity conservation and SLM skills will be institutionalized within the priority list of the Ministry of Education.			
2. National capacity to provide financial, technical, and information services for CSA production.	TA INV	Increased financing for supporting SLM and CSA by 20% from the baseline amount, (subject to further analysis in PPG phase).  National level capacities enhanced for CSA production, indicated by: (i) increased land area under climate-smart agriculture practice, (ii) increased number of beneficiaries (gender disaggregated) accessing climate resilient crop varieties; and (iii) improved climate risk management system.  <i>Baseline and target will be confirmed during the PPG.</i>	<b>2.1 Financial support systems for incentivizing CSA, SLM and conservation oriented agriculture practices are strengthened / established / operationalized.</b> This could include microcredit schemes and related certification of agriculture products with CSA criteria integrated.  <b>2.2 Soil and water quality monitoring and advisory programme enhanced.</b> National capacity to implement an upgraded soil and water sampling and testing programme, with information dissemination to support planning and monitoring of CSA and SLM activities  <b>2.3 National supply of climate resilient crop varieties enhanced through 5 upgraded and climate-proofed government propagation centers</b> (4 in Grenada agricultural districts and 1 in Carriacou), combined with support to farmers field school network with extension officers trained.	GEF TF	538,521  LD-1: 363,104  LD-3: 175,417	2,869,009
3. Operationalisation of resilient agricultural practices	TA INV	Land area covering 2,720 ha are managed under sustainable land management supporting CSA, evidenced by: reduced threats to ecosystem functions, such as reduction in encroachment and 15% reduction in sediment and fertilizer / pesticide levels); reduced level of soil erosion in steep and upland areas; and increased household income level with beneficiaries disaggregated by gender  Biodiversity conservation mainstreamed in management of landscapes covering 960 ha, indicated by: (i) active management of riparian and gazette and management of dry forest conservation areas; (ii) reduction of IAS threats to biodiversity in dry forest areas; and (iii) stable or improved population and	<b>3.1 Climate smart agricultural and SLM practices implemented in St David, St Andrew and St Patrick parishes (2,400 ha).</b> This will include: (i) restoration of higher and mid-belt native forest and agroforestry areas degraded by extreme weather events; (ii) adaptive livestock management (e.g. through high protein plants used for fencing and fodder); (iii) adaptive agriculture practices for short crops and dry forest conservation in coastal areas. Demonstrations include 3 protective structures (including shade houses) for adaptive crop production located in different climatic zones, serving as national learning centers/model farms applying variety of crops and cultivation techniques, as well as demonstrating suitable business models for replication.  <b>Output 3.2 Biodiversity conservation expanded and integrated with climate smart agriculture and SLM measures in La Sagesse Watershed, Great River Watershed and Levera/Levera Pond/St Patrick Watershed</b> in: (i) upland watershed areas buffering Grand Etang NP and Mt St Catherine's (proposed) NP, (ii) lowland to upland riparian zone, and (iii) lowland dry forest areas (i.e. establishment of 2 tropical dry forest coastal sites as national parks). Landscape level threats to biodiversity reduced through IAS/disease control: i) Batrachochytrium (Chytrid fungus) in high mountain strata, ii) bamboo removal in the mid-level strata, and iii) control of Herpestes auropunctatus (small Indian Mongoose)	GEF TF	1,865,707  LD-1: 1,459,675  BD-4: 260,900  BD-2: 145,132	6,781,295

		<p>distribution of Grenada Dove.</p> <p><i>Baseline and target will be confirmed during the PPG.</i></p>	<p>in Grenada's coastal dry forest ecosystem encompassing 5 KBAs, with native and endangered biodiversity impacted (i.e. CR Grenada Dove).</p> <p><b>3.3 Climate smart agriculture and rangeland management system in Carriacou and Petit Martinique</b> demonstrated through operationalization of an upgraded propagation center (including climate resilient varieties) in Carriacou and establishment of 2 protective structures in Carriacou and Petit Martinique.</p> <p><b>3.4 Small businesses supported for agroprocessing and agrotourism</b>, processing CSA crops and supporting sustainable rural livelihoods and education on CSA-SLM practices (including women, men and youth). At least 8 agroprocessing and 2 agrotourism businesses will be supported with technical assistance in production, labeling and marketing of climate smart agricultural products.</p>				
4. Knowledge management for SLM, CSA and biodiversity conservation.	TA	<p>Knowledge and experiences captured, shared and encourage widespread adoption of CSA, SLM and biodiversity conservation practices.</p> <p>Monitoring and evaluation of project implementation, outcomes and outputs ensures project effectively reaches outlined goals and objectives.</p> <p><i>Baseline and target will be confirmed during the PPG.</i></p>	<p><b>4.1 Technical knowledge captured, experiences and lessons learned disseminated</b> via technical and training reports / manuals / guides, lessons learned notes, based on experience codified (CSA, SLM, biodiversity assessment, land use mapping, other), and incorporated in institutional strengthening and capacity building initiatives, for continued institutional and private sector learning and activity implementation.</p> <p><b>4.2. Media products promote outreach and increased public awareness / environmental education of SLM, CSA and biodiversity conservation</b>, disseminated through videos, photo essays, fact sheets, web platform, television, exchange site visits by communities and producers involved, also dissemination at regional events.</p> <p><b>4.3. Monitoring and evaluation</b> of project implementation conducted, including through periodic field visits, tracking tool assessments, mid-term and final evaluations of project.</p>	GEF TF	260,865  BD-4: 53,289  LD-1: 154,278  LD-3: 53,298	912,867	
Sub-Total						3,485,500	13,040,952
Project Management Cost (BD: \$45,211; LD: \$129,064)						174,275	652,048
<b>Total Project Costs</b>						<b>3,659,775</b>	<b>13,693,000</b>

### C. INDICATIVE SOURCES OF CO-FINANCING FOR THE PROJECT BY NAME AND BY TYPE, IF AVAILABLE

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount (\$)
Recipient Government	Ministry of Finance	Grant	5,230,000
Recipient Government	Ministry of Agriculture, Lands, Forestry, Fisheries and the Environment– Forestry & National Parks Department	Grant	850,000
Recipient Government	Ministry of Agriculture, Lands, Forestry, Fisheries and the Environment – Fisheries Division	Grant	1,600,000
Recipient Government	Ministry of Finance	Grant	2,500,000
Recipient Government	NAWASA	Grant	2,500,000
Recipient Government	Ministry of Agriculture, Lands, Forestry, Fisheries and the Environment	In-kind	613,000
GEF Agency	UNDP	Grant	400,000
Total Co-financing			13,693,000

### D. INDICATIVE TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES) AND THE PROGRAMMING OF FUNDS <sup>a)</sup>

GEF	Trust	Country/	Focal Area	Programming	(in \$)
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Agency	Fund	Regional/ Global		of Funds	GEF Project Financing (a)	Agency Fee (b) <sup>b)</sup>	Total (c)=a+b
UNDP	GEFTF	Grenada	Biodiversity	n/a	949,427	90,196	1,039,622
UNDP	GEFTF	Grenada	Land Degradation	n/a	2,710,348	257,483	2,967,831
<b>Total GEF Resources</b>					<b>3,659,775</b>	<b>347,679</b>	<b>4,007,454</b>

#### E. PROJECT PREPARATION GRANT (PPG)

Is Project Preparation Grant requested? Yes  No  If no, skip item E.

#### PPG AMOUNT REQUESTED BY AGENCY(IES), TRUST FUND, COUNTRY(IES) AND THE PROGRAMMING OF FUNDS

Project Preparation Grant amount requested: \$ 130,000 PPG Agency Fee: 12,350							
GEF Agency	Trust Fund	Country/ Regional/Global	Focal Area	Programming of Funds	(in \$)		
					PPG (a)	Agency Fee (b)	Total c = a + b
UNDP	GEF TF	Grenada	Biodiversity	n/a	26,132	2,483	28,615
UNDP	GEFTF	Grenada	Land Degradation	n/a	103,868	9,867	113,735
<b>Total PPG Amount</b>					<b>130,000</b>	<b>12,350</b>	<b>142,350</b>

#### F. PROJECT'S TARGET CONTRIBUTIONS TO GLOBAL ENVIRONMENTAL BENEFITS

Corporate Results	Replenishment Targets	Project Targets
1. Maintain globally significant biodiversity and the ecosystem goods and services that it provides to society	Improved management of landscapes and seascapes covering 300 million hectares	1,389 Hectare <sup>2</sup>
2. Sustainable land management in production systems (agriculture, rangelands, and forest landscapes)	120 million hectares under sustainable land management	3,135 Hectares <sup>3</sup>

### PART II: PROJECT JUSTIFICATION

#### 1. PROJECT DESCRIPTION

##### 1) Global environmental and/or adaptation problems, root causes and barriers that need to be addressed:

##### Country Overview and Context:

The tri-island State of Grenada, Carriacou and Petite Martinique, is located at the southern end of the Lesser Antillean islands and has a total area 34,000 ha. The largest island, Grenada has an area of 31,200 ha with a population of approx. 104,000. Most of the island's population is concentrated on the lower slopes along the coastline. The land is volcanic in origin with a mountainous topography, with 71 watersheds originating from the single north-south ridge in the island's center. Within a distance of 5 km, it ranges in elevation from sea level to 840m with a 120 km coastline.

**Biodiversity.** Grenada's forest ecosystems consist of elfin woodland, montane forest, and seasonal evergreen forest (rainforest) that descend to montane rain forests, then to lowland tropical dry forests and finally to mangroves. Grenada's terrestrial biodiversity includes over 450 species of plants, 150 species of birds, 4 native mammals, 4 amphibians, 8 reptiles, 5 snakes, 11 bats, 17 freshwater fish. Grenada's endemic biodiversity includes two species of plants, the Grand Etang Fern (*Danaea sp.*) and the Cabbage Palm (*Oxeodoxaoleracea*) and one tree species (*Maythenus grenadensis*). The tropical dry forest ecosystem, one of the most globally threatened forest types, contains the single island endemic critically endangered Grenada Dove (*Leptotila wellsi*) and the endangered subspecies - Grenada Hook-billed Kite (*Chondrohierax uncinatus mirus*). The endangered endemic Grenada Frog, *Pristimantis euphonides*, is found in Grenada's upper mountain forests. Grenada is also home to four bird species endemic to the Lesser Antilles -- the Grenada flycatcher (*Myiarchus nugatory*), the Scaly-breasted thrasher (*Margarops fuscus*), the Lesser Antillean bullfinch (*Loxigilla noctis*), and the Lesser Tanager (*Tangara cucullata*). Grenada also harbors several species that are endemic to the Grenada Bank (Grenada to the Grenadine Islands to St Vincent): Grenada Tree boa (*Corallus grenadensis*), Grenada Tree Anole (*Anolis richardii*), Grenada Bush Anole (*Anolis aeneus*), the

<sup>2</sup> Total dry forest and riparian zone. Total dry forest in project watersheds ~ 1040 ha (1/3 of all dry forests) comprised of; i) Levera NP ~ 123 ha, ii) La Sagesse ~ 160 ha, iii) 340 ha dry forest area around La Sagesse that is potential *Leptotila wellsi* habitat, and d) dry forest in 5 KBAs ~ 420 ha. Riparian zone in project watersheds ~ 349 ha.

<sup>3</sup> Great river watershed (4574 \*30% = 1372.2ha), La Sagesse watershed (692 \*100% = 692ha), St Patrick watershed (1253 \*50% = 626.5ha), Levera Pond watershed (382\*100% =382ha), Levera watershed (62\*100% = 62ha). Total = 3134.7

Burrowing snake (*Typhlopsta symicris*), and Windward Clelia “Cribo” (*Clelia Clelia*), perhaps to be extant on Grenada. Four species of turtles nesting on Grenada; Hawksbill, Green, Leatherback and Loggerhead. Reported extinctions include the Manatee (*TrichechusManatus*), the Grenada parrot (*Amazona sp.*), the Agouti (*Dasyproctaalbida*), Neuweid’s Moon Snake (*PseudobaNeuweidi*) Shaw’s Racer (*Liophis melanotus*) and the Morocoy Tortoise (*Geochelonecarbonaria*) and possibly the Windward Clelia “Cribo” (*Clelia Clelia*). The Mona monkey, mongoose, rat and green parrot, have been introduced by man over the last few centuries, often resulting in negative impacts on the native fauna.

**Socioeconomic Context.** Grenada has had a relatively diversified economic structure, based on the contributions of agriculture, manufacturing, tourism, construction, communications, transportation and government. Real growth, which averaged -1.3 percent over the period 2008-2012, grew in 2013 and 2014, and is projected at 2.8% in 2016, 2.1% in 2017 and 3.2% in 2018. Continued strong performances in agriculture and tourism are the main drivers of this growth. According to the 2008 Country Poverty Assessment (CPA), 37% of the population is living below the poverty line, with an estimated 2.4% being considered as indigent, though with good social indicators reported (including low levels of maternal and infant mortality, universal primary education, low fertility and increasing life expectancy). Almost half the households in Grenada (47%) are female-headed of which more than 20% in the rural areas are poor as compared to 13% of male-headed households. For the urban households 44% of female heads live in the bottom 3 quintiles as opposed to 18.6% for the males, and over half the female heads (56%) are unemployed compared with the male heads (25%). Though most farmers are males with gap increasing from 66% in 1995 to 71% in 2012, women play a predominant role in the post-production agroprocessing sector.

**Agriculture.** Agriculture is one of the main drivers of economic growth in Grenada and is fueled primarily by the production and export of cocoa, nutmeg, fisheries, fruits and vegetables. The sector contributed between 5% and 7% to GDP over the 5-year period 2007-2011 and provides employment for about 10% of the labour force. Overall growth in agriculture has a projected expansion of 13.5% in 2016. Most agricultural activities are carried out in rural communities where the highest levels of poverty occur. It has been demonstrated that development in the sector has the greatest impact on the livelihoods in rural communities. However, agricultural acreage and number of farmers are decreasing, with acreage having declined 22% between 1995 and 2012, or 1.3% per annum. The largest decline is in number of farms larger than 25 acres (48%) and farms under 0.5 acres (38%), though the average farm size remained relatively unchanged. Grenada’s market share declined significantly after hurricanes Ivan (2004) and Emily (2005) and has shown little signs of recovery. Hurricane Ivan damaged or destroyed 90% of Grenada’s 555,000 nutmeg trees, and is currently only 36% of pre-Ivan levels. Prior to the hurricanes in 2004 and 2005 Grenada was the second largest producer and exporter of nutmegs in the world, with post Ivan exports declining to 1/5 (500 tons) of pre-Ivan levels. The cocoa industry declined by 70%, now only 40% pre-Ivan production levels. In spite of these changes, the north-east corridor (St. Andrew and St Patrick parishes along the east coast) have the largest flattest land areas in Grenada and remains the largest agricultural production area on the island.

**Water.** Grenada is among the island states already considered to be water stressed. Seasonality and variability in rainfall can cause up to a 40% reduction in available water resources during the dry season. Agriculture and tourism, two major water users, are significant economic activities in Grenada. Grenada’s water resources are comprised primarily of surface water, with a groundwater potential to satisfy about 10-15% of the present potable requirement. Grenada’s National Water and Sewerage authority (NAWASA) exploits 23 surface and 6 groundwater potable supply sources on mainland Grenada. NAWASA reports significant decrease in water in catchment areas since Hurricane Ivan in 2004. Rainfall totals and patterns follow closely topography, with highest rainfall in upland areas (3,750 - 5,000 mm) and lowest in coastal areas (990 - 1,500 mm, 2009). The north-eastern and southern parts of the island receive the lowest rainfall and have the longest dry periods. Carriacou and Petit Martinique are significantly drier than the mainland where the average annual rainfall is about 1,000 mm. Some communities particularly in the south of Grenada rely heavily on rainwater harvesting and storage to augment supplies during shortfalls mainly during the dry season. Of the 71 watersheds, four of the largest are located in northern Grenada and are a source for the rain fed rivers and streams. St. Andrew parish has the second most number of water sources and also has the second highest population, with the Great River watershed the origin of the highest number of rivers and located in the high rain zone and portions of the Mt St Catherine (proposed Forest Reserve under the GoG/GEF 5 Ridge to Reef Project). This zone has impervious geology, less infiltration and more surface runoff. In northern Grenada, including St Patrick parish, fresh water is obtained from surface waters (rivers and springs), two natural lakes and rainwater harvesting. The continued importance of this source of water supply is manifested during severe dry seasons and in the aftermath of hurricanes and tropical storm-induced disasters, as well as, pollution and illegal farming. In contrast, Carriacou and Petite Martinique domestic water comes exclusively from rainwater catchments, with water for livestock supplied from groundwater until the recent installation of 2 desalination plants that, at lower than full capacity, supply the 2 islands’ water needs. The absence of reliable water flows is a major constraint to farming in Carriacou and Petit Martinique and in south western watersheds of Grenada. In the northern and eastern parishes both precipitation and

surface water supply are less challenging. Water challenges for farmers, in all areas, remain due to the lack of adequate catchment and storage facilities.

**Ecosystem Functions and Uses:** Forest ecosystems cover approximately 20.8% of Grenada. Years of hurricanes, deforestation and replanting in Grenada have led to the forest ecosystems that include primarily secondary re-growth or agroforestry, with the exception of some isolated areas on steep mountain slopes (Grand Etang Forest Reserve and Mt St Catherine which contains primary forests). Secondary forests and forest fragments are important in the landscape as they reduce the amount of edge effect around forested PAs and minimize the amount of agricultural land (and therefore the setting of fires and other impacts) directly adjacent to PA forests, as well as provide habitat for biodiversity and connectivity between forests. In addition to water, the forests provide control of soil erosion and enhancement of soil productivity, various economic activities, and carbon sequestration. There has been a general phasing-out of timber production in Grenada over the past decades, but forests continue to be important for the livelihoods of many rural communities.

**Protected Areas:** With the Grenada Declaration, Government of Grenada has committed to a national target of PA coverage of 25% of nearshore and 25% of terrestrial territory by the year 2020. However, there are currently 9 terrestrial protected areas that are legally established totaling 1,991 ha, or only approximately 6% of Grenada, protecting Grenada's cloud forest to dry forests (habitat of the CR Grenada Dove *Leptotila wellsi*). An additional 3 terrestrial sites (totaling 1,183 ha), having received Cabinet approval through not legally established / gazetted, though are often managed as protected areas. In the coastal / marine environment, only 3 MPAs have been legally established encompassing approximately 4% of nearshore coastal resources (defined as territorial waters out to 12 miles) and protecting coral reefs, mangroves, beaches and recreation and tourism areas, but only 1,780 ha are actually legally established. There are an additional 4 MPAs totaling 11,250 ha with activity toward their establishment in progress, and terrestrial protected areas that are proposed in the PA System Plan with activity toward their establishment. With implementation of all terrestrial PAs identified in the PA System Plan, Grenada falls short of meeting its international commitments and 2020 targets. The system plan lacks PA and landscape connectivity in its design.

**Threats to Biodiversity and Ecosystems Services** in Grenada can be categorized as:

Most of Grenada's remaining large tracts of forest ecosystems are primarily found in the high elevations, where the greatest threat is due to expanding agriculture with human settlement and development; the latter two are the primary threats to Grenada's lowland dry forests. Other significant threats are slash and burn agriculture and invasive species (bamboo) encroaching into native forests. Burning of agricultural waste and setting of fires to clear land also pose a threat to forest ecosystems, including within protected areas; during the 2009-2010 drought, over 600 fires burned during the dry season, including a fire that destroyed a portion of the Perseverance Protected Area and Dove Sanctuary and 30% of the Beausejour watershed. Recent Hurricane Ivan (2004) and Hurricane Emily (2005) have devastated forests and protected areas throughout Grenada (forest structure, composition and functioning), causing significant damage to dams, forest roads, bridges and watercourses and severely impacted forestry and conservation infrastructure and activities. Severely impacted were Grenada's protected areas, including the Grand Etang Forest Reserve and the Mt. Hartman and Perseverance protected areas, which were established for the protection of the critically endangered endemic Grenada Dove. In addition, storm surges from the offshore Hurricane Lenny (1999) destroyed many coastal forests, which are also under significant threat of habitat destruction from concentration of housing and hotel / commercial development along the coastline. These threats include impacts to the globally threatened coastal dry forest ecosystem, primarily found in southern/southeastern Grenada (with small area in the north), where most of Grenada's tourism and residential development and activity occurs. Mangrove ecosystems in particular have been severely reduced due to tourism development and the building of jetties, although other factors such as harvesting, pollution from solid wastes, pesticides, sewage and oil spills, and sand mining have also contributed to mangrove decline. Although tourism development is a threat in Grenada, there is no large resort development foreseen in the watershed and project intervention areas.

**Degradation of Land and Water Resources and Ecosystem Services:** Terrestrial and coastal / marine ecosystems in Grenada are subject to numerous sources of degradation. Deforestation and fragmentation of forests in the form of forest clearance to allow for residential and commercial development, agriculture, forest fires and coastal tourism development are main forces behind deforestation and land degradation. Unsustainable land management within upland watershed areas and in proximity to watercourses has negatively impacted terrestrial resources, of particular significance where over 90% of Grenada's land area has a slope of 20° and above. Up to the late 1990s, agriculture was the principal contributor to land degradation as cultivation - mainly sugarcane and bananas - often without appropriate safeguards for soil and water conservation led to both acute and chronic loss of soil, impacts to surface water resources and erosion of biodiversity resources. The range of negative impacts of unsustainable land management on land resources include: sedimentation from clearing of steep slopes for agriculture and consequent sedimentation of watercourses, reducing hydraulic capacities resulting in heightened flood risk downstream; removal of riparian buffers for farming close to riverbanks; fertilizer use contributing to pollutant loading in runoff following

rains; use of harmful chemicals and pesticides that negatively impact fresh and coastal waters; burning of agricultural waste and setting of fires to clear land threaten forest ecosystems, including lands within protected areas; nutrient loss and reduced soil fertility and crop support; and alternation of soil chemical and physical characteristics due to physical modification and chemical/pollutant contamination.

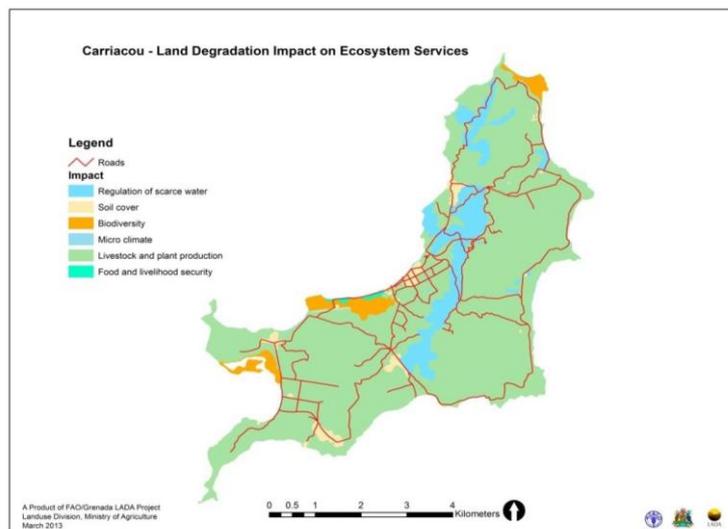
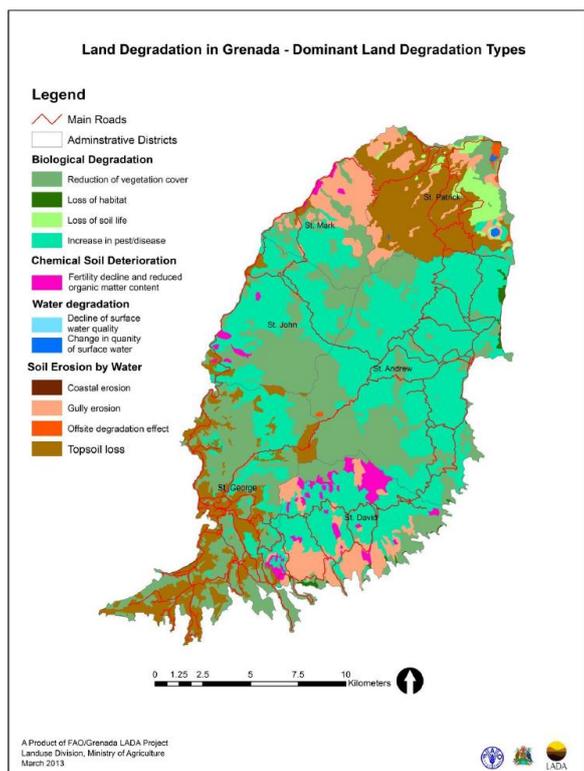


Figure 1 (left): Land degradation types in Grenada (Land Use Division 2013)

Figure 2 (right): Impact of land degradation on ecosystem services in Carriacou (Land Use Division, 2013)

In the marine environment, the most significant threat to coral reef ecosystems comes from upstream sources of pollution (sewage outflows; animals grazing along rivers), nutrient overload (fertilizers) and sedimentation (construction; erosion from agricultural practices). Improper solid waste disposal also contributes to land and water resource degradation with accumulation of contaminants, most evident during the rainy hurricane season between June and November when intense storm events result in extreme land degradation marked by landslides. The agricultural sector’s contribution to land degradation is most prevalent in perennial cropland in Grenada and pasture and grazing in Carriacou, and are a result of excessive use of chemicals, clear-cutting and/or deforestation, farming on steep slopes and/or marginal lands, over-grazing, over-cultivation, excessive irrigation and poor cultural practices. Chemical deterioration of soil due to overuse of fertilizers and other agrochemicals and reduced organic matter content is also found in annual croplands in project intervention areas of the parish of St David. While agrochemical dependent vegetable and root crop production increased within the last decade, there was also a decline in fertilizer use, linked to reduced import by the Pesticide Control Board, higher prices, and the demise of the banana industry. Loss of top soil in the northern parts of the island (proposed project intervention area, parish of St Patrick) are due primarily to agriculture and large scale physical development occurred in about 20% of the affected areas. Loss of top soil in the southwestern peninsula and surrounding areas were observed in 30% of the affected land use systems. Finally, illegal sand mining activity impacts continues to impact coastal ecosystems along the east coast in both the parishes of St David and St Andrew and threaten nesting sea turtles, including Hawksbill and Leatherback. The adoption of climate smart agricultural and sustainable land management practices will be important to successfully respond to challenges outlined.

Invasive alien species (IAS). Invasive alien species are known to have devastating effects on biodiversity. In Grenada, IAS such as mammalian predators devastate native vertebrates and invertebrates, invasive plant species outcompete native plant species, and pests affect agricultural crops and threaten Grenada’s export market, livelihood and food security. The devastating effects of introduced alien invasive mammals on islands species have included national and local extinctions or significant range and population reductions as a result of predation, competition for resources and/or habitat modification. Four of the predominant invasive mammalian predators in the Caribbean are found on Grenada, which include the Indian mongoose (*Herpestes auro-punctatus*), black rat (*Rattus rattus*), maniocu (opossum, *Didelphis marsupialis*), and feral cat (*Felis catus*). These species directly reduce populations of native and endemics

on Grenada, including the Grenada Dove. Invasive bamboo has spread throughout the mountain slopes of Grenada, becoming prolific after hurricane Ivan with forest cover loss. With shallow, fibrous roots, these increasingly large patches of vegetation reduce percolation and increase runoff, landslides and downstream flooding, with particularly severe impacts in riparian areas. Agricultural pests have severe effects on agriculture and economies, destroying the banana industry on the island with the loss of European trade preferences in 2006 due to the infestation of Moko (Black sigatoka). Outbreaks of pests in the Caribbean region threatens and in some cases hinders food security especially since these invasive alien species are difficult to be identified and therefore treated by farmers or pest experts in each country. Such pests include tomato borer (*Keiferia Lycopersicella*), the diamondback moth (*Plutella xylostella*) and the pink bollworm *Pectinophora gossypiella*). Invasive Heteroptera pests threatening over 90 species of plants including legumes and vegetables. The threat of pests spread by IAS is further exacerbated in drought stress situations induced by climatic changes. The invasion of the IndoPacific lionfish (*Pterois volitans*) is a significant threat to fish biodiversity across the Caribbean

Climate Change: As a small island developing state, Grenada is one of the world's most at-risk countries to climate change. Although Grenada is located south of the hurricane belt, it was devastated by two major hurricanes in 2004 and 2005 after fifty years with no major hurricanes. Ninety-one percent of forest land and watershed were stripped of vegetation. The effects of increased hurricane frequency and severity and prolonged dry periods (e.g. 2009-2010 drought), combined with lack of effective forest management to control fires, slash and burn agriculture, encroachment, and soil erosion, the ability of Grenada's forests to maintain and re-generate forest cover has been significantly compromised. Current climate change predictions for the Caribbean suggest a general drying trend with less frequent but more intense rainfall events, predicted temperature increases and sea-level rise, many islands are projected to undergo substantial coastal squeeze in the next century. Anthropogenic influences, such as infrastructure or inappropriate agricultural practices on steep slopes, or degradation of coral reefs and mangroves, have compromised the resilience of these ecosystems, furthering impacts of extreme weather events. Climatic events are known to have significant impacts on the agricultural sector. Increasing temperatures will continue to strain agricultural systems, groundwater availability, with added hotter and drier conditions. Total direct and indirect cost to the agricultural sector; inclusive of cropping, livestock, and fisheries sub-sectors after hurricane Ivan were EC\$55 million and EC\$46 million respectively. A further 150 miles of farm roads were damaged at an estimated reconstruction value of EC\$28.67 million, with now abandoned agricultural lands now inaccessible. In particular, Carriacou and Petite Martinique is being severely impacted by more prolonged dry periods, since there are few surface waters on these islands. Long dry spells can lead to temporary food scarcity and reduced productivity of grazing pastures. Lower animal yields are expected especially in Carriacou due to reduced grass yields, all furthering the need for climate resilient agricultural and rangeland practices. At the same type, Carriacou and Petit Martinique is experiencing severe soil erosion problems, due to current unsustainable land use practices exacerbated by runoff caused by higher intensity rainfall events.

**The long-term solution** is to have in place sustainable land use management and biodiversity conservation that is incorporated into national land use planning, sector policies and legal frameworks. Incorporated into SLM are climate smart agricultural practices that help ensure long term sustainability of agricultural production at the community and producer level, supported through a set of nationally managed financial, technical, and information services. This long-term solution will entail strengthened institution capacity for SLM, CSA and biodiversity conservation, a larger protected area estate, and biodiversity conservation that is mainstreamed into strengthened multi-sectoral policies and legal / regulatory frameworks. This long-term solution is essential for sustainability of integrated landscape management, ecosystem services and food security.

Specifically, the project will work to address the following **barriers**:

**Barrier 1: Insufficient systemic and institutional capacity for integrated SLM and biodiversity landscape level planning.**

Though Grenada has many policies and laws governing natural resources, there are issues affecting effective land use and environmental management, resulting in land degradation and lack of implementation of sustainable land management practices. Grenada has no active land use policy or land use plan. There has been no national land use policy to regulate land use and management, along with no comprehensive zoning or spatial planning. The 2015 Draft Land Use Policy has not yet received Cabinet approval. Though the National Physical Development Plan (2003-2021) has limited policies and regulations and enforcement mechanisms to support sustainable land management, it does mention the provision for the designation and conservation of environmentally significant areas, but is not accompanied by, nor does there exist, a national land use plan or national land use zoning. The Physical Planning and Development Act makes no reference at all to conservation and sustainable use of biodiversity. There is also a lack of

current detailed land use data, along with the requisite ecosystem services, biodiversity, land degradation and land cover data upon which to make information land use planning decisions. Land use management in Grenada also does not adequately incorporate maintenance of ecosystem goods and services, such as water and coastal forest resources. Limited financial resources for personnel and technical capacity limit implementation, with inadequate training at the national level to both monitor land degradation and proactively address potential impacts. There are limited services in place to support SLM planning, including limited personnel and material to support climate smart irrigation practices. Government supply of drip irrigation line sold to farmers at cost is depleted, and soil and water testing for fertilizer use and planning is expensive and requires analysis to be carried out off island. In addition to the limited services and capacity to implement SLM activities, awareness of the importance of appropriate land use planning and implementation of SLM, both for biodiversity conservation and the maintenance of ecosystem services and agricultural production, is lacking. Biodiversity and SLM related skills are currently not incorporated into national training programmes and associated curricula. There is a need for improved knowledge management. Though small community initiatives (i.e. ICCAS project) exist that provide technical guidance to stakeholders on CSA biodiversity and SLM, community projects do not address systematically complete range of SLM and CSA measures and do not link systematically with interventions in enabling environment and institutional capacity. In addition, NAWASA manages water sources, but this is focusing on a treated water supply for human consumption and settlement, and there are no policies, regulations or management arrangements for use of non-treated water for agricultural purposes. Related to this, the Grenada Aligned National Action Programme for UNCCD (2015) defines the need to establish a National Drought Management Policy with supportive legislative instruments that could be potential mechanism to address these water sourcing needs for agriculture.

**Barrier 2. Lack of access to financial mechanisms limits investment in sustainable agricultural planning and practices.**

Farmer's access to microfinance is limited, often limited due to lack of collateral and/or high interest rates. In the current financial support system and credit arrangements, there is no integration of criteria and guidelines to support CSA and SLM. There are also currently no arrangements for payment for watershed services, likely do to the lack of current management arrangements the use of these watershed services. Financing is significantly challenging for those in early stages or wanting to reenter the sector. The number of farmers reporting that they received credit declined by 37% with 1.5 % reporting they used credit in the 2012 compared to 1.9% in the 1995. High interest rates for short term loans are available with no collateral needed (i.e. Axcel Finance, 1.6%/month) but rates are not feasible for farmers. Grenada Cocoa and Nutmeg Association gives no small interest loans to active farmers of EC\$1,500-3,000 paid back via deductions from sales, though only to cocoa farmers. Small loans through Grenville Cooperative Credit Union 1%; Grenada Development Bank and PSCCU through MNIB 4-6%. MNIB offer credit to farmers registered with them and provides inputs (fertilizers, seeds, boxes), deducts loan payments from sales, but farmers are often reluctant to commit to produce prices that may be lower than otherwise available. Interest loans with MNIB are also available for amounts greater than US\$20,000, but a track record and collateral is needed limiting small farmers or new farmers wanting to re-enter market. Small business development loans through Grenada Development Bank were being heavily accessed, but gov't input of \$2m is insufficient to meet demand. Furthermore, there is a lack of incentives to invite investment to improve the sector with climate resilient practices, including lack of access to low interest loans for the small scale farmer and climate insurance to protect their investment. Produce quality is linked to loan and MNIB purchase agreements, but there are currently no finance arrangements that link or incentivize farmers to implement climate resilient agricultural practices.

**Barrier 3. Limited awareness, understanding and knowledge of CSA and SLM techniques and practices integrated with biodiversity conservation**

There is limited awareness of the importance for CSA and SLM and understanding of implementation techniques. A recent (2011) survey found population based knowledge, attitude and practices survey revealed a general low level of knowledge among the general population on land degradation and SLM. More than half of the population reported having no knowledge of land degradation (64%) and SLM (52%), and only approximately one third of respondents (37%) stated that SLM was important or very important to Grenada's development. Although farmers received 2.5 times more training on land management practices than other groups, their knowledge on land degradation and SLM was lower, with the exception of householders. Females, persons younger than 25 years old, and lower income level participants had less knowledge on land degradation and SLM when compared to other participants. In addition, the operational technical capacity to plan, implement and upscale climate resilient agriculture techniques and the integration of biodiversity conservation into land use practices is limited at national, sub-national and local levels. This technical limitation is a result of insufficient capacity and training of staff employed in relevant departments of the MALFFE and understaffing of the MALFFE of SLM and CSA solutions, including extension services that work

directly with farmers. As a result, mainstreaming of an ecosystem and climate-smart management approach to adaptation is limited. Though there is recognition in growers association on drought effects and related land degradation issues, there is often no experience with the application of irrigation techniques in different systems (i.e. traditionally rainfed cocoa and nutmeg in drying conditions). Integration of biodiversity conservation into these agricultural and agroforestry systems is rarely addressed, and coupled with a lack of understanding of its importance or means to implement, it is overlooked in policy and planning.

## **2) Baseline scenario or any associated baseline projects.**

**The project will build on the following baseline scenario:** Component 1. Systemic and institutional capacity for integrated landscape management at national level. Government of Grenada's baseline spending in support of the management of protected areas, forests, water resource management and agriculture throughout the country is significant. The Environment Division within MALFFE will spend an estimated US\$6,130,525 from 2014-2018 in coordinating environmental policy, laws and programs. In addition to government budget allocations for PA management, the National Parks and Protected Areas (Fees) Order (1992) established fees for persons entering a national park or protected area, and fees are also included in Schedule II of the Fisheries (Marine Protected Areas) Regulations. In 2011 the Ministry of Tourism collected \$250,000 in fees from 6 of the 13 sites that they manage, while the Grenada Tourism Board and the DFNP collected approximately \$10,000 in permit fees. User fees in place for the two existing MPAs cover about 50% of recurring costs for one and 30% for the other. Currently the MALFFE Land Use Division manages GIS information related to land cover, soil types, agriculture and protected area coverage, much of which is outdated and limited, with no new land use survey data, biodiversity and ecological assessment information or monitoring and tracking system. Component 2. National capacity to provide financial, technical, and information services for CSA production. Government's total 2016 allocation for Agriculture and Fisheries is \$42.2 million and includes \$32.9 million in capital expenditure. NAWASA and the Ministry of Economic Development are currently preparing a GCF proposal for the management of Grenada's water supply, including integrated natural resource/water resource management for Grenada's watersheds and SLM practices, which is expected to coincide with this project's implementation. Out of the complete GCF proposal, co-financing synergies will be particularly established with its components on water demand management and institutional strengthening for a water resource management unit (budgeted to 2.5 M USD). As such, this project will coordinate with the GCF initiative to ensure effective synergies with respect to the promotion of sustainable practices and management in the target areas in all 3 Components of this project (its national impact as well as its focal target areas in St Andrew's, St David and St Patrick), including the issue of the use of non-treated water sources for agricultural purposes along with regulatory and management aspects. Component 3. Operationalisation of resilient agricultural practices. The National Agriculture Plan is also a key baseline initiative for this project as it outlines strategies and objectives for sustainable climate resilient agricultural production to ensure food security in the face of changing climatic conditions, as well the importance of integrated management of natural resources (including forests, protected areas and biodiversity) into the agriculture sector. Other climate smart agriculture initiatives have been initiated in Grenada which this project will build on: Caribbean Agriculture Research and Development Institute (CARDI) has been undertaking cassava (a climate resilient root crop) research and training experimenting with fertilizer regime for enhanced yield, consumer and processing awareness (US\$150,000 annual budget); Grenada Organic Agriculture Movement (GOAM) is promoting increased use and production of organic materials in farming; the Programme on Integrated Climate Change Adaptation Strategies in Grenada (ICCAS, 2013-2018) is funding community level climate change adaptation initiatives, a few of them addressing agriculture and land use practices (UNDP US\$1.3M) and has established a demonstration site/model farm in Mt Moritz, Beausejour watershed (GIZ US\$3.1M). The UK Infrastructure Fund's Feeder Road Project (US\$10M, 2016-2020) will improve road access to agricultural lands (damaged in Hurricane Ivan), enabling farmers to access abandoned plots. The World Bank/Climate Investment Fund's Pilot Program for Climate Resilience/ Disaster Vulnerability and Climate Risk Reduction Projects (PPCR/RDVRPP) Project contributes to evaluation and improvement of degraded areas with forest rehabilitation, securing water capacity, and improving watershed management activities, which this project can build upon (US\$34.3M, 2011-2016). This project builds on the PPCR forest rehabilitation lessons learned of areas that were destroyed by Hurricane Ivan (2004) and Emily (2005) as well as incorporate that project's development of a forestry nursery at Grand Etang as a propagation center for forest restoration being carried out under this project.

## **3) Proposed alternative scenario, GEF focal area strategies, expected outcomes and components of the project.**

Despite the foundation provided by these baseline initiatives, there remain gaps that Grenada recognizes need to be addressed to avoid further losses to biodiversity. The interrelationship between these drivers of land degradation and biodiversity loss requires an integrated approach to abate these losses successfully. This is particularly true in Grenada

where, as a small SIDS, the transition between ecosystems takes place over short distances and upstream practices have important impacts on downstream and coastal areas. The proposed project strategy recognizes this and will address the drivers through putting in place an integrated approach that combines strengthened systemic and institutional capacity for integrated land management and CSA production with mainstreaming of biodiversity conservation into this integrated landscape; creating protected areas and reducing threats to conserve biodiversity of global concern; building capacities and knowhow for climate smart and sustainable agricultural and sustainable land management practices in the intervening areas that will reduce pressures on key landscapes and protected areas (and KBAs) while also reducing pressures on the remaining habitats in the production landscape thus providing further connectivity and longer term sustainability of biodiversity. The improved resilient agricultural practices will in turn reduce habitat fragmentation and land degradation which will reduce other drivers of environmental loss such as soil erosion and sedimentation in fresh water and coastal areas. System and sector level training on these best practices and integrated resource management will lift the integrated approach to scale and enable a more comprehensive ridge to reef approach to addressing the interrelated drivers of environmental degradation across the country.

Under the alternative scenario enabled by the GEF funding, the project strategy comprises 4 inter-connected components:

### **1. Systemic and institutional capacity for integrated landscape management.**

This component will focus on systemic and institutional capacity development for supporting integrated landscape management at the national level. Integrated land use planning and management system that include biodiversity mainstreaming and provide baseline support for revision of Grenada's PASP and finalization of draft land policy enabling Act and the preparation of the necessary regulations. These actions will provide a framework for mainstreaming biodiversity concerns into spatial management and promoting resilient agriculture, both climate resilient and resilient by not depleting natural capital and leading to biodiversity loss.

Output 1.1 Information management database and monitoring system is set towards a land use planning process with a central spatial biodiversity, ecosystem and land use database with Biodiversity and Land Use Tracking Tool and monitoring programmes developed and implemented. The project will support gathering and management of baseline land use and ecosystem/biodiversity data for land use planning that will support the current draft Land Use Policy and subsequent land use planning efforts as well as localized planning decisions (i.e. watershed plans proposed in this project), that will be input into a project supported central spatial database, and will include data from (i) baseline biodiversity/ecological assessments/inventories (biological survey/baseline assessment of fauna and flora of Grenada's terrestrial ecosystems and agricultural landscapes, status and location of threatened / endemic species, with monitoring programs; (ii) comprehensive land use survey using high resolution satellite imagery; (iii) enhanced profiles of mapped non-NAWASA water supply springs (seasonality, accessibility, uses, water quality, enhancement needs); (iv) baseline forest ecosystem studies to monitor CC effects (structure composition, with permanent plots and monitoring protocols); (v) IAS species (distribution, studies); (vi) assessment of key biodiversity areas, and others. This data will be incorporated into a Land Use and Biodiversity Monitoring and Tracking Tool (central / spatial database / user friendly, hosted by MALFFE Land Use Division) to monitor changes in; land coverage, forest conversions, CC impacts (i.e. floods and landslides), species distributions, and will include a monitoring framework with indicators for biodiversity status and ecosystem health.

Output 1.2 Regulatory, coordination and planning framework strengthened, integrating SLM, CSA and biodiversity conservation will be supported through the revising or newly establishing the following frames:

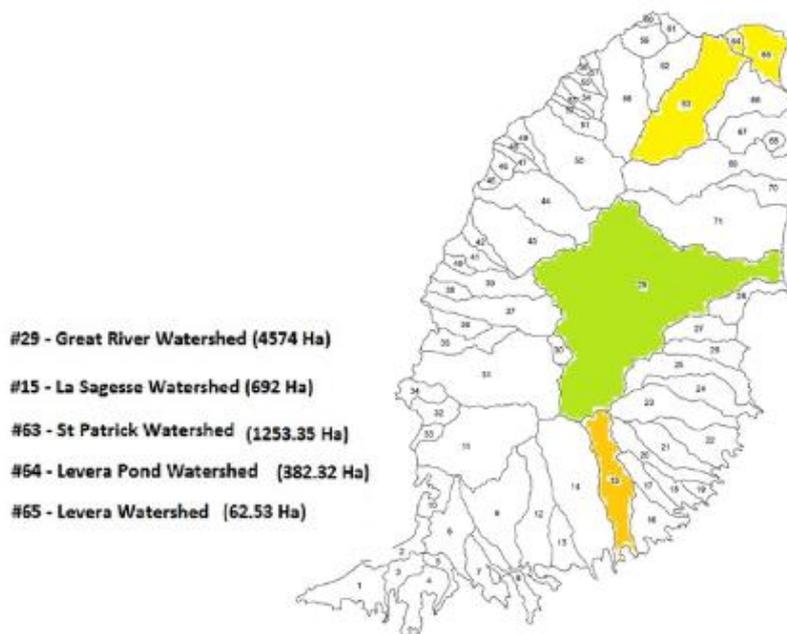
- Revised PA System Plan to achieve Caribbean Challenge Initiative (CCI) targets; finalization of draft Land Policy enabling Act with preparation of the necessary regulations;
- Two (2) management plans developed and implementation initiated for La Sagesse and Levera dry forest sites to be gazetted (supporting component 3.2);
- Development of a National Drought Management Policy and related legislative instruments supported, including the use of non-treated water sources for agriculture use.
- Five (5 sites) watershed management plans prepared and watershed level committees established (La Sagesse, Great River and Levera/Levera Pond/St Patrick watersheds and 2 island watershed management plans for Carriacou and Petit Martinique) – in support of community level interventions in Component 3.

Output 1.3 Biodiversity conservation and land use management capacity will be improved through institutional strengthening on land use surveys (hydrography, geospatial information management, classification and analysis of satellite imagery, including ground truthing and GPS use), with training coordinated with Ministry of Education (HR Development Unit), T.A. Marryshow Community College (TAMCC). To ensure longer term and regular trainings

available in these fields, the project will support the inclusion of biodiversity conservation and SLM related skills in national HR priority list and Priority Training Needs Assessment and associated curricula initiated in 2016 by Ministry of Education. Trainings will be conducted for Agriculture Extension in climate smart agriculture, certifications, public education and awareness outreach, with enhanced capacity and irrigation design training for Land Use Division/Irrigation.

## **2. National capacity to provide financial, technical, and information services for CSA production.**

Output 2.1 Financial support systems for incentivizing CSA, SLM and conservation oriented agriculture practices are strengthened / established / operationalized providing accessible financing for farmers. This project will support the review and implementation microcredit schemes and related certification of agriculture products with CSA criteria integrated, in order to support the integration of CSA and SLM criteria through national and local financial institutions (such as AXCEL, MNIB, Grenada Public Service Co-operative Credit Union Limited, Agriculture Loan Department).



*Figure 3. Targeted watersheds in Grenada*

Output 2.2 A Soil and Water Quality Monitoring and Advisory Programme enhanced and will provide services and information used by extension officers and farmers to support planning and monitoring of SLM and CSA practices, including application of adaptive soil and water conservation practices, promoting the reduced use of chemicals and alternative organic practices, and crop planning. The project will provide soil testing equipment and technical capacity to Produce Chemist Laboratory, Ministry of Agriculture to enhance a Programme that will provide soil and water testing service on a national level complimenting existing MNIB soil testing services. Soil testing will provide information on nutrient and chemical content used by extension officers and farmers for planning of crop planting, rotation, and soil and land preparation activities. The water testing in streams will help to determine chemicals, nutrients and sediments in runoff, informing watershed and land use planning processes and promoting erosion and chemical use control measures. Training on collection and management of samples and communication back to farmers will be provided (Ministry of Agriculture Extension, Land Use Division, MNIB, farmer and producer associations). The Programme will combine application of field testing kits with laboratory testing services.

Output 2.3 A National supply of climate resilient crop varieties will be enhanced through upgraded and climate-proofed government propagation centers. The 5 national propagation stations (4 Grenada, 1 Carriacou, currently non-producing) will be rebuilt in a climate proof way, with water supply enhancement, flood protection and protective structures for extreme events, research carried out to identify climate-resilient varieties and selections (reestablish archives / testing in different ecological zones, extension officers trained on propagation techniques, and maintenance / documentation / labelling of germplasm collection. Germplasm field collections improved (at propagation stations) and maintained at 3 separate locations within Grenada. Database of germplasm, present varieties and climate resilience varieties developed from the protective structures at the 3 (minimum) agricultural zones should be stored in online database to be developed. The project will support development of a tissue culture lab (indicatively, TBD during PPG phase) attached to the Wallilabou Propagation Center.

## **2. Operationalization of resilient agricultural practices integrated with biodiversity conservation.**

This component will focus on site specific target areas and watersheds to implement climate smart agricultural and sustainable land management practices that will integrate biodiversity benefits, including biodiversity of global significance. These activities will demonstrate the generation of multiple benefits of integrated agroecosystem management. (Biodiversity significance in GEB, 5 below). Project support will help reduce deforestation and environmental impacts, reduce erosion, improve ground cover and access to sustainable livelihood opportunities, augmenting existing good practices, testing new innovative practices, and developing and supporting replication of these practices in at least 2400 ha of areas involving 5 communities in the Great River Watershed, 3 communities in the La Sagesse Watershed and 3 communities in the Levera/Levera Pond/St Patrick watershed – indicative.

Output 3.1 Climate Smart Agricultural, SLM practices implemented in Great River Watershed (St Andrew Parish), La Sagesse Watershed (St David Parish), and Levera/Levera Pond/St Patrick Watershed (St Patrick Parish). Interventions will be carried out based on 3 broad agricultural strata: (i) Higher and mid-belt with native forest and agroforestry areas degraded by extreme weather events (nutmeg, cocoa, fruit) will include project supported adaptive agroforestry techniques, water and soil conservation (i.e. organic fertilizers, contour draining), multi strata mixed systems for enhanced biodiversity, intercropping, windbrakes (using native trees), land preparation, alternatives to burning (soil nutrients, forest fire prevention), and crop diversification (including climate smart crops e.g. root crops including cassava and sweet potato, less exposed to wind, less vulnerable to drought), climate resilient planting techniques (Nutmeg, to maintain deep roots). Drought mitigation will include water management and irrigation (e.g. solar pumps, gravity flow, drip), drainage, rainwater harvesting and storage, enhanced water stream intakes, reservoirs, irrigation (demonstration for crops traditionally rained, like nutmeg). Flood prevention will include removal of monoculture (Blue mahoe), invasive (bamboo) for increased percolation in watershed/riparian zone. The project will help improve access to plots, roads destroyed by extreme weather events (supporting the UK Infrastructure Fund Feeder Road Project through climate-proof features - i.e. drainage) and support pest control (enhanced by increased plant stress and vulnerability induced by climatic factors). Forest fire risk will be addressed (alternatives to burning fields, community trained fire brigades). The project will also support adaptive livestock management, including improved grazing practices to avoid rangeland degradation; poultry and pig farming to reduce organic effluent and contamination of streams and aquifers using bio digesters for pig farming and composting of chicken manure (added value to use as organic fertilizer). (ii) Low-belt coastal area adaptive agriculture practices for short crops and tropical dry forest ecosystem conservation will be supported to address flood and drought risks, reduced organic and pesticide effluent to streams and water tables, watershed/river and coastal protection. Adaptive agricultural practices will include (strip planting, contour draining, intercropping, land preparation, burn control / alternatives (fire prevention), crop diversification, species specific planting techniques, climate resistant crops (root crops, drought resistant varieties), organic fertilizers, alternatives to pesticides. Drought mitigation will include rainwater harvesting/storage, enhanced water stream intakes, reservoirs/holding ponds, irrigation (use and improved access to drip irrigation). There will be additional support for (5) demonstrations of protective structures (including shade houses) for adaptive crop production, one in each of the 3 mainland project parishes, and 1 in both Carriacou and Petit Martinique (see 3.3 below). The structures will be located to demonstrate use in different altitudes and corresponding climatic zones, and will serve as learning centers/model farms applying variety of crops and cultivation techniques, as well as demonstrating suitable business models for replication. Protective structure design will demonstrate adaptation measures for shade and water collection and lessons learned from earlier construction (FAO 2005) (space at roof peak to catch rain). The protective structure will have climate-proofing features (e.g. robust frames or structures that can be disassembled in face of extreme weather event, with concrete bases that don't retain water, combined with rainwater harvesting and/or storage functions). The demonstration sites will also illustrate irrigation systems, rainwater harvesting and storage techniques, including use of ponds and wells. Locations include: Grenada (St Andrews farmer's association, NE Cluster, GFAFO, other). Adaptive livestock management (see above) and reduced coastal erosion: coconut planting in select bays along a 10 km coastline between Telescope Point and Levera Bay, St Patrick (NE Cluster Assoc) and reduced illegal sand mining (such as Conference) with improved enforcement and training for police and enforcement officers (on endangered nesting sea turtle laws, existing regulations, impacts of sand mining).

Output 3.2 Biodiversity conservation expanded and integrated with climate smart agriculture and SLM measures in La Sagesse Watershed, Great River Watershed and Levera/Levera Pond/St Patrick Watershed. Interventions will focus in (1) upland watershed areas buffering Grand Etang NP and Mt St Catherine's (proposed) NP, (2) lowland to upland riparian zone (i.e. riverbed restoration with native species, control of invasive bamboo), and (3) lowland dry forest

areas (i.e. establishment of 2 tropical dry forest coastal sites as national parks - Levera/RAMSAR site and La Sagesse). In addition, landscape level threats to biodiversity will be reduced through IAS / disease control; 1) Batrachochytrium (Chytrid fungus) in high mountain strata (threat mapping, spread prevention), 2) bamboo removal in the mid-level strata (reforestation with native species), and 3) control of *Herpestes auro-punctatus* (small Indian Mongoose) in Grenada's coastal dry forest ecosystem (regionally threatened ecosystem) encompassing 5 KBAs, with native and endangered biodiversity impacted (esp. the Grenada Frog / *Pristimantis euphonides* and the CR Grenada Dove - *Leptotila wellsi*). Sea turtle protection of 4 endangered species will be also addressed through enforcement and training of police, as well as beach erosion control by the watershed management actions upstream.

Output 3.3 CSA and rangeland management in Carriacou and Petit Martinique will be supported, where intensive grazing has resulted in extreme land degradation. Improved grazing practices such as enclosures with feed will be promoted through 1) farmer education on benefits (cattle quality, high protein fencing benefits, 2) tree seedling grown at demonstration site/model farm (i.e. *Gliricidia spp*), and 3) disincentives through legislative review for farmer compensation due to grazing losses (Praedial Larceny Act that also covers damages caused by animals). There will also be support for demonstration of protective structures (including shade houses) for adaptive crop production on Carriacou (Royal Sunrise Enterprises/Carriacou Farmers Association as a CSA Model farm/demonstration site), and Petite Martinique (4H Club/Petite Martinique R.C. School - small nursery for short crops).

Output 3.4 Agroprocessing and agrotourism small businesses supported– by processing CSA crops and supporting sustainable rural livelihoods and education on CSA-SLM practices (including women, men and youth). At least 8 agroprocessing and 2 agrotourism small business will receive technical assistance in production, labeling and marketing of climate smart agricultural products. The project will collaborate with and support community based and producer organizations, who will be further involved in PPG phase consultations to specify these.

**4. Knowledge management for SLM, CSA and biodiversity conservation.** This component focuses on capturing both technical and educational knowledge and lessons learned during the implementation of the project, and *will incorporate institutional strengthening and capacity building initiatives carried out that will support both current and future generations of professionals. This project will be capturing experiences and lessons learnt, and producing outputs for both for institutional and private sector learning and ongoing implementation during and post project.* Knowledge and experiences will be captured, shared and disseminated to encourage widespread adoption of CSA, SLM and biodiversity conservation practices. The project will ensure that experiences and lessons learned generated at the demonstration sites and from implementation of activities are systematically collected, analyzed and disseminated throughout the country to facilitate awareness, replication and scale-up. Monitoring and evaluation of project implementation, outcomes and outputs will ensure project effectively reaches outlined goals and objectives.

Output 4.1 Technical knowledge captured and experiences and lessons learned disseminated will be supported throughout project implementation and incorporated into via work plans, and will include written products such as technical and training reports / manuals / guides, lessons learned notes that are based on experience codified (CSA, SLM, biodiversity assessment, land use mapping, other). Written documentation of *knowledge will incorporate institutional strengthening and capacity building initiatives, for continued institutional and private sector learning and activity implementation. A socioeconomic and gender monitoring system will also be established, and outputs from the Biodiversity and Ecosystem Monitoring and Tracking Tool incorporated into information disseminated. Training carried out in Components 1 (Biodiversity conservation and land use management capacity) and Component 2 will integrate experiences and lessons captured through KM activities of the project in an iterative way.*

Output 4.2. Media products promote outreach and increased public awareness / environmental education of SLM, CSA and biodiversity conservation. Media products to increase awareness and promote outreach and education of project activities, knowledge and lessons learned will include videos, photo essays, fact sheets, case studies, project web platform, training tools, television spots, newsletter/exchange site visits by communities and producers involved, also dissemination at regional events.

Output 4.3. Monitoring and evaluation of project implementation, including through periodic field visits, tracking tool assessments, mid-term and final evaluations of project.

**4) Incremental/additional cost reasoning and expected contributions from the baseline, GEFTF, LDCF, SCCF, and co-financing, and Global environment benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF);**

The incremental approach can be summarized as follows: The current situation in Grenada, in spite of Government’s commitments to biodiversity conservation, SLM and ensuring food security in the face of changing climactic condition, is one where systemic and institutional barriers are preventing the effective and timely implementation of stated national priorities and goals. This baseline situation is one where 1) there is no comprehensive and integrated land use planning for Grenada, Carriacou and Petit Martinique, 2) existing land use practices continue to degrade land and lead to soil fatigue, 3) agricultural practices do not incorporate climate smart techniques, furthering land degradation (i.e. farming on steep slopes, fertilizers, pesticides) with reduced crop productivity (i.e. drying conditions with no irrigation, non-climate resilient varieties), 4) existing PAs remain under-funded with limited capacity and management due to hiring freezes and available financing, with no change in the foreseeable future; 5) areas important to represent bioregional habitats and biodiversity will remain unprotected, and Grenada will remain far short of its 2020 national goals for protected areas coverage; and 6) management of critical ecosystems in, and ecosystem services from, watersheds continues without a systemic approach for their protection as well as inherent mitigation action to address potential downstream impacts or sustainable livelihood opportunities. In the alternative scenario enabled by the GEF, systemic and institutional barriers for integrated SLM and biodiversity planning will be addressed by project support for 1) strengthened institutional, legal and regulatory frameworks that incorporate land use planning and biodiversity conservation, 2) strengthened national capacity for the provision of technical, financial and information services for CSA production 3) effective operationalization of climate resilient agricultural practices, 4) effective integrated watershed management supporting key ecosystem service (water), 5) biodiversity conservation that is both mainstreamed into the agricultural sector as well as through removal of key threats to globally and regionally threatened ecosystems and species, and 6) knowledge management for SLM, CSA and biodiversity conservation that is captured and shared and encourages ongoing and widespread implementation.

Current Practice	Alternatives to be promoted by the project	Expected GEBs
<b>Integrated Landscapes – National level</b>		
<p>Continued ineffective land use planning and watershed management processes, due to lack of centralized information management system and updated ecological and biological information and prevailing gaps in policies, legislation and supporting regulations (including an outdated PA System Plan and complete lack of regulation of water sources for non-treated water use in agriculture), continues lead to degradation of land and water resources, deforestation, forest fragmentation and biodiversity loss.</p> <p>Continued lack of systemic and institutional capacity for landscape management and biodiversity conservation prevails, limiting mainstreaming of biodiversity conservation into sector policies and actions, including the agricultural sector.</p>	<p>Land use planning decision-making is informed and supported through</p> <ul style="list-style-type: none"> <li>- current and accessible ecological and biological information managed in a centralized database that enables tracking and monitoring of ecological and land cover changes, including changes due to climactic changes and events.</li> <li>- Completed, harmonized and implemented policy, planning and regulatory frames (including an updated PA System Plan, National Drought Management Policy that incorporates non-treated water use for agricultural sector and watershed management plans for target areas)</li> </ul> <p>Improved capacity building processes for biodiversity conservation and integrated land use management that is integrated into government’s ministerial education system.</p>	<p><b>BD:</b> Improved management of landscapes covering <i>1,389 hectares</i>, maintaining globally important diversity and ecosystem services. Strengthened protection of BD from an updated system plan and an extended PA estate (Levera / RAMSAR site, La Sagesse), mainstreamed biodiversity into legislative and regulatory framework (including land use planning) and strengthened institutional capacity for BD management and BD assessment techniques.</p> <p><b>LD-3:</b> The adoption of integrated natural resource management practices across the broader landscape (in forest lands and neighboring agricultural / grazing landscapes) covering 3,135 hectares, contributing to; (1) maintaining the functions and sustainability of natural ecosystems and agroecosystems (e.g. through ensuring sustainable levels of offtake and the application of agricultural practices that protect soil capital), and (2) flows of ecosystem goods and services, thus reducing negative impacts on BD.</p>
<b>Climate Smart Agriculture</b>		

<p>National capacities for support services: Continued lack of national capacity to provide effective information, technical and financial services, accessible to producers in a user friendly way and with climate risk criteria and guidance integrated.</p> <p>Operational CSA capacities and practices by producers: Continued agricultural production practices and uncontrolled cattle grazing without applying CSA and SLM techniques, resulting in further degradation of land and water resources, cumulative effect of climactic events in watersheds and biodiversity loss.</p> <p>Continued limited mainstreaming and integration of biodiversity conservation into land management planning for key BD, with lack of BD incorporated into integrated watershed or natural resource management, inadequate coverage of dry forest protection and little intervention with invasive species such as mongoose and invasive bamboo continues to invade watersheds and riparian zones.</p>	<p>National level financial support systems that incentivize SLM, CSA and biodiversity conservation are strengthened / established / operationalized. National level capacities in climate early warning and information systems, soil and water quality monitoring, quarantine to prevent IAS and pests, and upgraded and climate proofed propagation centers support CSA production and climate resilient agricultural varieties for food security.</p> <p>Degraded watershed areas are actively managed and restored for habitat integrity and biodiversity, incorporating climate resilient and biodiversity friendly agricultural production (including irrigation techniques, soil and water conservation measures, use of climate resilient crops and shade houses), as well as sustainable rangeland management practices. Communities and farmers access to CSA capacity building opportunities increase, with support of demonstration sites that are national learning centers for CSA (with production business model for replication, and national support systems - see above).</p> <p>Biodiversity conservation mainstreamed into integrated watershed management and CSA and SLM practices, including incorporating biological riverine corridors into watershed management plans, reducing species and landscape level threats to biodiversity (IAS) and legal establishment of 2 dry forest PAs in watershed lowland areas with demarcation, management plans and institutional level operations supported</p>	<p><b>LD-1:</b> Increased financing for SLM and CSA by 20% from the baseline amount</p> <p>Increased land area under climate-smart agriculture practice with improved climate risk management system.</p> <p><b>BD:</b> Securing of the long-term conservation status of globally important forest habitats in the project area, covering: (1) at least 1040 ha (indicative) dry tropical dry forest ecosystem and its biodiversity (lower watersheds, 5 KBAs, potential <i>Leptotila wellsi</i> habitat); (2) 620 ha (indicative) of watershed riparian zone; (3) improved conservation of a 2 globally threatened species (Grenada Frog <i>Pristimantis euphronides</i>, Grenada Dove <i>Leptotila wellsi</i>) through control of IAS/disease; and (4) nesting sea turtle beaches protection enhanced through improved enforcement.</p> <p>The project's target watersheds include biodiversity of global significance and extend into the Grand Etang and proposed Mt St Catherine Forest Reserve, both KBAs. Endemics found in the upper watersheds include: (1) endangered endemic Grenada Frog (Mt St Catherine); (2) 6 of Grenada's 7 restricted range bird species (Green-throated Carib <i>Eulampis holosericeus</i>, Antillean Crested <i>Hummingbird Orthorhyncus cristatus</i>, Caribbean Elaenia <i>Elaenia martinica</i>, Grenada Flycatcher <i>Myiarchus nugatory</i>, Lesser Antillean Bullfinch <i>Loxigilla noctis</i>, Lesser Antillean Tanager <i>Tangara cucullata</i> - Grand Etang FR, likely Mt St Catherine, TBD by biological assessment, component 1); (3) endemic plants (Grand Etang Fern (<i>Danaea sp.</i>) and the Cabbage Palm (<i>Oxeodoxaoleracea</i>) and one tree species (<i>Maythenus grenadensis</i>).</p> <p>Lowland biodiversity significance includes: (1) threatened tropical dry forest ecosystem (including 5 KBAs); (2) mangrove in all 3 watersheds and the RAMSAR wetland site in St Patrick. Grenada Bank endemics found in these watersheds also include the tree boa (<i>Coralis grenadensis</i>).</p>
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## 5) Innovation, sustainability and potential for scaling up.

The project is innovative considering that it will address climate resilient agriculture and sustainable land use practices throughout the agricultural production and value chain: pre-production (plant supply, information services for crop

planning - climate, soil and water monitoring), adaptive crop and livestock production practices, and post production (agroprocessing and agrotourism). It will also support the introduction of techniques and technologies that are new or currently very limited in the national context (e.g. water-efficient irrigation methods in traditionally rainfed agroforestry areas, the demo on protective structures, or the upgrading of propagation stations in a climate-proof way).

The environmental, social and financial aspects of sustainability are closely related and will be addressed through an integrated project design combining institutional capacity building at various levels with farm and producer level ground interventions. by the project in an integrated manner. The environmental sustainability will be ensured through strengthening government capacities in land use and biodiversity conservation planning, information management and monitoring tools and practices, through integrating SLM and biodiversity conservation principles in watershed level planning and management processes, and through introducing a set of climate resilient and sustainable land-use practices at the farm level that will support soil, water and biodiversity conservation. The project’s focus on traditional mixed agro-forestry plantations (nutmeg, cocoa, spices, fruits) with inherent biodiversity and soil and conservation values will also contribute to environmental sustainability. Social sustainability will be pursued through extensive involvement of CSOs and producer associations, including in participatory watershed planning processes (aiming at also establishing local committees), and through consultations and trainings related to the provision of information and financial services and for the introduction of CSA-SLM techniques. Sustainability of the training programmes will be supported through the systematic capturing, analysis and dissemination the technical documentation, experiences and lessons learnt by the dedicated knowledge management actions, and through inclusion of biodiversity conservation and SLM related skills in national HR priority list and Priority Training Needs Assessment and associated curricula managed by the Ministry of Education. Financial sustainability will be assured through component 2, by supporting the integration of CSA-SLM criteria to a set of financial support services and schemes, and also through the establishment of business plans for the longer term operation and maintenance of demonstration interventions and techniques introduced (e.g. the government propagation stations, the protective structures, irrigation equipment).

Furthermore, GEF investment in this project represents an important opportunity to impact SDGs – both directly and as a catalyst for other sources of financing and support. It can serve as a platform for the country to fulfill its SDG Agenda through catalytic investment.

The project community level interventions can be replicated in neighboring watersheds within the 3 Parishes targeted in Grenada, as well as within the sister islands of Carriacou and Petit Martinique, and also in other parishes of the main island. Replication and upscaling of the CSA-SLM practices will be supported through the knowledge management activities, the establishment of a network of farmer’s field schools, and also through component 2, financial and information services strengthened. The replication of watershed management plans will be supported through land use planning related capacity building and institutional strengthening measures. Dissemination of project results in the Caribbean region, in support of broader replication of experiences will be pursued through the involvement of regional technical institutions (e.g. CARDI, University of West Indies, 5Cs). Furthermore, upscaling will be supported attached to sustainability measures described for the training programmes (including the HR priority list and Priority Training Needs Assessment and associated curricula managed by the Ministry of Education), as well as the financial mechanisms supported and business plans prepared for the ground adaptation and demonstration measures (e.g. the government propagation stations, the protective structures, irrigation equipment).

**2. Stakeholders.** Will project design include the participation of relevant stakeholders from civil society and indigenous people?  
(yes X/no   ).

STAKEHOLDER (SH)	EXPECTED ROLE/CONTRIBUTION IN PROJECT PREPARATION
Ministry of Economic Development	Will ensure alignment with overall national policies, development plans, budgetary processes and other national frameworks, including the National Growth and Poverty Reduction Strategy (2014-2018) and the National Physical Development Plan throughout project design and implementation. Harbours GEF Focal point and provides overall coordination of stakeholders for project preparation design.
Ministry of Agriculture, Lands, Forestry, Fisheries and Environment (MALFFE)	National Implementing Partner (project executing agency). Also responsible for ensuring that the policy and legal framework are in place for effective management of natural resources, specifically BD and ecosystems services, and will have overall responsibility for implementation of the project. This ministry, throughout its multiple divisions as outlined below, will have the key responsibility of providing technical inputs into the preparation of

	the full proposal to both the institutional and ground level aspects of the project.
Fisheries Division (MALFFE)	Fisheries Division is directly responsible for conservation and management of seashore stocks, habitats and marine protected areas, as well as coastal zones directly impacted by land based activities; can contribute to education awareness on conservation management issues.
Forestry and National Parks Department (MALFFE)	Forestry and National Parks Department is directly responsible for conservation and management of forested landscape, national parks and protected areas, BD, IAS and ecosystems functions, including watersheds and water source; can contribute to education and awareness on conservation and management issues.
Environment Unit (MALFFE)	Agency within the MALFFE– responsible for climate change policies, programmes and initiatives, and will contribute to the activities throughout this project, including to enhanced management and conservation of the BD and ecosystems functions in Grenada.
Land Use Division (MALFFE)	Division within the MALFFE responsible the Ministries’ GIS and spatial database of land use, agriculture, water resources, ecosystems and forest cover, population and political boundaries/ geographic information, and is a key in providing input and project preparation direction related to land use, water resources, database / GIS development, management and use.
Extension Division (MALFFE)	This agency of the MALFFE that maintains direct relationships with farmers (crop and livestock) for the purpose of administering government support and for rendering technical advisory services with respect to sustainable agricultural technologies and practices.
Pest Management (MALFFE)	Responsible for preventing and controlling invasive pest species in Grenada, including those affecting agricultural crops.
Ministry of Finance	Responsible for controlling the exploration of aggregates from landscapes and seascapes and which authority through the physical planning development control authority (PPDCA) is responsible for ensuring land and building construction and development. This Ministry’s input will be key for project design related to land use and regulatory processes and also the financial incentives.
Agricultural Statutory Bodies	Grenada Cocoa/Nutmeg Associations; for marketing products of Tree-crop agriculture (Commodity Boards). Marketing and National Importing Board (MNIB); for marketing of Agricultural products produced by small-crop farmers, managing micro credit and certification services for farmers. Will have a role related to Component 2 development and will help define actions for Component 2 and 3.
National Water and Sewerage Authority (NAWASA), Statutory Body	Responsible for management of water supply for Grenada, ensuring that the water source is adequately protected from threats that would compromise potable water quality, and will provide technical advisory role related to water use, management, and supply of non-treated water for agricultural purposes.
Non-Governmental Organizations (NGOs):	Organizations such as ART, GRENCODA, PIA, SPECTO, GOAM are private, non-profit institutions set up for the purpose of delivering technical assistance and facilitator services with the goal of empowering individuals and communities, and can provide technical assistance in working with communities during project implementation.
Special initiatives / collaborations: TNC / GIZ	International conservation organization that can contribute to landscape approach to project, by incorporating aspects of seascape approach to management (CMBP Programme)
Community Based and Producer Organizations:	Local area vested interest groups such as N/W Farmers’ Organization; N/E Farmers’ Organization; southern Fishermen’s Organization INC., Grenada Federation of Agriculture and Fisheries Organizations, GRENRU, MAREB, Grenada Association of Poultry Producers (GAPP), Grenada Network of Rural Women Producers/GRENROP, Minor Spice Cooperative, Carriacou Association of Small Agro Processors (CASAP) will be participating in watershed planning, training and community level implementation, further consultations to be carried out in PPG phase to specify.
Ministry of Tourism	Responsible for management of historical components of National Parks and some tourism attractions. Will contribute to development of potential visitor functions in the dry forest that are to be gazetted.
Education institutions and centers of excellence	Have knowledge and mechanisms that can be expanded upon or incorporated into this project, including CARDI, St. Georges University (SGU) and regional institutions such as University of the West Indies (UWI), CARIWIN. These institutions will be engaged in

	project design for technical advisory for the different components and to ensure their contribution to the knowledge management and communication component.
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### 3. Gender Considerations. Are gender considerations taken into account? (yes /no )

Project preparation will ensure that gender consideration becomes an integral part of the proposed project strategy through a comprehensive gender assessment and development of a gender mainstreaming plan for the implementation phases. During the project inception the mandatory UNDP gender marking will be applied. This requires that each project in UNDP's ATLAS system be rated for gender relevance. This will for example include a brief analysis of how the project plans to achieve its environmental objective by addressing the differences in the roles and needs of women and men. Furthermore, gender marking implies the production of the following data by the project's year 2 and by its end:

- Total number of full-time project staff that are women
- Total number of full-time project staff that are men
- Total number of Project Board members that are women
- Total number of Project Board members that are men
- The number of jobs created by the project that are held by women
- The number of jobs created by the projects that are held by men

In order to ensure equality, these criteria will be integrated into the project design.

Female-headed households account for in excess of 36% of Grenada's poor and indigent population, and many of these women are responsible for supporting their families. Women play a majority role in the post-production of agricultural products, and will benefit from project support. The project will support women led initiatives such as: Small scale production using climate resilient crops and methods include Grenada Network of Rural Women Producers (GRENRU) is a group of 69 woman with cottage industry agro-processing small enterprises using organic products (jams, jellies, coconut oil); Minor Spices Cooperative, an agrotourism enterprise and germ plasm museum for spices; Grenada Organic Agricultural Movement (GOAM), amongst others. The Carriacou Association of Small Agroprocessors (CASAP) is a 9 woman member association carries out agroprocessing (jams, jellies, cakes) uses local crops including watermelon, plums, golden apple, watermelon, plums, golden apples, cassava lack a location for processing with needed equipment, uniformity of quality, labelling and marketing. Gender and social issues will be fully considered in this project, and gender accountability is a cross-cutting issue at both the project level and component level that will be tracked as part of the M&E system. Special attention will be paid to gender issues in developing socioeconomic indicators, and in the capacity-building activities.

### 4. Risks

Risk	Level	Mitigation
Extreme climatic events and hazards (e.g. hurricanes, tropical storms, prolonged drought) jeopardize the SLM measures introduced and consequently cause declines in agricultural production and livelihoods	M-H	While adaptation to climate change is at the core of the proposed project, it will address mitigation of this risk by incorporating climatic projections in the watershed level plans, support preparedness to extreme events through climate early warning systems, incorporate in the design of farm level and site specific measures potential impacts of extreme events (e.g. techniques ensuring deep root structure of agroforestry plants, or climate –proof design of installations – propagation stations and protective structures). Farmers are more likely to invest in farming abandoned plots and implementing CSA practices with crop insurance, currently not available for crops. The project will be developing a financial mechanism for farmers for both access to loans to plant and implement climate resilient measure as well as a mechanism for crop insurance.
Landowners are reluctant to incorporate SLM or CSA activities on their private lands, in the lack of land use zoning and regulations	M-H	Implementation of SLM activities on degraded lands, both outside protected areas and in watershed areas, are essential for addressing land degradation. The current GEF R2R Project will explore a model for addressing land development of co-management of private lands for protection or with restrictive land development control (LDC), which can be incorporated into this project. This project though, will actively promote public buy-in for SLM activities on private lands, particularly focusing on private abandoned agricultural lands and inaccessible watershed areas, demonstrating impacts of activities that result in LD and downstream impacts.
Land Use Policy does	M	A Land Use Policy and Plan requires political and institutional support for

Risk	Level	Mitigation
not receive Cabinet Approval, and Land Use Plan not developed.		implementation, well beyond the prevue of this project. With or without a land use policy and plan, the activities developed to support a land use plan (comprehensive land use survey, biodiversity assessments, monitoring of land use and physical changes, biodiversity monitoring) are still essential for land management decisions, even on an ad-hoc basis, by government. In addition, implementation of these activities and the development of a database and monitoring tool will still greatly support biodiversity conservation actions through availability of supporting information.
Knowledge drain and implementation capacity constraints at government due to the staffing limitations (overall staff reduction) and hiring restrictions based on current structural reforms under the IMF	M	As part of the sustainability measures on institutional the capacity building, the proposed project will support the systematic capturing, analysis and dissemination the technical documentation, experiences and lessons learnt by the dedicated knowledge management actions, and through inclusion of biodiversity conservation and SLM related skills in national HR priority list and Priority Training Needs Assessment and associated curricula managed by the Ministry of Education. Implementation arrangements will be defined through PPG phase in a way that would complement existing government capacities in the delivery of activities in the target agricultural areas (e.g. hiring of field coordinators and technicians), and will strengthen the function of propagation stations for advisory and local coordination functions.

## 5. Coordination with other relevant GEF-financed and other initiatives.

GEF currently supports a number of initiatives in Grenada that the Project will coordinate with, including the GEF 5 FSP “*Implementing a Ridge to Reef Approach to Protecting Biodiversity and Ecosystem Functions within and Around Protected Areas*” described in this project’s baseline and upon which the project will build on the outputs, outcomes and lessons learned. The government of Grenada in 2015 begun implementation of the R2R GEF-5 Project that serves as a key baseline initiative. That project will establish institutional frameworks that will also support this project’s implementation, including the operationalization of the National Parks Advisory Council, finalization of the Protected Area Forestry and Wildlife Act and regulations for a visitor PA fee system. Consolidation of legal processes to include private lands in the PA system along with regulations developed and implemented to prevent spread of agriculture and housing in high priority BD habitats will support land management on private lands in this project. Although the R2R project’s interventions are supporting introduction of community based SLM techniques in only one watershed (Beausejour, on the western coast), lessons learned from improved SLM and sustainable agriculture production, including capacity development and techniques, will be incorporated into this project. GEF is also supporting both the Development of a National Biodiversity Conservation Strategy, and Action Plan and Grenada’s Country Report to the CBD, upon which biodiversity activities in this project support. The project will also build on the Implementing Integrated Land, Water & Wastewater Management in Caribbean SIDS project (2012-2016) that addresses policy, tools and guidelines for IWRM as well as methods for multi-scale assessment and monitoring of land degradation trends. The GEF/WB-TNC supported Sustainable Financing & Management of Eastern Caribbean Marine Ecosystem Project will support long term sustainable financing for protected areas through the development of a National Trust Fund, recently government approved, with possible (TBD) use methods and indicators developed for MPAs that might be relevant to terrestrial protected areas. Preventing COSTS of Invasive Alien Species (IAS) in Barbados and the OECS Countries focuses in prevention, early detection, control and management frameworks for invasive alien species (IAS) that emphasize a risk management approach by focusing on the highest risk invasion pathways of Barbados and OECS countries. Though there is no national component, Grenada will benefit from regional component that focuses on strengthening institutional mechanism to address IAS. In addition, synergies with the Integrating Water, Land and Ecosystems Management in Caribbean Small Island Developing States (IWeCO) that is contributing to the preservation of Caribbean ecosystems that are of global significance and the sustainability of livelihoods through improved fresh water resources management and sustainable land management. This project will build on outputs of the now closed GEF/WB supported Grenada Dry Forest Biodiversity Conservation Project (2001-2006) that identified and supporting key biodiversity research with outreach and education regarding Grenada’s unique and threatened coastal tropical dry forests. In addition, the GEF/UNDP supported Small Grants Programme (Grenada) is funding small community initiatives that address deforestation, land and soil degradation, climate smart agriculture including rainwater harvesting that this project can build upon.

**6. Consistency with National Priorities.** Is the project consistent with the National strategies and plans or reports and assessments under relevant conventions? (yes /no )

The project builds on a number of ongoing initiatives being carried out by the Government of Grenada and is consistent with Government's priorities as set out in national policy documents and plans and projects implemented. Of key relevance is the Grenada Agriculture Policy, with the goal of ensuring an enabling environment facilitating growth and optimal utilization of our country's resources in the agricultural sector in a sustainable manner. This policy is supported by the 2015 National Agriculture Plan, with a primary strategic focus of strengthening the sector's resilience to climate change and natural disasters and promoting development that is socially, economically, and environmentally sustainable. The project will be supporting the agriculture sector policy and plans that incorporate biodiversity: The National Agriculture Plan's strategic objectives recognize the need for protected forests for INRM (including water and biodiversity) as well as Climate Smart Agriculture. The Grenada National Water Policy outlines optimal and sustainable use of the country's water. This project builds on and supports Government's prioritization of IWRM outlined in the Water Resources Management Unit and Action Plan for Implementation of the Grenada National Water Policy (2012). Project support for integrated watershed management supports the implementation of this Action Plan and the framework of IWRM as a best practice process, and mainstreaming biodiversity into the integrated watershed landscape in this project will further support this management framework and demonstrate biodiversity mainstreaming considerations into watershed management in the water sector. Government has decided that water resource management should be integrated into the MALFFE, and is in the process of submitting a US\$30M grant to the GCF for water resource management, including the supporting institutional framework. The National Agriculture Plan is also aligned to the objective of supporting climate resilience and environmental management in the MAFFFE Corporate Plan (2015-17). The Project also furthers the Grenada Declaration, where Grenada, at the 2006 8th Meeting of the Conference of Parties to the Convention on Biological Diversity (COP 8) pledged to effectively conserve at least 25% of its near shore marine area and at least 25% of its terrestrial area by 2020 as a means to contribute to the sustainable livelihoods for its people and to contribute to protection of the world's biodiversity, further extending Governments commitment to the Caribbean Challenge Initiative to protect 20% of near shore marine environment by 2020. The proposed project also directly supports Grenada's efforts to comply with its commitments related to international environmental conventions., and promotes the conservation and management of the country's biodiversity through addressing priority actions in the 5<sup>th</sup> Report to CBD (Aichi Targets #1, 2, 7, 11, 12 and 14)\_and the draft National Biodiversity Strategy and Action Plan (NBSAP, 2015) of which the key objectives are to provide broad based support for conservation and sustainable use of biodiversity, to protect key ecosystems from negative human induced impacts, and to develop and encourage sustainable utilization of biological resources that are essential to the livelihoods of local communities. This project contributes to the Aichi Targets by mainstreaming biodiversity into government and civil society through integration into the agricultural sector (Targets #1 & 2), reducing pressures on biodiversity through increasing effective management of agriculture and forestry (Target #7), further safeguarding threatened species, ecosystems and ecosystem services through increasing the protected area estate, reducing threats to biodiversity and species of global significance and (IAS/disease) (Targets 11, 12), and restoring and safeguarding essential ecosystem services through improved integrated watershed management (Target 14). This project also contributes to multiple Sustainable Development Goals, most relevant of which are: Goal 4 through gender equality and inclusion into SLM, agricultural and post production activities, including all stakeholder engagement and participatory management; Goal 6 directly through improving CSA techniques and production, including livelihood opportunities; and Goal 9 through mainstreaming biodiversity into policy and regulatory frameworks as well as integrated natural resource management actions and plans (such as watersheds), and strengthening biodiversity conservation through an increased protected area estate and direct action to remove threats to key biodiversity. The project also promotes the objectives of the newly aligned National Action Plan (NAP, 2015) to support the UN Convention to Combat Desertification, which seeks to prevent land degradation, restore 10% of degraded land by 2020, and mitigate the effects of drought and other climatic shocks, using an integrated approach for land degradation reduction and drought mitigation, which in turn also complements the targets of the Convention on Biological Diversity (CBD) and the United Nations Framework Convention on Climate Change (UNFCCC). Grenada's Climate Change Policy and Action Plan (2007-2011) outlines a strategic objective "to lay the foundation for an organized long term response to Climate Change", and which identifies the need to address linkages between climate change, biological diversity and land degradation. This project also supports Grenada's x to the RAMSAR Convention (x), focusing its expansion of the protected area estate on Grenada's sole RAMSAR site at Levera. The PASP identifies nationally-significant marine and terrestrial environments that meet the criteria as potential protected areas and could be designated to further meet the goals of the Grenada Declaration. Given terrestrial sites identified only amount to 17% of Grenada's land mass, the Project will further Grenada's goals of the Grenada Declaration by supporting a revision of the Grenada Protected Area System Plan (PASP, 2009-2014). Project objectives and actions also support the 2006 (revised) St. George's Declaration of Principles for Environmental Sustainability, whose overall aim in to

foster equitable and sustainable improvement in the quality of life in the OECS region. This project also supports 1999 Cabinet approved Forest Policy for Grenada, Carriacou and Petit Martinique whose objectives include to conserve species, ecosystems and genetic diversity, maintain and enhance forest ability to provide goods and service sustainably and optimize contribution of forest resources to social and economic sector (proposed for updating in the under the GEF 5 R2R project). The project also focuses on formal designation of 2 proposed protected areas outlined in the Grenada Protected Area System Plan (PASP, 2009-2014), furthering protection of globally threatened coastal dry forest. The National Strategic Development Plan (2007), which proposes that environmental considerations should be integrally linked to national development, identifies the need to link livelihoods and environmental sustainability, and advocates for better enforcement of laws to protect biodiversity. As well, the Tourism Master Plan (1997) and the National Environmental Policy and Management Strategy (NEMS, 2005) supports Grenada's commitment to the 2000 St. George's Declaration of Principles for Environmental Sustainability, including, but not limited to achieving the long-term protection and sustained productivity of the region's natural resource base and ecosystem service it provides, which this Project further supports. The Project clearly aligns with Grenada's climate change policies and plans, including Grenada's National Growth and Poverty Reduction Strategy (2014-2018), for which climate change adaptation is a pillar, as is Cabinet's decision that climate change considerations are integral to the new (2003-2021) National Physical Development Plan.

## 7. Knowledge management.

Knowledge management will be an integral part of the project, enabling institutional memory, promoting learning and continuous improvement, generating documents for up-scaling of lessons and experiences and visibility strategies for capacity development. Specific knowledge management activities are incorporated under component 4 and will be carried out in an integrated way and in support of the various capacity building and training actions under the different components. The broader dissemination of experience and lessons learnt generated by the project will be also pursued through engaging national and regional technical and education institutions, such as the St. Georges University (SGU), University of the West Indies (UWI), CARIWIN, CARDI, 5Cs.

### **PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY**

#### **A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT ON BEHALF OF THE GOVERNMENT**

Name	Position	Ministry	Date (MM/dd/yyyy)
<b>Mr. Fitzroy James</b>	Director of Economic and Technical Cooperation	Ministry of Economic Development, Planning, Trade and Cooperatives	<b>07/01/2016</b>

#### **A. GEF AGENCY CERTIFICATION**

<b>THIS REQUEST HAS BEEN PREPARED IN ACCORDANCE WITH GEF/LDCF/SCCF/NPIF POLICIES AND PROCEDURES AND MEETS THE GEF/LDCF/SCCF/NPIF CRITERIA FOR PROJECT IDENTIFICATION AND PREPARATION.</b>					
<b>AGENCY COORDINATOR, AGENCY NAME</b>	<b>SIGNATURE</b>	<b>DATE (MM/DD/YYYY)</b>	<b>PROJECT CONTACT PERSON</b>	<b>TELEPHONE</b>	<b>EMAIL ADDRESS</b>
Adriana Dinu, UNDP-GEF Executive Coordinator.		01/04/2017	Gabor Vereczi Regional Technical Adviser	+507 302 4628	gabor.vereczi@undp.org