Project Identification Form (PIF) entry – Full Sized Project – GEF - 7

BIOREACH: Biodiversity Conservation and Agroecological Land Restoration in Productive Landscapes of Trinidad and Tobago

Part I: Project Information

GEF ID
10188

Project Type
FSP

Type of Trust Fund
GET

CBIT
No

Project Title
BIOREACH: Biodiversity Conservation and Agroecological Land Restoration in Productive Landscapes of Trinidad and Tobago

Countries
Trinidad and Tobago

Agency(ies)
FAO

Other Executing Partner(s)
Environmental Management Authority (EMA)

Executing Partner Type
Government

GEF Focal Area
Multi Focal Area

Taxonomy
Focal Areas, Biodiversity, Species, Invasive Alien Species, Threatened Species, Tropical Rain Forests, Biomes, Mainstreaming, Ceritification - International Standards, Agriculture and agrobiodiversity, Land Degradation, Land Degradation Neutrality, Land Cover and Land cover change, Land Productivity, Sustainable Land Management, Sustainable Livelihoods, Community-Based Natural Resource Management, Sustainable Agriculture, Income Generating Activities, Sustainable Fire Management, Restoration and Rehabilitation of Degraded Lands, Influencing models, Strengthen institutional capacity and decision-making, Transform policy and regulatory environments, Convene multi-stakeholder alliances, Demonstrate innovative approache, Stakeholders, Communications, Awareness Raising, Behavior change, Private Sector, Financial intermediaries and market facilitators, Individuals/Entrepreneurs, SMEs, Type of Engagement, Information Dissemination, Consultation, Participation, Partnership, Local Communities, Beneficiaries, Civil Society, Community Based Organization, Academia, Non-Governmental Organization, Gender Equality, Gender Mainstreaming, Gender-sensitive indicators, Gender results areas, Capacity Development, Integrated Programs, Food Systems, Land Use and Restoration, Landscape Restoration, Sustainable Commodity Production, Integrated Landscapes, Comprehensive Land Use Planning, Food Value Chains, Sustainable Food Systems, Capacity, Knowledge and Research, Knowledge Generation, Enabling Activities

Rio Markers
Climate Change Mitigation
Climate Change Mitigation 0

Climate Change Adaptation
Climate Change Adaptation 1

Duration
48 In Months

Agency Fee($)
356,455

Submission Date
4/29/2019

A. Indicative Focal/Non-Focal Area Elements

Programming Directions	Trust Fund	GEF Amount($)	Co-Fin Amount($)
BD-1-1	GET	1,756,274	12,881,325
LD-1-3	GET	603,080	4,000,000
LD-1-4	GET	1,000,000	8,000,000
LD-1-1	GET	392,808	4,000,000
	Total Project Cost ($)	**3,752,162**	**28,881,325**

B. Indicative Project description summary

Project Objective

To promote biodiversity conservation, to restore degraded lands and improve livelihoods of rural communities in targeted productive landscapes

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount($)	Co-Fin Amount($)
1. Biodiversity-supportive land use planning	Technical Assistance	1.1.Biodiversity-sensitive land use planning and participatory land management mechanisms established in South & West of Nariva Swamp, South of Valencia Forest Reserve	1.1.1 Land use plans identifying high value conservation areas and productive terrestrial landscapes in buffer zones, are developed and validated 1.1.2 Multi-stakeholder committees are established and functional in four ecologically vulnerable areas in Trinidad and Tobago in South & West of Nariva Swamp, South of Valencia Forest Reserve	GET	500,000	4,000,000

2. Forest and Agricultural landscape restoration and biodiversity protection through agroecology	Investment	2.1 Land degradation neutrality achieved as degraded sites are restored and productive capacity of agricultural landscapes is enhanced *Target: 2400 hectares of degraded lands in Eastern Corridor across Trinidad and Tobago* *Indicator 3: 1400 hectares of land restored* *Indicator 4: 1000 hectares of landscaped under improved practices* 2.2 Restoration of critical habitats in ecological corridors between Protected Areas *Target: 100 ha with restored habitats* *Indicator 3: 100 hectares of land restored (habitats)*	2.1.1 Diverse integrated agroforestry production systems upscaled 2.1.2 Agroecological practices disseminated through farmer field schools, model farms and capacities of extension services are improved 2.1.3 Integrated wildfire management system developed 2.1.4 Invasive alien species management plan established in three vulnerable sites 2.2.1 Habitat-relevant biodiversity data is collected in corridors between PAs 2.2.2 Riparian forest established with native species in corridors between PAs (15km) 2.2.3 Recovery plan for significant species (e.g. piping guan, sabrewing hummingbird, West Indian Manatee) in vulnerable landscapes is implemented	GET	1,700,110	15,000,000
3. Enabling environment for green, biodiversity-friendly value chain development	Technical Assistance	3.1 Sustainability of biodiversity-friendly value chains are improved 3.2 Upscaling and improved market access for agroecologically produced agricultural products and services	3.1.1 Agroecological practices are implemented along 5 priority green value chains (cocoa, coconut, avocado, honey, roots and tubers) and specialized commodities (e.g. dryland rice)	GET	1,073,378	8,437,259

	3.3 Green value chains policy informs national-level agricultural planning and development	3.1.2 30 Lead farmers are trained on sustainable land management and agroecological principles 3.1.3 20 Farmer field schools on agroecology including integrated pest management, soil fertility, production focusing on diversification are conducted 3.2.1 Marketing strategies and business plans are developed to increase biodiversity-friendly products in markets 3.2.2 A minimum of three public-private sector partnerships are established to increase consumption of agroecologically produced products 3.2.3 Upscaling of ecotourism/agritourism operators in four ecologically vulnerable areas 3.3.1 Multi-stakeholder group including government, private sector, CBOs convened to develop roadmap for green value chains policy

4. Knowledge management and monitoring	Technical Assistance	4.1 Improved knowledge management on biodiversity and land degradation issues	4.1.1 Knowledge products produced by partner institutions (UWI, EMA) and disseminated	GET	300,000	400,000
		4.2 Ongoing monitoring feeds into adaptive project management	4.2.1 Project results and gender balance is monitored annually			
				Sub Total ($)	**3,573,488**	**27,837,259**
Project Management Cost (PMC)						
				GET	178,674	1,044,066
				Sub Total($)	**178,674**	**1,044,066**
				Total Project Cost($)	**3,752,162**	**28,881,325**

C. Indicative sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
Donor Agency	IADB	Grant	Investment mobilized	957,350
Donor Agency	IADB	Grant	Investment mobilized	1,662,375
Donor Agency	IADB	Grant	Investment mobilized	1,491,183
GEF Agency	FAO	Grant	Investment mobilized	1,996,917
Government	Ministry of Agriculture, Land and Fisheries Programme	Public Investment	Investment mobilized	10,000,000
Government	Cocoa Development Company of Trinidad and Tobago	In-kind	Recurrent expenditures	5,000,000
Government	Environment Management Authority	In-kind	Recurrent expenditures	197,500
Government	Ministry of Planning and the Environment- Environmental Policy and Planning Division	In-kind	Recurrent expenditures	576,000
Government	Tobago House of Assembly – Division of Agriculture, Forestry and Fisheries	Public Investment	Investment mobilized	7,000,000
			Total Project Cost($)	**28,881,325**

Describe how any "Investment Mobilized" was identified

The GORTT has offered to mobilize resources from the following programs in support of the GEF grant by way of scaling up, replication and other means to be further defined under the PPG. 1. IADB projects: i) Building on Vetiver Project; ii) Making Agriculture Profitable and Sustainable; iii) Improving Productivity of Artisanal Cocoa in Trinidad and Tobago. 2. FAO Project: Capacity building for Land Administration: Trinidad and Tobago (UTF/TRI/005/TRI) 3. Government of

Trinidad & Tobago (GORTT): • Ministry of Agriculture, Land and Fisheries Programme of Work – National Reforestation Programme • Tobago House of Assembly – Division of Agriculture, Forestry and Fisheries: • The Establishment of Agro-processing Facilities • The Goldsborough Estate Irrigation Project • The Development of an Agro-Park at Friendship Estate

D. Indicative Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)	Total($)
FAO	GET	Trinidad and Tobago	Biodiversity	BD STAR Allocation	1,756,274	166,846	1,923,120
FAO	GET	Trinidad and Tobago	Land Degradation	LD STAR Allocation	1,995,888	189,609	2,185,497
				Total GEF Resources($)	**3,752,162**	**356,455**	**4,108,617**

E. Project Preparation Grant (PPG)

PPG Amount ($)	PPG Agency Fee ($)
150,000	14,250

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)	Total($)
FAO	GET	Trinidad and Tobago	Biodiversity	BD STAR Allocation	70,210	6,670	**76,880**
FAO	GET	Trinidad and Tobago	Land Degradation	LD STAR Allocation	79,790	7,580	**87,370**
				Total Project Costs($)	**150,000**	**14,250**	**164,250**

Core Indicators

Indicator 3 Area of land restored

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
1500.00	0.00	0.00	0.00

Indicator 3.1 Area of degraded agricultural land restored

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
750.00			

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
500.00			

Indicator 4.2 Area of landscapes that meets national or international third party certification that incorporates biodiversity considerations (hectares)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Type/Name of Third Party Certification

Indicator 4.3 Area of landscapes under sustainable land management in production systems

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
500.00			

Indicator 4.4 Area of High Conservation Value Forest (HCVF) loss avoided

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Documents (Please upload document(s) that justifies the HCVF)

Title	Submitted

Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO_2e (direct)	1650000	0	0	0
Expected metric tons of CO_2e (indirect)	0	0	0	0

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO_2e (direct)	1650000			

Expected metric tons of CO_2e (indirect)	
Anticipated start year of accounting	2021
Duration of accounting	20

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO_2e (direct)				
Expected metric tons of CO_2e (indirect)				
Anticipated start year of accounting				
Duration of accounting	20			

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)

Target Energy Saved (MJ)	

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)

Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	1,000			
Male	1,500			
Total	2500	0	0	0

Part II. Project Justification

1a. Project Description

a. The project problem, root causes and barriers that need to be addressed

The **main problem** that this project seeks to address is that Trinidad and Tobago's biodiversity and productive landscapes face threats from human encroachment, forest fires, and unsustainable livelihoods. The biodiversity of Trinidad and Tobago plays an important role in the ecosystem services that support human well-being, such as in the provision of freshwater, flood regulation/erosion control, tourism/ecotourism, recreation, shoreline protection (mangroves, coral reefs and seagrasses), nutrient cycling and pollination and the provision of food.[1] The depletion of biodiversity and land degradation reduce people's access to productive landscapes and ecosystem services impacting livelihood, health, and agriculture production, thereby creating a negative feedback loop. This project seeks to disrupt the negative cycle with a virtuous one, through restoration of landscapes, effective land use planning and the proliferation of sustainably cultivated green value chains resulting in increased, and more diverse livelihoods. In addition to supporting livelihoods and food security, diverse, better integrated production systems will also increase environmental resilience, especially in the context of severe climate events, which SIDS such as Trinidad and Tobago are subject to.

Background

Trinidad and Tobago (henceforth T&T) is a twin island republic located at the southern-most tip of the Caribbean. It shares maritime borders with Barbados, Grenada, Guyana and Venezuela. The country occupies an area of 5,128 square kilometres and has a population of approximately 1.37 million people. Trinidad is the larger island with ninety-six percent of the population whilst Tobago is the smaller island with approximately six per cent of the nation's land area and four per cent of the population.

The two-island state, is composed of unique tropical ecosystems and a wealth of biodiversity. The country has highly varied habitats for such a small land mass. T&T is made up of hillside and lowland forest, full-fledged natural savannah, swamps, and mangroves. The main ecosystems are: coastal and marine (coral reefs, mangrove swamps, ocean and seagrass beds); forest; freshwater (rivers and streams); karst; man-made ecosystems (agricultural land, freshwater dams, secondary forest); and savannas. The country is composed of sedimentary, metamorphic, volcanic and limestone substrate, and surrounded by reefs connected to deep offshore areas. The islands also receive volumes of freshwater, sediment and nutrient outflow from one of the longest rivers in South America (Orinoco).

Forests in Trinidad and Tobago are widely diverse for such a small area. They include cloud, dry, deciduous and semi-evergreen variations, which support biodiversity, agricultural and recreational activities. Trinidad also lies at the intersection of two major tectonic plates whose interaction has generated one of the largest natural asphalt deposits in the world, at its southwest end, contributing to a hotbed of microbial life.[2] Overall, there are six major soil types in Trinidad and nine in Tobago.[3]

Home to over 3,000 species of which about 85 are endemic, and 470 are bird species, Trinidad and Tobago's biodiversity has attracted tourists, industry, farmers, scientists, among others.[4] The unique biodiversity in T&T has yielded scientific research of global significance e.g. echolocation of bats, animal chemical responses, and animal mimicry.

In the following table, **key biodiversity areas** located in the project areas, species as well as key pressures/ threats are described with more detail.

Key Biodiversity Areas[1]

Project location and key biodiversity area[2]	Biodiversity and species	Pressure/threats to key biodiversity
Main Ridge in Tobago (3,982 ha)	**Birds:** Four species three of which are endemic subspecies: White-tailed Sabrewing, Venezuelan Flycatcher, Rufous-vented Chachalaca and Copper-rumped Hummingbird. The Tobago populations of White-tailed Sabrewing and Blue-Backed Manakins were thought to have been exterminated by hurricane Flora in 1963. Populations have now recovered and displaying Blue-backed Manakins are one of the main attractions to visitors to the forests of Tobago. **Non birds biodiversity:** One endemic snake species Erythrolamprus ocellatus, and two subspecies Liophis reginae ssp. and Mastigodryas boddaerti dunni are currently only known from Tobago. There are 16	- Hunting and widespread habitat destruction - Hurricanes pose a serious threat, especially given the expected increase in intensity and frequency of hurricanes associated with climate change. - Bush fires are common during the dry season and contribute to significant habitat loss.

	endemic plants listed from Tobago, most of which are likely to occur within the boundary of the Main Ridge Forest Reserve.	
Part of Victoria-Mayaro Forest Reserve (52,396 ha)	**Birds:** The site offers the possibility of a second population of the critically endangered Trinidad Piping–guan. The site is also of national importance to the birds and terrestrial mammals as it represents one of the largest areas of intact forest in Trinidad and Tobago. **Non-bird biodiversity:** The Trinidad and Tobago endemic frog Eleutherodactylus urichi is found at the Trinity hills and surrounding forest	- Natural gas pipeline was recently constructed which, together with existing roads, fragments the formerly contiguous forest. - Gradual habitat destruction due to illegal logging or expansion of agricultural plots. -The survival of any population of Trinidad Piping-guan is severely threatened by hunters.

[1] World Database of Key Biodiversity Areas (http://www.keybiodiversityareas.org/site/factsheet/main-ridge-tobago-iba-trinidad-and-tobago).

[2] For further details see maps in Annex A

Despite this rich context, T&T's biodiversity faces threats due to land degradation resulting in habitat loss.

It is estimated that Trinidad and Tobago have lost approximately 8 percent of species from ecosystems in the country (UNEP-WCMC, 2016).[5] The main direct drivers of biodiversity loss are: land degradation and habitat change (loss, degradation, and fragmentation), overexploitation/unsustainable use, invasive alien species, and pollution. The main types of land degradation are deforestation, accelerated soil erosion, declining soil fertility, the increased incidence of flooding, soil and water pollution, and contamination from pesticides. Most significantly, the spread of encroaching populations and companies who operate without licences have led unsustainable practices in vulnerable areas. A lack of a comprehensive land use planning mechanisms has led to unsustainable utilization, overuse and degradation of the country's land resources.[6]

The degradation of land further poses risks to biodiversity, people and their sources of livelihoods. With erosion of land cover, heavy rains result in flooding, destroying crops and property. In 2018, it was reported that that over a 4-day period, intense rainfall, and coastal and river flooding and landslides impacted 150,000 people (11% of the population) and 4,100 households in T&T (OCHA).

T&T also face risks from forest fires, which in Trinidad and Tobago are largely caused by human activity. Fires are mostly deliberately set or started during the preparation of lands for farming—mainly for agriculture, in grasslands, to prevent regeneration of the forests, or to burn waste. Despite there being severe fire events (in 2003 for instance, three fires burned a total of 1,059 hectares in Southwest Trinidad), there is a lack of knowledge around fire prevention, management, its impacts on the soil and environment, as well as its spreading capacity during dry periods.

The following are the root causes for biodiversity loss and land degradation in Trinidad and Tobago:

Root Causes

· *Poor governance*- The lack of governance on land tenure has created many of the issues that have promoted encroachment and unsustainable practices on vulnerable land. There are over 50 pieces of legislation that cover land tenure, many of which overlap, many of which are unknown, with little to no sensitization at the community level. One of the major concerns is that squatter communities are often tacitly accepted by various government representatives, while technically going against state land policies. Many squatters are able to obtain letters of permission from elected officials (Certificates of Comfort), granting them stay in forest reserves or other ecologically vulnerable areas.

The lack of cross-government collaboration on this issue has meant that various departments have their own policies without a coherent approach, while the Office of the Commissioner of State Lands operates without sufficient enforcement capacity. Anecdotally, it is known that the application process for land occupation is so lengthy, and enforcement so poor, that it is far more efficient to merely occupy/construct in remote zones, as there is little chance of reprisal. The Commission does not have the resources to take all the squatters to court.

The result is that entire communities have sprung up in areas that are zoned as reserves, near ecologically vulnerable sites, or in areas that are prone to floods or fire. While this land has not been purchased, laws such as the Adverse Possession Rule, allow occupiers of land, to which they do not have legal title, to obtain ownership if **they can prove exclusive, continuous and uninterrupted possession of the land** for at least sixteen years in the case of land owned by an individual, or thirty years in the case of land owned by the State.

In addition to the environmental risks this poses, there are also health risks associated with unplanned housing developments, without proper sanitation and water resources, which can lead to the spread of disease. This practice, , is not restricted to family farmers, commercial producers are also known to illegally occupy land and quarries.

· *Poverty-* Many of the pressures driving communities to remote areas are economic. Without sources of income to survive in more urban settings, and with high cost of land, people have limited choices. Despite T&T's energy wealth, a 2013 study by the Commonwealth Foundation estimated poverty levels at 20 %. Many low-income groups lack the means and resources to provide for some of their basic needs and have resorted to the unsustainable exploitation of natural resources, particularly through deforesting, unsustainable agricultural practices, and burning off lands in areas where it could spread. Some of these communities are settled in zones which are identified as forest reserves. However, with a lack of knowledge, demarcation, the communities grow.

· *Agricultural legacy-* In T&T, agriculture contributes less than 0.5% to GDP, employs four percent of the population, and is composed of an aging demographic, which is unable to attract youth. The agriculture sector has historically been overlooked in favour of extractive industries.

During the colonial period the main agricultural exports were coffee, cocoa and sugar, which were produced through the plantation structure. As a result, there has been little tradition of product diversification.

T&T is a net food-importing country, which is both costly and dependent on global supply and price shocks. T&T is impacted by increases in global food prices as evidenced by a growing food import bill, which in 2010 represented 10.1 percent of total imports. Importation of food also impacts the national economy, in particular, domestic inflation. For instance, over the period 2000 to 2012, food imports increased significantly from over TTD $1.5 billion in 2000 to TTD $6.2 billion in 2012, thereby increasing the cost of living for the national population.

In Tobago, which was historically seen as the "bread basket of the country", there has been a reduction of the area under agriculture cultivation by 65%, between the period 1982 and 2004. This decline in agricultural holdings and reduction in the area under cultivation was due to land use change-- the utilization of lands from agriculture to housing and other industrial uses. Many people also opted out of employment on farms to more lucrative government funded jobs; however, these positions are now threatened as government revenue has decreased due to energy prices. Some of the lands remaining idle could be returned to agricultural production, however the resources have not been put in to draw people into the agricultural sector, and the lands are underutilized and neglected.

The main food imports are: cereals, fruits and vegetables, dairy products, eggs, and meat. Given T&T's climate, there is great potential for T&T to be producing their own agricultural goods and increasing their food security and health of population. As is witnessed in Tobago, particularly in 2018, the mere interruption of ferry services, can lead to food insecurity and spoiling of perishable products. This high level of dependency on imports and transportation services, can create great food security pressures on the island.

The government of T&T is prioritizing agriculture so as to diversify the economy, increase food security and provide sustainable employment opportunities. However, as is described under the "barriers" heading, there are challenges that have prevented from this happening at a national level.

· *Lack of Knowledge*- Many of the degrading practices that happen in T&T, occur because of the lack of knowledge around them. Forest fires, for instance, are largely caused by human activity. Fires are deliberately set during the preparation of lands, mainly for agriculture, in grasslands, to prevent regeneration of the forests, or to burn waste, despite there being severe fire events. Every year approximately 309 wildfires are recorded affecting some 3,492 ha. of forest land--the total figure is expected to be even higher as not all wildfires are recorded. In 2003, for instance, three fires burned a total of 1,059 hectares in Southwest Trinidad. In addition to the imminent threat associated with uncontrolled wildfires, the repetitive burning leads to continued land degradation, and spread of invasive alien species. There is a lack of knowledge around fire prevention, management, its impacts on the soil and environment, as well as its spreading capacity during dry periods.

Similarly, there is a lack of awareness on agricultural practices and how they may be rendered more sustainable and productive. Many squatting farmers, who burn land for agriculture, in addition practice little to or no soil conservation. Most farmers cultivating on sloping soils, for instance, tend not to use appropriate soil conservation methods. An example of this is noted in Central Trinidad where farmers are known to till up and down the slope as oppose to across the contour.[7] Failure to employ the correct methods increases soil erosion and sediment loads in runoff water.

Similarly, a concern expressed by government and CBOs alike is the high use of insecticides, fungicides, herbicides and antibiotics which may be undermining agricultural production. Research from the University of West Indies (UWI) has noted that there is inadequate knowledge on pests and diseases that often lead to misdiagnosis and improper management practices. It is common for farmers to use incorrect chemical pesticides or too high dosages. Chemicals are often applied at greater frequencies than necessary and sometimes incompatible mixtures are used. There is often monotonous use of pesticides with similar active ingredients which influence the development of resistance of pathogens to the chemical agents.[8]

Research by the UWI has determined that 50% of farmers, in a field survey, were using pesticides at weekly intervals and some even twice a week, while the standard recommendation is generally every two weeks, based on need only. This excessive pesticide use results in a cyclical problem, with greater incidence levels of diseases and pests often occurring, despite application of chemical pesticides. This is due to development of resistance among the pests and pathogens.[9]

This has also caused agriculture to become a source of pollution. Farmers rely heavily on imported products to manage the many crop pests. Chemical pest control can account for a high proportion of the production costs (up to 30 per cent). Between 2003 and 2006 about 8.2 million kilograms of pesticides was imported into the country. According to the 2005 Report on the State of Land Resources of Trinidad and Tobago the it was noted that the country imported 2,400 tonnes of pesticides in 2004. There little information available today on the concentrations of pesticide residues in soils, surface and groundwater, not to mention the effects on human and wildlife health.

Invasive Alien Species (IAS) - also contribute to biodiversity loss and land degradation in Trinidad and are linked to the occurrence of fire. In particular, the Guinea grass (Megathyrsus maximus) is an invasive grass that threatens ecosystems. It is extremely fire-prone and linked to crises in fire management in Trinidad. Non-native grass invasion and subsequent fire result in landscape-scale conversion from forest to grassland[10] throughout the tropics--the spread of fire in guinea grass is three to five times more than in forests.[11]

In addition, many farmers complain about the proliferation of bamboo and how it has choked the production of cocoa and other lucrative resources. Bamboo often occupies precious land; often along riverine coastal zones, initially thought to protect water resources. However, as the bamboo grows larger, it often topples over during heavy rainfall, destroying the riverbank.

Barriers

1) Agricultural barriers: The main environmental issues affecting agriculture in T&T are soil erosion, water shortages, disposal of agricultural chemicals, forest fires, and squatters living on forested hillsides.

The main barriers to increased and sustainable agricultural production are: low productivity; resource, in particular labour, constraints; inadequate marketing systems; lack of infrastructure facilities; lack of appropriate and sustainable production methodologies, insufficient availability of crop and livestock inputs due to the dependency of importing inputs, and a lack of technical support.[12] Crop production has been limited by pests (birds, agouti, iguana, sheep) as well as invasive species.

Additionally, crop production systems are mostly rain-fed and employ limited use of technologies to increase production, productivity and efficiency. Agricultural commodities are generally marketed in the primary unprocessed state with limited value-added processing. This limits commodity shelf life, increases perishability, and reduces prices and profitability in agricultural enterprises. The poor quality of agricultural produce, as well as their limited and inconsistent supplies, serve as disincentives to the local customer base for agricultural commodities.

2) Encroachment: The problem of encroachment is a significant barrier to improved biodiversity protection and sustainable land management. The Inter-American Development Bank's (IDB) estimates in its "Rapid Assessment of Housing and Settlements in Trinidad and Tobago" that there are at least 55,000 households squatting on State lands and a further 30,000 households squatting on private lands based in their zones of inquiry. A further 21 percent of residents interviewed claimed that they did not know their land ownership status, which indicates that there may be larger issues of land tenure.

3) Lack of Land-Use Guidance, Planning and Enforcement: Another issue related to land encroachment is that people have no guidance on what kind of activities can be practiced where. This means that forest reserves can be destroyed for habitation or small-scale agriculture, without any awareness of what impacts this may have. While the lack of governmental enforcement is an issue at large, the fact is that there are not community-led initiatives, which monitor

and direct the types of development that take place. There has been increasing enforcement in the urban centres, but the rural areas do not have the kind of tools available that would help with zoning and planning. Further, for commercial actors, there is an incentive to keep these areas regulation-free as they can extract what they need to, without associated payments and licences.

4) Lack of associative culture: Trinidad and Tobago lack associative culture around agricultural production. With a shrinking industry and most people operating at the individual level, it can be challenging to foster cooperation and identification of common interests, and applications. Interventions in the cocoa industry are beginning to show some affiliations and groups taking form. However, this is nascent.

These barriers can broadly be summarized as promoting land degradation and biodiversity loss. In particular quarrying, unsustainable agricultural practices - clearing of forest reserves for example short-term crops that give quick cash, unplanned residential settlements (squatting) ,and infrastructure development are identified as key causes for degradation.

b. the baseline scenario and any associated baseline projects

In response to the baseline problems of increasing land degradation and corresponding reduction in biodiversity, the Government of Trinidad and Tobago is, implementing a variety of baseline projects, which are briefly described below.

· IADB- *Building on Vetiver* project (2019-2022), with a budget of USD 957,350. This project seeks to pilot testing and empirical evaluation of vetiver systems as a green bioengineering alternative in the mitigation and prevention of land slippage and erosion, and for rehabilitation of severely degraded lands in the North West Northern Range, North Eastern quarry sites and coastline and Southern coastal communities of Trinidad and Tobago. While this project is exclusively focused on vetiver, unlike the proposed GEF project which will promote diversified agroforestry, there will be useful lessons that can be gleaned. In particular, the IADB project seeks to use a participatory model of implementation, as does the proposed GEF project. It will be useful to identify which of technical trainings, and public awareness have worked in mobilizing communities.

· IADB-*Making Agriculture Profitable and Sustainable* (USD 1,662,375). This project proposes a model to overcome these challenges and scale adoption of Climate Smart Agricultural (CSA) practices by integrating training and technical support to farmers, introducing testing and branding of sustainably cultivated outputs and access to higher value sales channels. The project will (i) deliver training in sustainable farming practices to 500 farmers operating in the country's largest watershed, (ii) support the introduction of third party testing to verify that production is free from chemicals (iii) provide access to higher value market channels starting with 4 premium supermarkets serving 150,000 customers in Trinidad, and (iv) support community based reforestation of degraded areas within the targeted farming communities, thereby increasing carbon sinks. The proposed GEF project has many synergies with this baseline project and will seek to harmonize activities to make use of resources spent in the baseline. Similarly, to the baseline project the proposed project seeks to build linkages with the private sector to enhance demand for sustainably produced agricultural projects, which will be delivered through training. The proposed GEF project will also examine the types of farmer trainings that have occurred and glean lessons learned. The proposed project will work in different sites from the IADB project so as to increase coverage across the country and will add the angle of biodiversity protection.

· IADB-IMF- *Improving Productivity of Artisanal Cocoa in Trinidad and Tobago (IMPACTT*): The project focuses on developing successful farm business models involving cocoa. Under the project, 40 farmers were selected to receive best practices training, technologies, labour saving mechanization options, improved information dissemination systems, training on maintaining quality along the value chain, branding, certification and traceability support and entrepreneurship training, to enable them to access lucrative markets. There are numerous lessons to be drawn from this project to feed into the design of this proposed project. The best practices, lessons in technology and certification will be examined and if successful, will be upscaled into the project sites, and integrated into project activities. Similarly, technologies that have shown success will be replicated in the proposed project. The GEF project will target communities other than those covered in the IMPACTT, to widen the number of beneficiaries. The GEF project will also incorporate the principles of biodiversity protection in sustainable cocoa production.

· FAO- *Capacity building for Land Administration: Trinidad and Tobago* (2018-2020) (USD 1,996,917). The project's purpose is to strengthen institutions and thereby contribute to reduction of time to obtain and renew agriculture state land leases, increased annual number of issued leases to year 2021, better and accessible information on the current stock of agriculture state lands and improved efficiency and transparency (through enhanced integration of modern information technologies), shared information, interlinkages across state actors on common standards and processes. The project supports institutions to serve citizens by assisting them to formalize their rights, and to support state institutions in reducing non- regulated or illegal occupation of state land. While this baseline project focuses on the technical aspects of leases, and state land management, aspects of governance can feed into land use planning aspects of the proposed GEF project. In particular, the proposed project can take into account zoning priorities in the project implementation areas. The proposed project will not address the movement of peoples or the regulation of communities, it will merely support existing communities in developing participatory land use plans that may be informed by zoning priorities expressed in the baseline project.

· Caribbean Development Bank- *Strategy Support for Transformative Economic and Social Development* (2017-2021) for USD 436.7 million. The goal of this five-year programme is to increase country competitiveness, promote good governance and drive environmental sustainability. The proposed GEF project has strong linkages with this project which seeks to enhance environmental sustainability all the while supporting economic transformation in green value chains. The CDB Strategy seeks to find projects like this to drive economic transformation across the agricultural sector. The GEF project is an opportunity to help support this Strategy.

· **Government-funded** *Agricultural Programme*: Agriculture has been targeted as one of the sectors earmarked for special focus within the Government's diversification strategy because of the sector's inherent potential in increasing food security, increasing potential exports; displacing food imports, saving foreign exchange; and increasing agricultural incomes. The State is seeking to double the output of the agricultural sector over the next two years, thus raising the sector's contribution to gross domestic product to just over 1.0 percent of GDP. In the 2018 Budget Speech, the Minister of Agriculture indicated that the Government will adopt modernized production methods throughout the sector so as to improve productivity, competitiveness and economic returns to the farmer and ensure environmental efficiency. In 2017, the Ministry of Agriculture, Land and Fisheries was able to achieve the following: 482,100 nursery plants and planting material for crops such as citrus and other fruits were produced and distributed to farmers and the general public; 1,900

applications were processed under the Agricultural Incentives Programme; the Coconut Rehabilitation and Re-Planting Programme was initiated. This project will help support the Ministry of Agriculture's objectives through the development of green value chains, farmer field schools, rehabilitation of land and dissemination of sustainable practices.

· **Cocoa Development Company of Trinidad and Tobago Limited** ***Programme of Work***- Seeks to enhance cocoa bean production through mixed cocoa farms, increase the quantity and quality of cocoa being produced, increase employment along the value chain, identify the varieties that are most climate and pest rest resistant, disseminate best practices to farmers, increase national level consumption of local cocoa while also increasing market access abroad, and use agroecological processes for production without pesticides. There are strong synergies with the programme of work of the Cocoa Company and the proposed GEF project. This baseline initiative is collecting data on cocoa varieties, cocoa farmers, land plots and cluster groups that will be very necessary for the success of the proposed GEF project. The proposed GEF project will be able to use all the baseline data and analyses that have been developed by the cocoa company and integrate them strategically in the interventions, which is cost-effective.

· **Environment Management Authority (EMA)** ***Programme of Work***- The Environment Management Authority is responsible for monitoring biodiversity and reporting on species status of endangerment. This project's plan for establishing a recovery plan for two species will support the programme of work of the agency. EMA has the mandate and staff available to advance work on specie monitoring and recovery. The proposed GEF project will leverage the resources available and support capacity development with the species proposed in the project.

· The **Tobago House of Assembly – Division of Agriculture, Forestry and Fisheries** has earmarked several projects in its budget (*The Establishment of Agro-processing Facilities, The Goldsborough Estate Irrigation Project, The Development of an Agro-Park at Friendship Estate*), which provide a baseline upon which the proposed project can be built. In particular the earmarked projects include improving water resources for irrigation in large farming estates, increasing employment in the agriculture sector, as well as a cocoa rehabilitation programme. The proposed project will complement the interventions by integrating a biodiversity approach while also supporting marketing and private sector collaborations. While recognition of cocoa as potential sector has taken place, greater technical support is needed to move this to a reality.

Value chains in Trinidad & Tobago

Cocoa: T&T cocoa has historically been prized for its quality and has won awards at international cocoa awards. It fetches a relatively high price in the international market. However, since 1925, production declined due to a focus on extractive industries, international market disruptions, and diseases such as the black pod, Dutch disease.

There is now a renewed interest in reviving cocoa plantations with mixed agroforestry, such as with banana, plantains, papaya, pigeon peas, and for more permanent shade, peewah, breadfruit, coconut, citrus and moringa. The advantage of mixed cocoa farms includes: fostering diverse ecosystems, providing income on a weekly basis, spreading risk over crops so not as to be beholden to one crop, providing alternate food sources for parrots and squirrels so that they do not attack cocoa trees.

Cocoa is one of the more biodiversity-friendly value chains and also earns a good price. Globally it fetches at least 2.5 times premium over bulk cocoa, which is 95% of world's production. It also has the potential to provide a higher yield than other agricultural products, with fewer inputs. The oldest cocoa research facility in the cocoa research centre of the UWI is in Trinidad and houses the oldest breeding programme. Trinidad also houses the international cocoa gene bank, the largest and most diverse collection of cocoa in the world.[13] These net advantages make it a useful value chain to invest in.

There is also notably increased revenue from mixed cocoa farms. It is estimated that farmers can generate TTD $5,000 to TTD $15,000 per hectare from cocoa, with a further TTD $10,000 hectares from companion crops. It is also noted that the price obtained for cocoa has been increasing. The idea is that by investing in cocoa, farmers will also be investing in other products with commercial value. Cocoa also offers the opportunity for transformation, which promotes jobs and economic possibilities along the value chain.

Honey: Honey production offers lucrative potential in T&T. Currently, the beekeeping industry is severely underdeveloped with the majority of beekeepers producing honey as a hobby or part-time job rather than a full-time business venture. There are approximately 450 registered beekeepers in Trinidad and Tobago with a total of approximately 7,000 bee colonies. The development of honey industry is constrained by a number of bottlenecks such as the decentralization of the apiaries unit, little reserved forest lands for beekeepers, no testing facilities which makes it impossible for beekeepers wanting to export honey, weather, and diseases such as the Sac Brood and the European Foul Brood disease. Additionally, the Varroa destructor (a honeybee mite) was found on the islands and severely affected the bee colonies. Specifically, it affected the European bees more than the Africanized bees as Africanized bees are more resistant to pests and diseases than European bees. Many unregistered beekeepers squat on private lands and do not have the proper space to carry out their activities. Given the scale of land degradation upon state lands, there are opportunities for apiaries in vulnerable zones that require rehabilitation. Further, beekeeping is an activity that can be integrated into other agricultural production, and bee products other than honey can be explored

Due to a combination of the aforementioned factors, local demand is far greater than local supply and all honey currently produced is only sold on the domestic market for local consumption, at a very high price point, which could supplement livelihoods. One bee colony can produce 15.14 litres of honey during the dry season which can be sold at TT$3,500. Currently, local honey is sold for approximately TT$175-TT$200 for the 750 ml bottle.

The cocoa and honey examples demonstrate that if strategic investments are made, they can serve to both protect biodiversity while promoting economic transformation for those employed in these value chains.

Ecotourism: Given T&T's current levels of tourism and further potential, ecotourism provides an avenue for both promoting biodiversity and strengthening livelihoods. The Tourism sector in T&T has been growing steadily. In 2014 Tourism contributed TTD $4,882.0 million to the economy which was an equivalent of 3.2% of the GDP. It is projected for the year 2025 to increase the total income to approximately TTD $6,183.1 million[14]. The impact is most seen from a social-economic perspective towards small communities who benefit from local tours and from non-traditional products, for example woodcrafts and artisan gifts[15].

Ecotourism is emerging as a successful sector that supports local communities and biodiversity conservation. Current ecotourist activities include: turtle watching throughout the northeast coast; tours to mangroves forests, such as the Caroni and Nariva; scuba diving at the Buccoo Reef; and tours to the Asa Wright Nature Centre. Turtle watching has become a significant attraction and there are at least five dedicated communities that rely on turtle watching and hatching tourism, such as Grand Riviere and Matura. Grand Riviere, between 2005 and 2011, experienced a 300% increase in tourists. The total income resulted in TTD $105,000 to the government through the sales of permits and the benefits through tour operators were estimated to be approximately TTD $660,000. The local community employed thirty-two individuals as data collectors and local tour guides and local businesses, such as hotels and restaurants, experienced and increase in revenue.

These examples show the potential that exist for ecotourism, especially since unregulated tourism can have deleterious impacts on small island ecosystems.

c. The proposed alternative scenario, with a brief description of expected outcomes and components of the project

In order to challenge the drivers leading to biodiversity loss and land degradation, the proposed project will implement the following activities, which coherently seek to improve biodiversity protection, decrease land degradation, and support the transformation to sustainable agriculture which supports healthy ecosystems and people's livelihoods and health. This will be done through the following three components:

1. Biodiversity Supportive Land-Use Planning
2. Forest and agricultural landscape restoration and biodiversity protection through agroecology
3. Enabling environment for green, biodiversity-friendly value chains

Component 1- Biodiversity Supportive Land-Use Planning

It project seeks to address the gap that currently exists in land use-planning, which has negatively impacted biodiversity. Given the lack of governance on land tenure issues, inconsistencies among ministries of agriculture and environment, a lack of awareness among communities on how they are degrading their environment and what long term consequences this may have on their livelihoods and food security, a participatory land use planning mechanism and associated tools are highly necessary. This component will also contribute to an enabling environment for green value chain development, which is articulated under Component 3.

Land tenure

The project will use the voluntary guidelines on responsible governance of tenure for lands, fisheries and forestry in the context of national food security, a n internationally agreed set of principles and good practices to improve tenure governance, to address tenure issues and to ensure the preservation of the biodiversity in the protected areas of Trinidad and Tobago. In over 40 countries globally the Guidelines have been used to frame dialogues between stakeh olders and generate agreements over land/forestry/ fisheries policy, piece of legislation, review organizational framework or processes within the land ad ministration systems (gender equal access to rights; indigenous people recognition of rights; improved rights registration).

The project will ensure a first review of the legal framework for tenure in protected areas to create a shared vision of what is the state of the art for legitim ate tenure rights recognition in protected areas, the possible gap with current reality and, as such, to feed a inter sectoral dialogue towards the developme nt of an enabling environment for tenure issues in protected areas. These series of dialogues will support the elaboration of new piece of legislation if it a ppears necessary in order to allow recognition of rights and duty in protected areas which allow to achieve goals of protecting biodiversity and promoting sustainable land management practices.

There is one key outcome under this Component:

Outcome 1.1. Biodiversity-sensitive land use planning and participatory land management mechanisms established in South & West of Nariva Swamp, South of Valencia Forest Reserve

Rules and regulations are not sufficient and do not successfully lead to biodiversity-supportive land use planning in the baseline scenario. One of the major gaps is that the very communities that are seen as responsible for encroaching upon vulnerable ecosystems and fostering habitat loss through their degrading activities, are outside of the planning processes for the areas they occupy. This project will provide a mechanism by which they can intervene and collaborate with other stakeholders to improve biodiversity-friendly land use planning.

For that reason, this project seeks to work with those squatter communities that have resided in vulnerable areas for many decades, and have established long-term settlements. These communities are targeted as they have a connection and vested interest in maintaining the landscapes in which they reside, and have obtained political recognition over the land in which they reside, due to long-term occupation. Part of the targeted activities are to ensure that they do not

encroach further, and that they are aware of the vulnerabilities of the ecosystems which they border. A key feature of this component will be to strike up multi-stakeholder consultation groups which include local and national government representatives, local communities (former squatting communities without representation), NGOs, CBOs, as well as small-scale private entrepreneurs who will be engaged by the project to develop a participatory land-use management plan. Such a plan will require stakeholders to convene, develop a methodology, articulate strategic interests as well as collectively identify strategies to protect areas that are particularly vulnerable. The idea is that the multi-stakeholder groups will take ownership of their own planning processes, with a greater knowledge on biodiversity and sustainable land management.

The success of multi-stakeholder consultation groups are anticipated as a similar model has been piloted under a complementary GEF project on Protected Areas. The process has been effective in obtaining buy-in from various stakeholders, who have convened on environmental issues for the very first time. It is anticipated that the multi-stakeholder groups under this project will function effectively if the mechanism responds to the needs of the people and supports livelihood development. For that reason, a participatory process is proposed through which stakeholders can identify their needs, and target how improved land use planning can support their agricultural practices, support ecosystem services and livelihoods. This is especially relevant for communities that were settled initially through squatting and did not have any structured planning support. Even though they are established and have political recognition from elected officials, their communities are not designed or planned, and have emerged ad hoc. Providing organizing mechanisms, community-based structures, the first of its kind, will benefit future land use planning. As national ministerial-level participation will be included in the multi-stakeholder group, it is anticipated that results will be upscaled. There is potential for these groups to feed into the Protected Areas consultation groups that have emerged, creating greater coordination between PAs and their surrounding areas which this project targets. The government has demonstrated interest in identifying what mechanisms work at the local level, to integrate them into a wider national policy and to replicate them. Given that no one has worked with these communities, it can serve as a pilot.

One of the challenges has been that different institutions have been leading disparate processes for development which are not coordinated. For instance, the Commission of State Lands is running its own process to obtain data on population occupation of lands. Meanwhile political agents grant citizens permission to occupy lands, outside of government priorities. Similarly, the environmental agency is providing public awareness activities on certain wildlife protection, but this is not integrated into state land planning.

The Government recognizes the priority for comprehensive Land Administration (National Environment Policy , 2017) . However, numerous entities, in over ten different Ministries are responsible for aspects of land management and land administration. The Parliament's Joint Select committee on Land and Infrastructure recommended steps to consolidate and rationalize the legal and administrative basis for land management in the country, including the creation of a unified Land Management Authority. This did not happen. Consequently , the Government and FAO are in final stages of Project formulation on the project "Capacity Building for Land Administration: Trinidad and Tobago" . Its purpose is to strengthen institutions and thereby contribute to better and accessible information on the current stock of agriculture, forestry and natural resources use in state lands. Its central intervention is the state land lease system , driving change through improved efficiency and transparency (through enhanced integration of modern information technologies), shared information, interlinkages across state actors on common standards and processes. The project supports institutions to serve citizens by assisting them to

formalize their rights. It assists the institutions' responsibilities to the state to reduce non- regulated or illegal occupation of state land. Given FAO's strategic role, there will be complementarity between the initiatives, and this GEF project can potentially serve as a model by which to liaise with former squatter communities.

There are two models at the local level that can be learned from for this project however; one is the municipal-level urban planning structures that have been successful in the capital in monitoring land use; and the latter is the multi-stakeholder consultation groups that have been struck up under the coordinated GEF project to improve monitoring of protected areas. These will serve as models to inform multi-stakeholder consultation structures.

Catalytic change is anticipated as investments in coordinated and coherent land use planning in vulnerable, ecological zones have not yet been made. Development has been haphazard; loci of activity outside of the capital have not been planned. It is anticipated that effecting land use planning will contribute to:

- Stronger local-level institutional structures contributing to organizational culture within communities
- Greater awareness of land use, its benefits, its potential
- Protection of vulnerable ecological zones which are adjacent to the selected sites and under pressure from individual-level and commercial activities
- Greater clarity on what types of activities can be undertaken where, with local-level monitoring in place (Component 4)
- Improved planning, stronger livelihoods

This process will require public awareness activities to sensitize communities on the biodiversity and ecosystem services value, and how these are beneficial for people's livelihoods. One of the crucial aspects of these land-use planning will be to conjure effective zones for different types of activities, and to identify set-aside areas that are agreed by all members. The plans will also come up with community-led enforcement mechanisms. While there are resources being put in place for greater environmental monitoring at the government level, through a complementary GEF project, it will be necessary to foster buy-in at the community-level so that the compliance is self-led.

Furthermore, land use planning activities will be supported through Collect Earth, a free and open source software for land monitoring developed by FAO. Through augmented visual interpretation fast, accurate and cost-effective land use monitoring assessments will be performed. Further, biodiversity data will be collected to feed into the national biodiversity database that needs to be populated.

The four project sites are outside of the Protected Areas identified in a complementary GEF project n# 4769 "Improving Forest and Protected Areas Management in Trinidad and Tobago (IFPAMTT)". The purpose of working in buffer zones and corridors is to reduce pressures on Protected Areas, synergize interventions with other GEF investments, to be able to observe greater biodiversity outcomes. It is also to increase knowledge among communities bordering PAs on how their activities may or may not impact demarcated zones.

Women's participation will be prioritized in interventions under this outcome. Specifically, women's uses of land, their relationship to biodiversity and ecosystem services, will be taken into account in land use planning. Land use and how it relates to women's livelihoods will be assessed to ensure that land use planning does not negatively harm women's economic conditions, and that zoning takes gender considerations into account. At least 40% of multistakeholder groups will include women to foster participation and mobilization, and also enhance women's roles in in community-level planning. Women will also be key in knowledge sharing and knowledge dissemination. It is assumed that if women are integrated into the biodiversity protection process, they will pass that on to communities and families and ensure more buy-in in the long-run.

The key outputs under Outcome 1.1 are:

Output 1.1.1 Land use plans identifying high value conservation areas and productive terrestrial landscapes in buffer zones, are developed and validated

Outcome 1.1.2 Multi-stakeholder committees are established in four ecologically vulnerable areas in South & West of Nariva Swamp, South of Valencia Forest Reserve

Component 2: Forest and Agricultural landscape restoration and biodiversity protection through agroecology

Component 2 is organized on two key outcomes:

Outcome 2.1 Land degradation neutrality achieved as degraded sites are restored and productive capacity of agricultural landscapes is enhanced

Target: 2400 hectares degraded lands restored

Indicator 3: 1400 hectares of land restored

Indicator 4: 1000 hectares of landscaped under improved practices

Under Outcome 2.1, the project seeks to rehabilitate and restore degraded lands through strategies which will also increase the productivity and resilience of agricultural landscapes. The angle here is that much of the agricultural production that is taking place in the selected sites is low-producing, and degrading land and biodiversity in the way it is carried out, with the use of pesticides, monocultural production, and in zones that should not be encroached upon.

The goal under this outcome is to increase land productivity without degrading land resources, so that human activity has a net positive impact in the project zones. The lands in the targeted sites are degraded, some are old plantations, some turned into quarries, some carrying unsustainable agricultural production, and others are dominated by invasive alien species which have hampered indigenous biodiversity.

Restored landscapes under this project will include a suite of land uses including ecological corridors, well-managed plantations, agroforestry, and plantings along waterways.

Output 2.1.1: Diverse integrated agroforestry production systems upscaled in 2400 hectares of degraded lands

The project will support farmers and extension services to extend and promote agroforestry on heavily degraded lands. The strategy is to invest in agroforestry that can both serve to reverse degradation as well as provide alternative livelihoods and food security for small-scale farmers and vulnerable communities. This supports T&T's objectives of increasing local agricultural production to enhance greater self-sufficiency and improve dietary diversity.

Output 2.1.2: Agroecological practices disseminated through farmer field schools, model farms and capacities of extension services are improved

Agroforestry production systems will be used as a means to disseminate biodiversity-friendly sustainable practices. Farmer field schools (FFS) will be established to provide comprehensive instruction in a participatory, hands-on setting. The goal of the FFS will be to (i) build farmers' skills in agroecological farming practices, (ii) enable farmers to improve food security, crop variety and strengthen livelihoods; and (iii) raise awareness of disruptive forces, invasive alien species, improved pest management and building resilience. Consultations have revealed that in the past FFS were conducted over a limited time period, but follow up and support was required for a much longer period—support that extension services could not provide. For that reason, larger plantations, with extensive acreages, owned by farmers interested in rehabilitating their land through agroecological means, will serve as "model farms", allowing other farmers to test practices, breeds and have space for pilots and demonstrations exemplifying agroecological practices. These will provide hands-on spaces, where smaller farmers can test activities, model practices, share techniques, and promote organizational culture. It will also allow for farmers to observe impacts over a longer duration and have a space where they can convene. Extension services will also be capacitated so as to enhance the institutional capacity of the Ministry of Agriculture in demonstrating how agroecology can be applied effectively. This will also contribute to project sustainability: capacitating extension officers who have identified specific gaps in their technical expertise, will ensure that they can provide services in the long-run outside of project support. Partnerships with the University of West Indies (UWI) will also allow for testing more climate-resilient strains.

Output 2.1.3: Integrated wildfire management system developed

In conjunction with invasive species management, the project will establish an integrated wildfire management plan to decrease devastation of biodiversity, and protect people and assets. Interventions under this outcome will seek to better prevent, manage and respond to forest fires. Given that the majority of forest fires are human-made, the project will work on several levels: community, municipal and governmental levels. The project will work with multistakeholder groups to establish early warning system for forest fires. Part of this work will include carrying out public awareness activities on the possible threats that fires pose, hold consultations to understand the motivations behind fire-setting, identify alternatives in the realm of agriculture and waste management, and to harmonize these early warnings with other public safety initiatives. It is anticipated that community-level roles and responsibilities will be established so that remote communities in highly biodiverse, vulnerable zones have early warning systems in place, and understand prevention, management, warning and containment processes to preserve their habitats.

These communities will also learn how to manage guinea grass in order to mitigate the threat of fire. Traditional reforestation techniques have failed to re-establish a forest cover on degraded forest lands. New approaches need to be developed and tested, combining traditional methods with controlled burns, to control the grass and design reforestation patterns to safeguard the investment in rehabilitated areas, while fostering community-level ownership over improved land management.

The project will review the many laws and regulations governing the use and control of agricultural and forest fires, most of which were drafted more than 50 years ago. It will be essential to streamline the national legislation in order to harmonize the forest and agricultural legislation as it relates to wildfires.

Traditionally the Forestry Division is the main state agency for forest fire monitoring and control. Their institutional set up should be analyzed as to its effectiveness. Special attention will be paid to the integration of other state and non-state actors with a mandate for fire management such as the Fire Department, the Police and the Armed Forces as well as the role of community-based organizations (e.g. such as Fondes Amandes, Nature Seekers and Protectors of the Environment among others).

New wildfire laws and regulations will require trained personnel to be able to fulfill mandates. A national training program will be developed and implemented for government agencies involved in wildfire management. The proposed training program will cover all fields of wildfire management from early warning to fire suppression and monitoring forest regeneration. It will be geared to the staff of the responsible government agencies and key non-state actors such as local community groups.

Output 2.1.4: Invasive alien species management plan established for four sites

An invasive species management plan will allow communities to identify their greatest threats, in addition to guinea grass and bamboo, and devise a strategy by which these can be contained, and their impacts reduced. This plan will also include how IAS can be managed in the long-run, both institutitionally and financially, examing the public and private sector approach to the eco-benefits and impact of supporting IAS.

Outcome 2.2 Restoration of habitats and ecological corridors between Protected Areas

Indicator 3: 100 hectares of land restored (habitats)

Under Outcome 2.2, the project seeks to rehabilitate the corridors between PAs and support the biodiversity that lives in the buffer zones of PAs. The main purpose of this outcome is to restore strategic habitats which house endemic biodiversity such as the Piping Guan and the Sabrewing Hummingbird. The main interventions under this outcome will be to reforest strategic corridors with native, climate-resilient species, designed to attract biodiversity while maintaining genetic variability.

In order to assess the effectiveness of interventions, and to contribute to knowledge on the habitat being restored, the project will collect biodiversity data within these corridors both to feed into the national level biodiversity database (initiated by complementary GEF project n# 4769, but also to understand biodiversity functions in these corridors. This will foster improved management of these zones in the long-run.

National nurseries will be accessed for restoration activities. During the PPG a list of native, resilient species, per implementation zone, will be developed and it will be determined whether additional nurseries need to be established. Seedlings will also be sought from other countries in the Caribbean.

There are three outputs planned under this Outcome:

Output 2.2.1 Biodiversity data is collected in corridors between PAs- There is a dearth of biodiversity data between protected areas how these interact and influence one another. While there is a biodiversity database, it requires population of qualitative data.

Output 2.2.2 Riparian forest established with native species in riverbanks between PAs (15 km) Target 100 ha of degraded forestlands- Reforestation of riverbanks is key to supporting, and attracting biodiversity and healthy ecosystems. Activities under this outcome will involve the reforestation of degraded riparian forests along corridors between PAs. There are numerous benefits to this: fixing the riverbanks, particularly those that have toppled over due to bamboo, shading of the river and decreasing heat levels of the river which negatively impact fish populations, and protection of water resources.

Output 2.2.3 Recovery plan for significant species (e.g. piping guan, sabrewing hummingbird, West Indian Manatee) in productive landscapes is implemented- In order to complement the habitat recovery, the project will also initiate a recovery plan for three species which are culturally relevant for T&T, and endemic to the country. Pawi or Trinidad piping guan (*Pipile pipile*) is listed as Critically Endangered. Pawis belongs to an evolutionarily old group (Cracidae) that are precursors to the galliformes. The white-tailed sabrewing (*Campylopterus ensipennis*) categorised as near threatened is a large hummingbird that breeds in Tobago. The hummingbird, in particular provides eco-tourism opportunities for birdwatchers, while the Pawi galvanizes national emotion, both providing incentives for community support. There are only a few hundred of the West Indian Manatee (*Trichecus manatus*) left in the entire Caribbean and Northeastern South American region and is threatened on the Endangered Species List. The sightings of the West Indian Manatee have decreased dramatically in T&T impacting the marine ecosystem and decreasing opportunities for eco-tourism. Given the regional significance to this species, actions in T&T will support regional interventions as well, and provide opportunities for South/South collaborations.

In the table below you can find further information on the three species as well as the most relevant threats.

Specie	Conservation category[1]	Habitat and Ecology	Threats
Trinidad Piping-guan *(Pipile pipile)* Endemic T&T	IUCN: Critically endangered	Forest, Artificial/Terrestrial	**Agriculture & aquaculture** Annual & perennial non-timber crops **Biological resource use** Hunting & trapping terrestrial animals Logging & wood harvesting **Climate change & severe weather** Habitat shifting & alteration
White-tailed Sabrewing *(Campylopterus ensipennis)* Endemic to T&T, Venezuela and Bolivia	IUCN: Near threatened	Forest, Artificial/Terrestrial	**Residential & commercial development** Commercial & industrial areas **Agriculture & aquaculture** Annual & perennial non-timber crops Livestock farming & ranching **Transportation & service corridors** Roads & railroads Utility & service lines **Climate change & severe weather** Storms & flooding
West Indian Manatee (*Trichecus manatus*) Native to: Bahamas; Belize; Bonaire, Sint Eustatius and Saba (Bo	IUCN: Vulnerable Endangered[1]	Marine Neritic, Marine Intertidal, Artificial/Aquatic & Marine, Wetlands (inland), Marine Coastal/Supratidal	**Residential & commercial development** Housing & urban areas Commercial & industrial areas Tourism & recreation areas **Agriculture & aquaculture** Annual & perennial non-timber crops Marine & freshwater aquaculture

naire); Brazil; Cayman Islands; Colombia; Costa Rica; Cuba; Curaçao; Dominican Republic; French Guiana; Guatemala; Guyana; Honduras; Jamaica; Mexico; Nicaragua; Panama; Puerto Rico; Suriname; Trinidad and Tobago; United States; Venezuela, Bolivarian Republic of; Virgin Islands, British; Virgin Islands, U.S.			**Transportation & service corridors** Shipping lanes **Biological resource use** Fishing & harvesting aquatic resources **Human intrusions & disturbance** Recreational activities **Natural system modifications** Dams & water management/use Other ecosystem modifications **Invasive and other problematic species, genes & diseases** Problematic native species/diseases **Pollution** Domestic & urban waste water Industrial & military effluents Agricultural & forestry effluents Excess energy **Climate change & severe weather** Droughts Temperature extremes Storms & flooding

[1] https://www.iucnredlist.org/

It is anticipated that currently degraded lands (degraded forests) on the project area will be reforested to tropical rainforests (low land tropical forests, 1400ha) and to riparian forests (established with native species in riverbanks between Protected Areas (15 km), 100ha). Reforestation measures will be in with the properties of adjacent forest reserves which border target sites.

T&T does not have accurate assessment of degraded land. UNCCD Secretariat with the financial assistance of the Government of the Republic of Korea, was spearheading the implementation of a LDN Project in sixteen affected country Parties worldwide. Government of TT contributed USD 250,000 to the regional LDN project. Government of T&T decided to focus on setting a land neutrality for the quarrying sector. However, imagery received for the analysis was of low resolution and could not be used. GORTT is currently pursuing other sources of investment to do this work.

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[1] The Antillean manatee subspecies is listed as Endangered because the current population is estimated at less than 2,500 mature individuals and is predicted to undergo a decline of more than 20% over the next two generations (estimated at ~40 years for an unexploited population, based on T. m. latirostris data) without effective conservation actions, due to current and projected future anthropogenic threats (habitat degradation and loss, hunting, accidental fishing-related mortality, pollution, and human disturbance).

Component 3: Enabling environment for green, biodiversity-friendly value chain development

This component will strengthen fledgling value chains that can benefit biodiversity, while supporting people's livelihoods. This is coherent with the country's national aims to bolster national agricultural production, while increasing employment in the agricultural sector. Green value chains offer the economically transformative potential that can also benefit biodiversity and reduce land degradation. The value chains identified in this project have been determined through extensive government consultation, CBO consultation and through an agroecological assessment carried out on the agricultural production systems of T&T, as commissioned by the University of West Indies.

Initiatives under this Component will also leverage the expertise in the region. For instance, significant GEF-funded investments have been made in Haiti on the cacao value chain over the last five years, results from these projects will be explored to see if there are lessons learned that can be applied for Trinidad. Similarly, in Jamaica, there has been substantial work on the cassava value chain that can be explored. Within Trinidad itself, there are various non-governmental studies on agroecology value chains (CABI, UWI, CANARI Rocrops Agrotech) whose research has contributed to the development of this PIF.

There are three outcomes under Component 3:

Outcome 3.1: Sustainability of biodiversity-friendly value chains are improved

It will support five key value chains that have demonstrated potential both from a biodiversity conservation and livelihoods perspective. One such example is in the cocoa value chain. The endemic variety of cacao (cocoa) called Trinitario originated in Trinidad and appears to have been endemic for a short time before it was distributed globally to become the major source of high-grade chocolate.

There are three outputs anticipated under Outcome 3.1:

Output 3.1.1: Agroecological practices are implemented along 5 priority green value chains (cocoa, coconut, avocado, honey, roots and tubers) and specialized commodities (e.g. dryland rice)

Output 3.1.2: 30 Lead farmers are trained on sustainable land management and agroecological principles

Output 3.1.3: 20 Farmer field schools on agroecology including integrated pest management, soil fertility, production focusing on diversification are conducted

These outputs are meant to entrench sustainable agroecological principles that support biodiversity. Best practices exist in Trinidad and Tobago at a very small scale; this project is meant to upscale and mainstream those practices so that they may have landscape-level impacts. As has been observed from the rehabilitation of cocoa plantations, there is a return of various species of snakes, bats, birds and butterflies. Moreover, the diversity of agroforestry improves better flood control, diversity of livelihoods and combination of certain crops can ensure pest-management, and build resilience in the face of extreme climate events.

While farmer field schools have been carried out in T&T, one of the critiques by farmers were that these are short, without follow-up and with lack of access to demonstration sites on an ongoing basis. They also noted that extension staff did not possess the capacities to build and advance on knowledge gained in FFS. This project will seek to establish linkages among farmers themselves, as well as with large demonstration sites. Further, the project will promote linkages with institutions that have already expressed interest (University of West Indies and the Cocoa Company) in establishing ongoing relationships, observing results and impacts, and providing technical advice on optimizing particular crops and practices. Moreover, the project will include capacity building of extension services to avoid an imbalance of knowledge between farmers and extension staff. Universities and the cocoa company, institutions will be able to provide guidance and communication beyond the duration of this project. By investing in the organizational culture of farmer field schools, it is anticipated that linkages forged will continue beyond the project.

Outcome 3.2- Upscaling and improved market access for sustainably produced agricultural products and services.

Outcome 3.2 is aimed to improve the enabling environment, support the private sector, and expand the availability of green products and services on markets. Outcome 3.2 will promote public procurement and direct marketing to farmers markets, supermarkets, restaurants and international companies.

T&T provides an opportunity for market growth of sustainably produced products. There is an increasing interest on the part of supermarkets to include agroecologically produced products, as well as the emergence of smaller artisanal markets. There are examples of GEF-supported SGP initiatives that have piloted value chain methodologies in rural communities around agroforestry and have been able to add value to their enterprises.[16]

It is worth noting that upscaling will also include training on sustainability/agroecologically produced value chains for all the actors in the value chain, according to their areas of expertise. This will assist long-term buy for the purchase of green products. Links to government agencies responsible for business development/SME development for agriculture produce will also be made.

Output 3.2.1- Marketing strategies and business plans are developed to increase biodiversity-friendly products in markets

The value chain analysis includes five key aspects: 1. Inputs, 2. Production, 3. Processing and distribution; 4. Marketing and 5. Consumption. While Outcome 3.1 focuses on the first three aspects of this chain, Outcome 3.2 focuses on the latter two with the following anticipated outputs:

Output 3.2.2- A minimum of three public-private sector partnerships are established to increase consumption of agroecologically produced products

Part of strengthening value chains, in addition to techniques and practices, will also be to enhance business development strategies. This will involve helping producers to access resources, upscale activities, seek labelling to increase visibility and recognition of sustainability practices, certification (as required) at the national level, and providing incentives to larger supermarkets to purchase recognizable quality. Private sector partnerships will be crucial in this domain to ensure that there is greater level of awareness, exchanges, and that investments in value chains can deliver the expectations of the private sector.

The project will support procurement mechanisms of sustainably produced products by schools (canteens), hospitals, public agencies, partner restaurants, hotels and supermarkets.

Output 3.2.3: Upscaling of ecotourism/agritourism operators in four ecologically vulnerable areas in South & West of Nariva Swamp, South of Valencia Forest Reserve

Output 3.2.3 will invest in eco-tourism as well as agro-eco-tourism through historical estates and plantations, development of chocolates and birdwatching to promote the kind of tourism that T&T requires for greater sustainability. These, even if small scale, in turn employ other community members having a ripple effect.

Outcome 3.3: Green value chains policy informs national-level agricultural development

Outcome 3.3 will foster government strategies and plans which nurture green value chains. There is currently no comprehensive sustainably produced green-value chains policy at the government-level. This project will develop a roadmap towards a national-level green value chains policy. The aim is to support economic development, agricultural self-sufficiency, the decrease of net food imports, and greater consumption of sustainably produced T&T products. As this is a sector that requires public private partnership, along with CBO expertise on socially responsible/sustainable production, multistakeholder clusters will be struck to input into the roadmap to ensure that sectoral needs and considerations are included. The roadmap will then be presented to the Minister of Agriculture for endorsment. One key output is expected under this outcome:

Output 3.3.1: Multi-stakeholder group including government, private sector, CBOs convened to develop roadmap for green value chains policy

Component 4- Knowledge Management and Monitoring

The purpose of this component is to establish knowledge management and monitoring structures that will provide relevant data, best practices, integrate learning from the project into other policies, activities and interventions. In particular, partner institutions will play a key role in disseminating the information and knowledge according to their target audience.

Monitoring activities will be necessary to ensure that the project is in line with its objectives. At the same time, monitoring will also allow the project to redefine its scope, if needed, when results differ from what is anticipated. Ongoing monitoring will ensure that the project promotes an adaptive approach to optimize interventions and yield results.

Best practices and experiences will also be leveraged from other countries in the Caribbean to increase regional collaboration and optimize resources.

Outcome 4.1 Improved knowledge management in biodiversity and land degradation issues.

Under this outcome, the learning from this project will serve to develop knowledge products by partners including government agencies, CBOs, NGOs, University of the West Indies (UWI) and at the farmer-level.

The project will develop an evidence-based approach so as to demonstrate the effectiveness and benefits of agroecology for achieving biodiversity protection. This will be done through demonstrations on model farms and in zones of restoration. Collaborations will be sought with UWI and CBOs that work in this area, so as to allow them to engage on the research front of different varieties of crops.

Improved agroecological practices, resilient species, agroforestry, techniques for soil fertility will be shared at different levels, according to levels of relevance. In the cocoa value chain, for instance, particular strains of cocoa may yield to different types of flavour, quality which is information useful for farmers and entrepreneurs in that sector, whereas the resilience of strains are useful both for farmers but also research institutes at UWI conducting research in this area. Similarly, successful interventions for protecting biodiversity can be replicated by the Environmental Management Authority in other zones. Successful activities with squatter communities can serve as a blueprint to be replicated in other parts of the islands.

Public awareness will be a cross-cutting theme to ensure that communities feel implicated, engaged, consulted and are active participants in the implementation of the project. Local-level actions will ultimately determine whether the initiatives are successful; sensitization activities will be carried out to highlight the link between biodiversity and livelihoods.

Once land-use plans are developed, these will be shared widely and with community leaders and actors to ensure that people are aware of what kind of activities should take place in which zones. Similarly, the fire early warning plan will be distributed to all entities working on public safety and to those occupying targeted zones. Biodiversity values will be collected during implementation to feed into the biodiversity databank. Multi-stakeholder consultation groups will be used as mechanisms to share information from the local to the government level and vice-versa.

During formulation of this project, there has been collaboration with academic institutions and they are particularly interested in extracting information on agroecological development to include within their own curriculum and fieldwork. Knowledge will also be used by the agricultural ministry, the tourism ministry and the extension officers to improve quality of advice.

Knowledge products can include, but are not limited to: training products, curriculum development, policy recommendations, public awareness programmes.

There is one Output anticipated under this Outcome.

Output 4.1.1 Knowledge products produced and disseminated by partner institutions

Outcome 4.2 Ongoing monitoring feeds into adaptive project management

Under this outcome, the project will ensure that there is ongoing monitoring to ensure that the project is meeting desired results, or adapting itself and its delivery for optimal results. Monitoring will focus especially on: ensuring that there is gender balance within the scope of the project, that appropriate target beneficiaries are the subject of interventions, that data is not being lost, that results are relevant, that activities are appropriate for delivering the types of results required, that resources are used efficiently and effectively, that interventions are not duplicated and there is effective collaboration with other initiatives.

There is one Output anticipated under this Outcome:

Output 4.2.1 Project results and gender balance monitored annually

d. Alignment with GEF focal area strategy

This project is aligned with the BD Focal Area (BD 1-1: Mainstreaming biodiversity acress sectors as well as landscapes and seascapes through BD mainstreaming in priority areas), particularly through project outcomes 1.1 (BD-supportive land-use planning in South and West of Nariva Swamp, and South of Valencia Forest Reserve), 3.1 (sustainability of BD-friendly value chains is improved) and 3.2 (Upscaling and improved market access for agroecologically-produced products and services) and 3.3 (Green value chains).

The project is also aligned with the LD Focal Area, LD 1-3 (Maintain or improve flows of ecosystem services, including sustaining livelihoods of forest-dependent people through FLR), through project outcome 2.2 (Restoration of critical habitats in ecological corridors between Protected Areas); and addresses LD 1-4 (Reduce pressures on natural resources from competing land uses and increase resilience in the wider landscape), particularly through project outcome 2.1 (Degraded sites restored and productive capacity of agricultural landscapes is enhanced).

It is anticipated that currently degraded lands (degraded forests) on the project area will be reforested to tropical rainforests (low land tropical forests, 1400ha) and to riparian forests (established with native species in riverbanks between Protected Areas (15 km), 100ha). Reforestation measures will be in with the properties of adjacent forest reserves which border target sites.

T&T does not have accurate assessment of degraded land. UNCCD Secretariat with the financial assistance of the Government of the Republic of Korea, was spearheading the implementation of a LDN Project in sixteen affected country Parties worldwide. Government of TT contributed USD 250,000 to the regional LDN project. Government of T&T decided to focus on setting a land neutrality for the quarrying sector. However, imagery received for the analysis was of low resolution and could not be used. GORTT is currently pursuing other sources of investment to do this work.

e. Incremental cost reasoning

Problem	Business-as-usual approach	Incremental Cost Reasoning (GEF Alternative)

Biodiversity loss	Land-use and land cover change will continue to be the single greatest threat to T&T's biodiversity and associated services – through activities such as unsustainable agricultural practices, and fires. Urban development will continue to stretch into areas that are not classified for this type of development based on watershed studies; fires have impacted more than 50,000 has. of lands (collectively) across T&T since 1998—this will continue, the number of Invasive Alien Species that pose a threat has increased since 2010[17] and will likely continue.	Restoration activities will be undertaken (Component 2) to rehabilitate habitats. Native species of trees will be reforested in attempts to restore natural diversity. Agroforestry systems will be established promoting diversity and attract biodiversity. Recovery plan for three endangered species will be adopted. Communities will take an active part in understanding and monitoring their relationship to biodiversity. Non-encroachment zones will be delineated and agreed to by communities to protect biodiversity. (Component 1/2)
Land degradation	Deforestation, accelerated soil erosion, declining soil fertility, the increased incidence of flooding, soil and water pollution/ contamination, and forest fire is likely to continue.	With GEF-funded interventions, it is anticipated that communities will form multi-stakeholder groups that will help govern land use. Agroecology principles will be applied to productive value chains, varied agroforestry will be upscaled to achieve a greater diversity of agricultural production. Restoration of degraded lands will be undertaken in 1000 ha. Public awareness activities will be carried out to disseminate SLM practices. LDN will be sought by establishing productive practices on degraded land. (Component 2)

Low agricultural productivity	The agriculture industry is challenged by issues such as an aging farmer population; small holdings of less than two hectares with the majority under 0.2 hectares; subsistence and part-time farming. There is minimal commercialization of farming activities. The majority of farms are small scale producers of mainly vegetables, root crops and field crops. Soil quality suffers from potential pesticide use. Agriculture is not diversified with long-term planning in mind. Weak associative culture means farmers have not organized to fetch better prices or increase access to markets as an industry. Result can be greater food insecurity and dependency on imports.	Value chains with productive potential, enhanced livelihood impacts, and positive benefits to biodiversity will be strengthened. (Component 3). Farmer field schools and farmers will be trained through hands on practice at model farms. Invasive alien species will be identified, and a risk management plan will be developed so that its impacts on agriculture can be mitigated. Improved and resilient varieties will be promoted, on mixed-crop farms to avoid mono-cropping (Component 2).
Unsustainable management of vulnerable areas	Destruction of vulnerable habitats, destruction of biodiversity and ecosystem services. Potential deterioration of long-term biodiversity-based livelihoods. Possible health risks from sanitation, disease outbreaks. Increased pressures on protected areas.	Local communities contribute to land-use planning and agro-ecological zoning (AEZ). No construction zones are identified and agreed and local people sustainably manage their natural resources (Component 1).
Low-income rural livelihoods	Agriculture continues to lose employment; people engage in unsustainable practices for short-term production.	Strengthened green value chains open up employment opportunities for people; access to markets increase revenues; eco-tourism/agri-tourism increases value of rural biodiversity and ecosystem services (Component 3).

f. global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF)

In the first place, the proposed project will contribute to achieve Global Environment Benefits through the restoration of 750 has of agricultural land in degraded state. Furthermore, 750 has of forest and forest land will undergo ecological restoration. This will be achieved under Component 2.

In the second place, this proposal intends to establish 500 has under improved agroecological practices, as well as upscale and mainstream those practices with the purpose of obtaining results at landscape level. Moreover, 500 has of production landscapes will be managed in a sustainable manner.

Lastly, this project proposal will target 2500 direct beneficiaries that will receive training on SLM and agroecological principles and will benefit from the implementation of the FFS approach

g. Innovation, sustainability and potential for scaling up

Innovation

The project will pilot innovative approaches in the targeted sites to protect biodiversity and avoid and reduce land degradation. The project will establish community-based land-use planning mechanisms, which have not yet been done. Multi-stakeholder, local-level structures will be established for such planning purposes which have historically been top-down.

The project will also explore new market linkages, and agricultural practices for green value chains that promote climate resilience and address food insecurity. Upon carrying out a value chain assessment, new breeds may be piloted. New relationships with private sector partners will be sought.

There is no comprehensive fire management plan in place, and appropriate linkages between fire and invasive alien species have not been established in any fire prevention plan. This project will build the link between IAS and fire prevention, while supporting the development of a national-level wildlife management plan.

There is no national level green value chains policy currently. This project will support the development of a draft policy aimed and upscaling agroecologically produced products.

Sustainability

The project includes considerations that promote the continued achievement of its objectives and outcomes long after direct implementation. Several key principles that support sustainability:

- Country ownership, which will include:

  - Partnering with public institutions including national, regional and local governments and structures,

- Working with community-based organizations, associations and communities and supporting them to establish their own effective management structures during implementation,
- Supporting interventions that reinforce government plans and activities, and that can be integrated into government policies, which will make project interventions and consequences more relevant to government institutions.
- In line with government plans and priorities to increase agricultural production within the country.
- The project will support institutional developments (value chain policy, enhancement of extension staff) which will serve as long-term support beyond project duration.

· Promoting a **learning-by-doing** approach. This will allow beneficiaries of the project to put into practice the activities and strategies proposed in the project (e.g. agroecology practices, land-use planning methodology development).

· The project will be **adaptive**: to identify the activities that are most sustainable and beneficial leading to improved livelihoods, which community members will have an incentive to maintain.

· Strong co-financing partners. The project is highly responsive to government plans and priorities and has mobilized strong support from the Agriculture ministry and the Environmental Management Authority. With such strong interest, there is a greater likelihood for the project impacts to be maintained and replicated beyond project duration.

· **Livelihoods approach**: The project will generate visible socio-economic benefits to local communities. The livelihoods approach will be mainstreamed in land restoration and biodiversity protection, giving a stronger likelihood that intervenions will be sustainable after project closure. The project will work with communities to demonstrate the comparative advantage of protecting biodiversity and ecosystem services.

· **Fostering collaborative culture**- The project seeks to enhance the collaborative supports for farmers and to enhance the organizational culture by promoting ongoing FFS, multustakeholder groups, the establishing of lead farms, and fostering networks along various value chains. It is anticipated, that organizational support will create more sustainable farms, whereas right now they are highly atomized.

· **Integration of knowledge**- This project is supported by the government and university which seeks to glean data for its own programme of study. It is anticipated that this type of research-based support will also support the sustainability of best practices beyond the project, as the university disseminates findings.

In addition, positive feedback loops and project sustainability will be based upon:

· raised awareness and ownership through improved information, practical strategies and planning capacity development both at the local and government levels;

· increased returns from land increase incentives for better stewardship of the land; and

- alternative livelihoods will decrease pressure on ecosystem degradation processes.

Scaling-up

The project has been designed to be replicated and scaled up, so as to mainstream biodiversity conservation and sustainable use. Several aspects lend themselves to replication of the project:

- **Promoting and upscaling agroecology**, which will include farmer field schools, lead farmers and model farming systems, training, awareness-raising and learning-by-doing approaches to encourage the wider uptake, and up-scaling of these practices, beyond the small niches in which they are occurring.

- The project will **intervene on green value chains** which will bring socioeconomic and environmental benefits that others may replicate, and upscale at a national level for greater production and market development.

- **Invasive alien species risk management plan**; which can be upscaled at national scale

Capacity will be created at the **extension services** level to apply trainings and knowledge to other parts of the country.

- **Knowledge generated will be integrated by institutions:** UWI/ Ministry of Agriculture

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[1] GoRTT: Fourth National Report of Trinidad and Tobago to the Convention on Biological Diversity.

[2] Schulze-Makuch, D. et al. Microbial Life in a a Liquid Asphalt Desert. *Astrobiology.* 2011 Apr;11(3):241-58. Available online at: https://www.ncbi.nlm.nih.gov/pubmed/21480792

[3] Grimes, N. Agrocology Assessment of Agriculture Production Systems of Trinidad and Tobago. 2018

[4] GoRTT: Fourth National Report of Trinidad and Tobago to the Convention on Biological Diversity.

[5] NBSAP

[6] Grimes, N. Agrocology Assessment of Agriculture Production Systems of Trinidad and Tobago. 2018

[7] GORTT. Report on the State of Land Resources in Trinidad and Tobago, 2005.

[8] Too Many Chemicals in the Crops: Caribbean on a Pesticide Treadmill. *UWI Today*. 2016 Article available online at: https://sta.uwi.edu/uwitoday/archive/july_2016/article17.asp

[9] Ibid.

[10] Invasive grasses can alter the occurrence and behavior of fires via a variety of both intrinsic (characteristics of the plants themselves) and extrinsic (arrangement of plants across the landscape) fuel properties (Brooks et al., 2004). Intrinsic fuel properties associated with type conversion from forest to grassland can include increased flammability due to lower fuel moisture (Brooks et al., 2004) and competitive superiority in the postfire environment (Veldman

and Putz, 2011). Extrinsic properties, in turn, can include increased horizontal fuel continuity (Brooks et al., 2004), changes in microclimate (Blackmore and Vitousek, 2000; Hoffmann et al., 2002), high fine fuel loads (Litton et al., 2006) , and alterations to packing ratios (Brooks et al., 2004; Hoffmann et al., 2004).

[11] Ellsworth, L. Improved Wildfire Management in Megathyrsus Maximus Dominated Ecosystems in Hawaii. Decemner 2012. Available online at: https://www.firescience.gov/projects/11-3-1-12/project/11-3-1-12_Ellsworth_dissertation_2012_revisions_final110212.pdf

[12] Grimes, N. Agrocology Assessment of Agriculture Production Systems of Trinidad and Tobago. 2018

[13] Grimes

[14] World Travel and Tourism Council. 2015. Travel and Tourism Economic Impact 2015: Trinidad and Tobago. London, United Kingdom. 20pp.

[15] NBSAP.

[16] CANARI

[17] 5th National Report of Trinidad and Tobago to the CBD

1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.

Please refer to Annex A of this CEO Endorsement Request entry

2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Indigenous Peoples and Local Communities Yes

Civil Society Organizations Yes

Private Sector Entities Yes

If none of the above,please explain why:

In addition, provide indicative information on how stakeholders, including civil society and indigenous peoples, will be engaged in the project preparation, and their respective roles and means of engagement.

Type of Stakeholder	Specific Entities Engaged	Type of Engagement
Government	Ministry of Planning and Development Ministry of Agriculture, Land and Fisheries Ministry of Rural Development and Local Government Tobago House of Assembly (Department of Natural Resources and the Environment; Department of Agriculture) Cocia Development Company of Trinidad and Tobago Environment Management Authority	- Providing leadership over project implementation - Providing staff and resources to share baseline data, and apply project interventions - Participation in trainings, awareness raising campaigns, information dissemination - Collecting data generated through project and integrating in institutions for policy development processes. - Development of relevant policies and plans (e.g. value chains, wildfire management, species recovery plans)
Local Communities	Melao	- Inform the development of land use practices and p

	Pin Road Settlement Plum Mitan Bich Charuna Mayaro	of land use practices and planning - Partipate and lead in agricultural, restoration practices - Participate in farmer field schools, trainings - Communicate best practices, promote awareness raising - Develop community enforcement measures to meet land-use planning objectives - Include participation of women and youth to ensure diversity of participants and beneficiaries
NGOs/CBOs/Research institutes	Centre for Agriculture and Bio-sciences International (CABI) Caribbean Natural Resources Institutre (CANARI) University of West Indies (UWI) Agriculture Society of Trinidad and Tobago Network of Rural Women Producers The Caribbean Network for Integrated Rural Development University of Trinidad and Tobago	- Providing trainings, demonstrations, sharing best practices and technical know-how. - Supporting upscaling measures by coordinating activities across different communities. - Providing scientific data, testing initiatives
Private sector	Supermarkets	- Building linkages with s

	Small-scale farmers Commercial-level farmers	mall-scale producers: buyi ng and selling - Supporting marketing ini tiatives - Establishing employmen t opportunities - Identifying entry points f or sustainably produced a gricutural products

A full list of institutional stakeholders will be compiled by CEO endorsement.

3. Gender Equality and Women's Empowerment

Briefly include below any gender dimensions relevant to the project, and any plans to address gender in project design (e.g. gender analysis).

Overall, T&T has taken an active stance on female inclusion in the labour force, politics and higher education[1].

[1] National Gender Policy: Green Paper, 2016

Women represent 14.92 % of the agricultural labour force (2012 figures), and usually are employed in activities along the value chain –such as primary production, input supply, marketing and agro-processing.[1] It is noted that this is the official figure; in likelihood the number of women engaged will be much higher. More opportunities along diverse value chains offer more potential jobs for women's employment. The project will facilitate inclusion of women to ensure that they obtain the benefits of value chain development. This will be confirmed through ensuring that women are recipients of business, marketing supports. The project will also invest in value chains that are demonstrably more inclusive of women (as will be identified during PPG).

There are currently no direct incentive programmes tailored to encourage or support women in agriculture. The project will seek to remedy this by including women as key participants in policy formulation processes, in public consultations, in farmer field schools, and agroecology demonstrations. Women will make up at least 40% of the multi-stakeholder groups convened for land-use planning.

Women's use of land, and linkages with livelihoods, labour and other social conditions will be examined during the PPG. It will be essential that land-use planning takes into account gender differentiated impacts of zoning, and access to natural resources, to avoid the development of gender blind plans. Women's use of ecosystem services will specifically be captured during the PPG. The design of the land use methodology will ensure the active inclusion and leadership of women, so as to create a land use planning process that is adhered to and supported by women.

Women will be key players on information dissemination, especially at the community levels. Local level women's groups and informal female networks will be used to share information on biodiversity protection and land restoration. Women will be active in policy formulation processes, public consultations, FFS, and agroecology demonstrations. 40% of women will participate in the multi-stakeholder groups convened for land-use planning. Local level women's groups and informal female networks will be used to share information on biodiversity protection and land restoration. These groups will be further engaged during full project preparation.

The number of female beneficiaries will be re-examined at PPG following a complete gender analysis. At PIF the figures have been calculated by examining the populations of the target zones and accounting for 40% of total beneficiaries.

Gender disaggregated indicators will be a part of the project results framework to assess impacts of the project on women.

The project will facilitate gender mainstreaming to ensure that women receive the benefits of value chain development. A full gender analysis will be conducted by CEO endorsement. Baseline data on women in pilot sites will be collected through field surveys. A gender targeting analysis will ensure that women be recipients of business and marketing supports. The project will also invest in value chains that are gender- inclusive. Land-use planning will consider gender-differentiated impacts of AEZ and access to natural resources.

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[1] Grimes. N, Agroecology Assessment of Agriculture Production Systems Trinidad and Tobago

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment? Yes

closing gender gaps in access to and control over natural resources; Yes

improving women's participation and decision-making; and/or Yes

generating socio-economic benefits or services for women.

Will the project's results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Will there be private sector engagement in the project?

Yes

Please briefly explain the rationale behind your answer.

Private sector actors will be actively engaged in project implementation, as follows:

Component	Private Sector Engagement
Component 1: Biodiversity-supportive land use planning	Commercial actors will be invited to be part of multi-stakeholder groups to design land-use planning tools and plans. Commercial activity has been a part of illegal land use, and private sector actors will need to be engaged in zoning, to achieve long-term compliance.
Component 2: Landscape restoration and biodiversity protection	Private sector actors will collaborate to ensure that reforestation and rehabilitation activities are not undermined by commercial activities. The project will ensure that planted trees are not deforested and for that specific consultations and agreements will be sought with private sector entities.
Component 3: Enabling environment for green, biodiversity-friendly value chains	Private sector will play a key role here in facilitating market access and purchase of sustainably-produced agricultural products. Supermarkets, banks for credit, chamber of commerce to promote local brands will be approached.

5. Risks

Indicate risks, including climate change, potential social and environmental risks that might prevent the Project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the Project design (table format acceptable)

#	Description	Potential consequence	Mitigation measures	Risk category	Probability & impact (1–5)
Local-level risks					
1	Lack of community buy-in for protecting biodiversity through agroecological practices	Risks to biodiversity, land degradation, pressures on vulnerable ecosystems	The project will support the development of participatory land-use planning mechanisms. Community members will be engaged to develop their methodologies, tools and plans for natural resources management. The project will apply a bottom-up approach. The project will also carry out awareness-raising activities on the value of biodiversity and ecosystem services.	Social	P = 2 I = 5
2	The high cost of agricultural labour and inputs prevent the recommended approaches from being adopted in the rural sector	Business-as-usual; further loss of employment and production in agricultural sector	The project will promote value chains that require less external inputs (i.e. agroecology), testing farms, lead farmers, technical assistance. Moreover, the project will support business plan development, which will include plans to access financing.	Economic	P=3 I=3
National					
3	Political changes	An election is planned in the coming year—which could lead to changing political priorities	The project is structured in a way that regardless of the incoming political party, it is anticipated that it will continue as planned. The reason for this is that it is focused very much at the local level and seeks to address priorities such as enhancing food production and protect	Political	P = 3 I = 1

			ing biodiversity, mitigating risks such a s fires which are anticipated to resonat e with all political parties.		
4	Limited funds available to sustain project benefits	Interventions will not be sust ainable after project closure	Biodiversity conservation activities are designed to bear benefits, which will pr ovide incentives to BD/NR managers a fter project closure.	Economic	P=3 I=2
5	Natural hazards and climate shoc ks.	Floods and droughts may di minish project results	Agroecology and improved land manag ement is anticipated to increase climat e resilience of farming systems. Resili ent species will be selected to survive periods of climate variability. Farmers, extension staff will be provided with tra inings on how to improve water resour ce management, and manage producti on during periods of climatic uncertain ty. Trainings for early warnings on fire will be integrated into the fire preventio n plan.	Natural	P=3 I=4
6	New pests and diseases	Changing climate may incre ase exposure to new pests a nd diseases	This risk will be mitigated through crop diversity, soild rehabilitation, and the u se of tested plant varieties through mo del and demonstration farms.	Natural	P=3 I=4

6. Coordination

Outline the institutional structure of the project including monitoring and evaluation coordination at the project level. Describe possible coordination with other relevant GEF-financed projects and other initiatives.

FAO will be the implementing agency responsible for the supervision, and provision of technical guidance during the implementation of the project. A Project Coordination Unit, hosted by the Environmental Management Authority (EMA), will be established to support the day-to-day management, coordination and monitoring of project activities. The project management structure will consist of a **Project Coordination Unit (PCU)** supported by a **National Project Steering Committee (PSC)**. The project will also be supported through a Technical FAO Project Task Force to ensure that multidisciplinary expertise will be accessible to the project in line with the results framework (Table B).

Project Steering Committee (PSC): A multi-stakeholder PSC will be established to guide and oversee implementation of the project. Specifically, the PSC will: a) Provide guidance to the PCU to ensure that project implementation is in accordance with the project document; b) Review and approve any proposed revisions to the project results framework and implementation arrangements; c) Review, amend (if appropriate) and endorse all Annual Work Plans and Budgets; d) Review project progress and achievement of planned results as presented in six-monthly Project Progress Reports, Project Implementation Reviews (PIRs) and Financial Reports; e) Advise on issues and problems arising from project implementation, submitted for consideration by the PCU or by various stakeholders; f) Facilitate cooperation between all project partners and facilitate collaboration between the Project and other relevant programmes, projects and initiatives in TT.; and g) Approve TOR for midterm and final evaluations.

The PSC chair will be nominated by the Ministry of Planning and Development in consultation with PSC members and includes FAO. The PSC composition will include representation from the Permanent Secretary (Ministry of Planning and Development), the Tobago House of Assembly, the Ministry of Agriculture, Land and Fisheries (MALF) and the EMA, academia, representatives of farmers, and civil society. The PSC may co-opt *ad hoc* representatives from the other partners' projects, relevant government departments, as necessary. The PSC composition and Terms of Reference will be confirmed during the first meeting of the PSC that should be held no later than 3 months after project start.

Project Coordination Unit (PCU): A PCU will be established within the EMA led by a Chief Technical Advisor (CTA). The PCU is responsible for the day to day management of the project and timely and efficient implementation of the approved annual work plans. The PCU will: a) Act as secretariat to the PSC; b) Organize project meetings and workshops, as required; c) Prepare Annual Work Plans and detailed Budgets (AWP/B) and submit these for technical clearance by FAO and approval by the PSC; d) Coordinate and monitor the implementation of the approved AWP/B; e) During project inception period, review the project's M&E plan and propose refinements, as necessary, and implement the plan; f) Prepare the six-monthly Project Progress reports and give inputs in the preparation of the annual PIR by the Lead Technical Officer; g) Coordinate the project with other related on-going activities and ensure a high degree of inter-institutional collaboration; and Assist in the organization of midterm and final evaluations, as appropriate.

The PCU will consist of a CTA, the Assistant Technical Advisor (ATA) and Administrative and Operations Associate. The project-recruited consultants will work with assigned staff from the EMA and Ministry of Planning and Development to facilitate the transfer of skills and enhance capacity for sustainability

Coordination with other projects

The proposed project will coordinate actions through the Project Steering Committee led by the Environmental Management Authority (EMA) along with FAO and other GEF agencies. Related projects are detailed below:

- GEF project #4769 *Improved Forest and Protected Area Management in Trinidad and Tobago*
- The proposed project will also support T&T's cross-cutting capacity development goals in implementing the MEAs, as identified in the *Capacity Development for improved management of Multilateral Environmental Agreements for Global Environmental Benefits* (GEF project #5847). The proposed project support UNCCD and UNCBD by promoting biodiversity conservation and decreasing land degradation. Arguably, through agroforestry and reforestation activities, the project also seeks to build climate resilience thereby supporting UNFCCC.

The project will also support GEF regional projects, which are currently underway:

- GEF Project #5407 *Disposal of Obselete Pesticides including PoPs, Promotion of Alternatives, and Strengthening Pesticides Management in the Caribbean*. While this project focuses on the technical management of harmful chemicals, the proposed project touches on the issue of pesticide on a local level, through sustainable agriculture, agroforestry. The proposed project will support value chains which avoid high pesticide-use thereby supporting the initiatives under the regional project.

- GEF Project #4938 *Integrating Water, Land and Ecosystem Management in Caribbean SIDS (IWEco).* While this project is in its final phase, there are useful lessons that can be drawn and applied in the proposed project. In the baseline, the GEF regional project seeks to contribute to the preservation of Caribbean ecosystems that are of global significance and the sustainability of livelihoods through the application of existing proven technologies and approaches that are appropriate for small island developing states through improved fresh and coastal water resources management, sustainable land management and sustainable forest management that also seek to enhance resilience of socio-ecological systems to the impacts of climate change. The proposed project will work on similar issues regarding the protection of ecosystems through its interventions on improved land management, however this will happen at a more downscaled, local level.

The project will also seek coordination with other non-GEF projects such as:

- FAO: *Sustainable Processing and Value Chain Development for Root and Tuber Crops* (TCP/SLC/3604)

- FAO: *Ensuring long term productivity of lowland tropical forest in the Caribbean - Research on cost and benefits of investments in silvicultural treatments* (GCP/SLC/205/GER)

- FAO: *Cassava Industry Development: Market Assessment, Technology Validation and Dissemination* (GCP/SLC/010/CDB)

These three projects highlight FAO's expertise in working on value chain development, in productivity of landscapes and of focusing on particular agricultural products and supporting their production for economic transformation. These areas of expertise will be applied in the proposed project implementation.

7. Consistency with National Priorities

Is the Project consistent with the National Strategies and plans or reports and assesments under relevant conventions

Yes

If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc

The updated National Environmental Policy notes that the GoRTT considers it a priority responsibility to judiciously manage the interactions between its citizens and the environment with aims of safeguarding human health, peace, prosperity and social justice, while yielding optimum sustainable benefits for present and future generations. It recognizes that land and soil are finite resources that provide critical supporting and regulatory ecosystem functions including, but not limited to: the growth of crops, regulation of water quality and quantity, carbon sequestration, biodiversity conservation and provision of space for human settlement. The availability of land and soil resources to support rapid population growth is limited. Therefore, their management is important to ensure that the needs for both the human and natural environments are met.[1] The proposed project supports this policy through its interventions on improving land management.

The policy also notes that the the conservation of biodiversity through the development and implementation of programmes to address drivers of biodiversity loss including, but not limited to: deforestation, fires, erosion, illegal development activity, illegal exotic pet trade, invasive species and over-hunting is a priority. The proposed project supports this aspect by addressing drivers of biodiversity loss such as deforestation, fire, and invasive species.

National Biodiversity Strategy Action Plan (NBSAP)- by 2020, the NBSAP seeks to achieve the following Aichi Biodiversity Targets 1 (awareness increased), 5 (habitat loss halved or reduced), 6 (sustainable management of marine living resources), 7 (sustainable agriculture, aquaculture and forestry), 9 (invasive alien species), 11 (protected areas) and 12 (extinction prevented). This project supports increasing knowledge of biodiversity and ecosystem resources (Target 1); seeks to reduce habitat loss through landscape-restoration strategies (Target 5), seeks to promote sustainable agriculture (Target 7), combat invasive alien species such as Guinea grass (Target 9), supports protected areas by decreasing pressures in buffer zones and environmental corridors (Target 11), and preventing extinction of wildlife through developing species recovery plans (Target 12).

The first two years of the NBSAP has a target set for the Forestry and Agriculture sectors:

- 7a. By 2020 at least 30% of areas under agriculture are managed sustainably, ensuring conservation of biodiversity.
- 7c. By 2020 at least 50% of areas under forestry are managed sustainably, ensuring conservation of biodiversity.”

The project would have synergies with these targets as the project would occur in forested areas or be on the edges/boundaries of acreages under agriculture.

Target 7a's Output of the Revised NBSAP states that "*Land use policy is updated to support sustainable agriculture and forestry practices and implemented*" aligns with Component 1. Biodiversity-supportive land use planning" of the Project

The Project Component 2.1.4: Invasive alien species management plan established for four sites, aligns with the revised NBSAP's Target 9a Output: "*Existing laws and regulations, plans and policies governing the management and control of IAS are harmonised"*

National Action Plan (NAP) to Combat Desertification- Priority actions in the NAP include: Priority actions identified in the NAP include: i) Establishing new legislation and policies or filling gaps in existing ones; ii) Ensuring appropriate land use practices with respect to use of land for built development; iii) Establishing new institutions and strengthening institutional capacities of existing ones; iv) Creating an enabling environment for participation by local groups and stakeholders; v) Raising awareness to encourage behavioural change; vi) Collecting data systematically and consistently on aspects of land resource use and management to establish early warning systems and support assessment of environmental risks; and vii) Supporting existing projects and programmes which offer appropriate solutions to some aspect of land degradation and the involvement of local communities.

This project will ensure appropriate land use practices in targeted communities; support institutional capacities of extension services; create an enabling environment where community members can develop participatory mechanisms governing their land use; raise awareness to prioritize the critical importance of biodiversity protection and land restoration; while supporting early warnings for fire prevention and work at the local community level.

LDN Targets: T&T has not yet set an LDN target under the LDN Target Setting Programme and accordingly the project cannot be stated to be in alignment (or conversely out of alignment) with a target under the programme. It is likely that when T&T establishes the baseline data for the requisite parameters for LND which is land coverage, soil organic Carbon content and land productivity a target would subsequently be adopted. This target in the first instance, is likely to be limited to one developmental sector, for ease of implementation, which may focus on degraded areas that have a legal obligation for rehabilitation.

National Spatial Development Strategy (NSDS)- The Vision of the NSDS seeks that "by 2033, Trinidad and Tobago will be a nation where all people enjoy high quality of life within a safe, healthy, inclusive and sustainable physical, socio-economic and cultural environment. To elaborate, the country will be a hub of innovation-driven economic prosperity focused on sustainable development and environmentally sensitive design standards. Both urban and rural areas will provide good employment opportunities, and city and town centres will cater equitably for the needs of both residents and visitors through the provision of retail and commerce, recreation and cultural facilities, and education and health services, in peaceful secure, accessible and healthy environments. Food security and energy efficiency will be achieved through innovation, diversification and targeted investment in the agriculture and fisheries sectors in the first instance and the renewable energy sector in the second. An efficient, integrated and sustainable transport system will link homes, jobs and key services while

reducing dependence on private car use and making alternatives more viable and more attractive to use. Benefits of reduced congestion and pollution will be reflected in improved productivity, better health and reduced stress, all supporting a stronger economy. The benefits of an enhanced quality of life based on sustainable development will be shared across the nation, urban and rural areas alike, so that disadvantage, injustice and poverty are eradicated. People will be actively involved in the planning of national and local environments, and management of change will be based on transparent and consultative decision-making processes."[2]

The proposed project supports this vision in investing in agriculture, supporting sustainable development at the local level, and support people at the local level to take part in planning of local environments.

National Gender Policy supports initiatives aimed at removing the obstacles to women's equal and active participation in, and enjoyment of the benefits of agricultural and natural resource development. It emphasises that equality between women and men is an essential pre-condition for peoplecentred sustainable agricultural and rural development.[3]

Finally, this project is in line with the **Ministry of Agriculture Priorities**, which include land use planning, sustainable use of biological resources (sustainable patterns of production and consumption).

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[1] National Environmental Policy; draft (2017). Available online at: https://ema.co.tt/images/Files/NEP/FINALProposedNepv03EeEma20180522.pdf

[2] National Spatial Development Strategy for Trinidad and Tobago: A Planning Framework to Govern Physical Development. Available online at: https://www.planning.gov.tt/OurTnTOurFuture/documents/Executive_Summary_web.pdf

[3] National Gender Policy: Green Paper, 2018. Available online at: http://www.opm-gca.gov.tt/portals/0/Documents/National%20Gender%20Policy/NATIONAL%20POLICY%20ON%20GENDER%20AND%20DEVELOPMENT.pdf?ver=2018-03-08-134857-323

8. Knowledge Management

Outline the Knowledge management approach for the Project, including, if any, plans for the Project to learn from other relevant Projects and initiatives, to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.

The project will develop an evidence-based approach so as to demonstrate the effectiveness and benefits of agroecology for achieving biodiversity protection. This will be done through demonstrations on model farms and in zones of restoration. Collaborations will be sought with UWI and CBOs that work in this area, so as to allow them to engage on the research front of different varieties of crops.

Public awareness will be a cross-cutting theme to ensure that communities feel implicated, engaged, consulted and are active participants in the implementation of the project. Local-level actions will ultimately determine whether the initiatives are successful; sensitization activities will be carried out to highlight the link between biodiversity and livelihoods.

Once land-use plans are developed, these will be shared widely and with community leaders and actors to ensure that people are aware of what kind of activities should take place in which zones. Similarly, the fire early warning plan will be distributed to all entities working on public safety and to those occupying targeted zones. Biodiversity values will be collected during implementation to feed into the biodiversity databank. Multi-stakeholder consultation groups will be used as mechanisms to share information from the local to the government level and vice-versa.

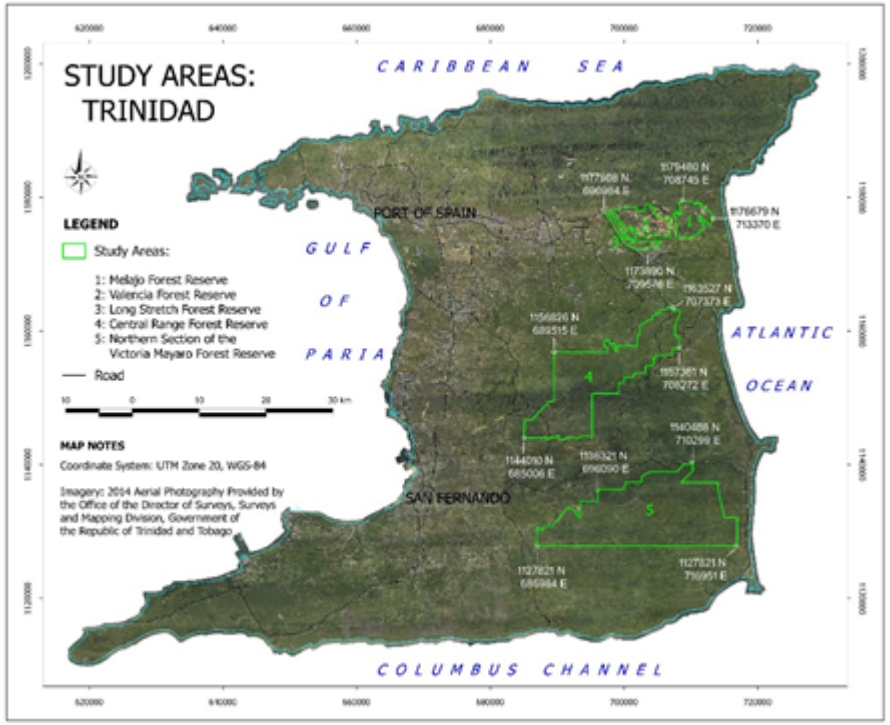
Part III: Approval/Endorsement By GEF Operational Focal Point(S) And Gef Agency(ies)

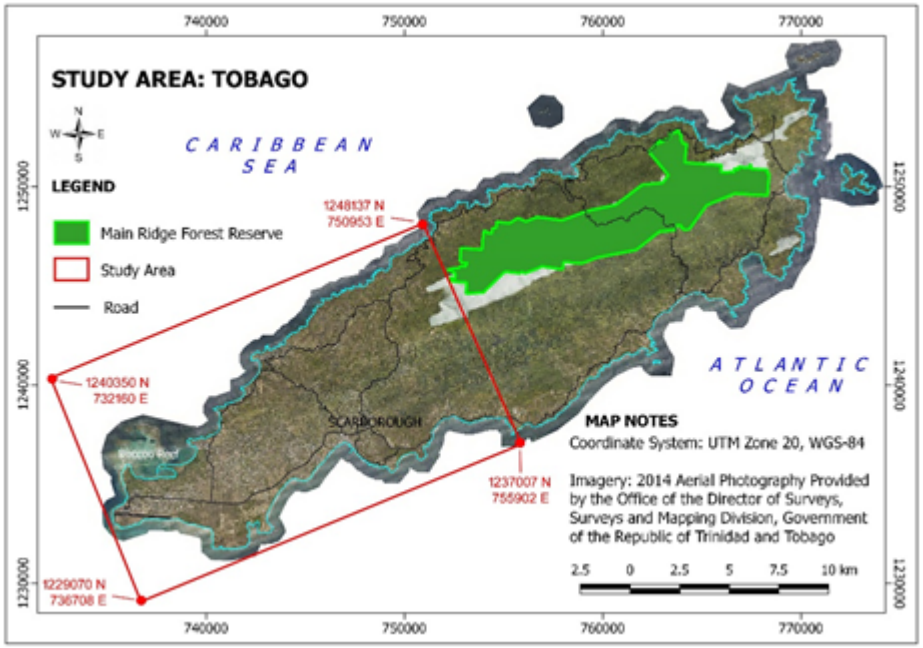
A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the Operational Focal Point endorsement letter with this template).

Name	Position	Ministry	Date
Hayden Romano	Managing Director	Environmental Management Authority (EMA)	3/25/2019

ANNEX A: Project Map and Geographic Coordinates

Please provide geo-referenced information and map where the project intervention takes place




STUDY AREA: TOBAGO
CARIBBEAN SEA
ATLANTIC OCEAN
LEGEND
Main Ridge Forest Reserve
Study Area
Road
1248137 N
750953 E
1240350 N
732160 E
1237007 N
755902 E
1229070 N
736708 E
SCARBOROUGH
MAP NOTES
Coordinate System: UTM Zone 20, WGS-84
Imagery: 2014 Aerial Photography Provided by the Office of the Director of Surveys, Surveys and Mapping Division, Government of the Republic of Trinidad and Tobago
2.5 0 2.5 5 7.5 10 km
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1250000
1240000
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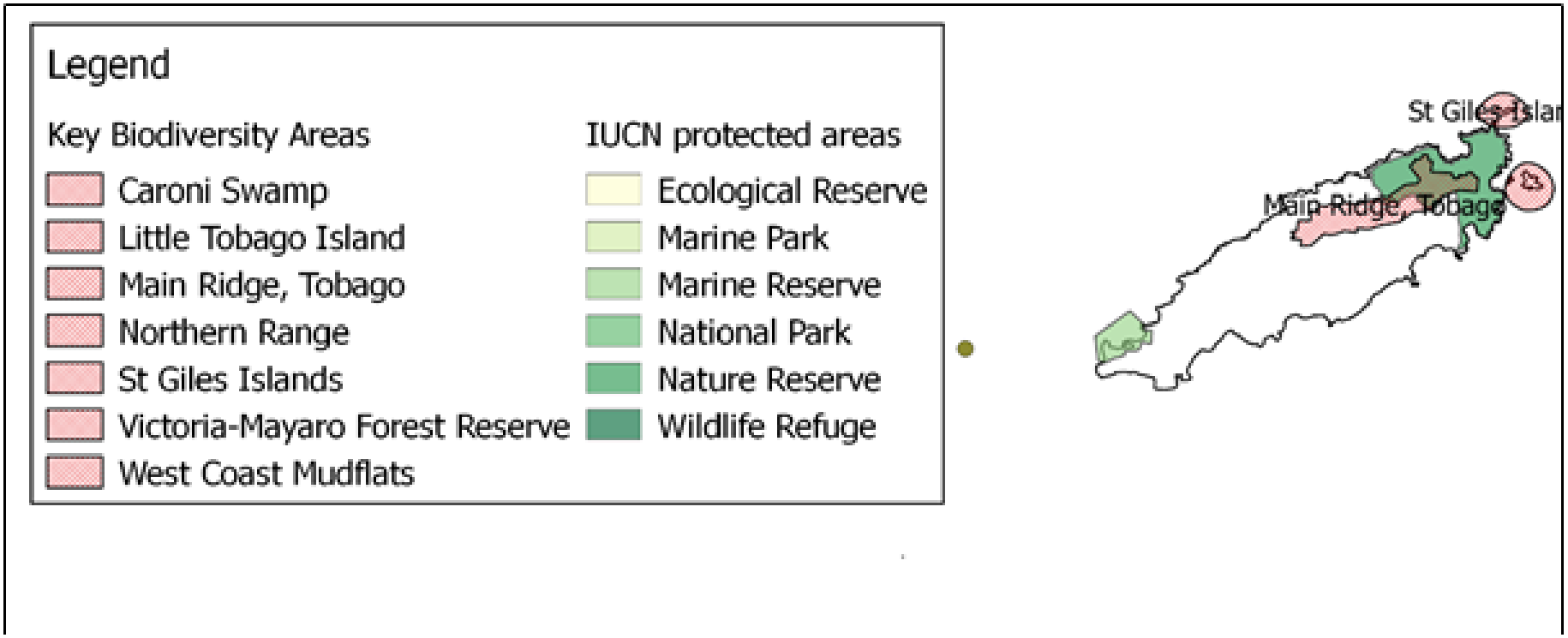
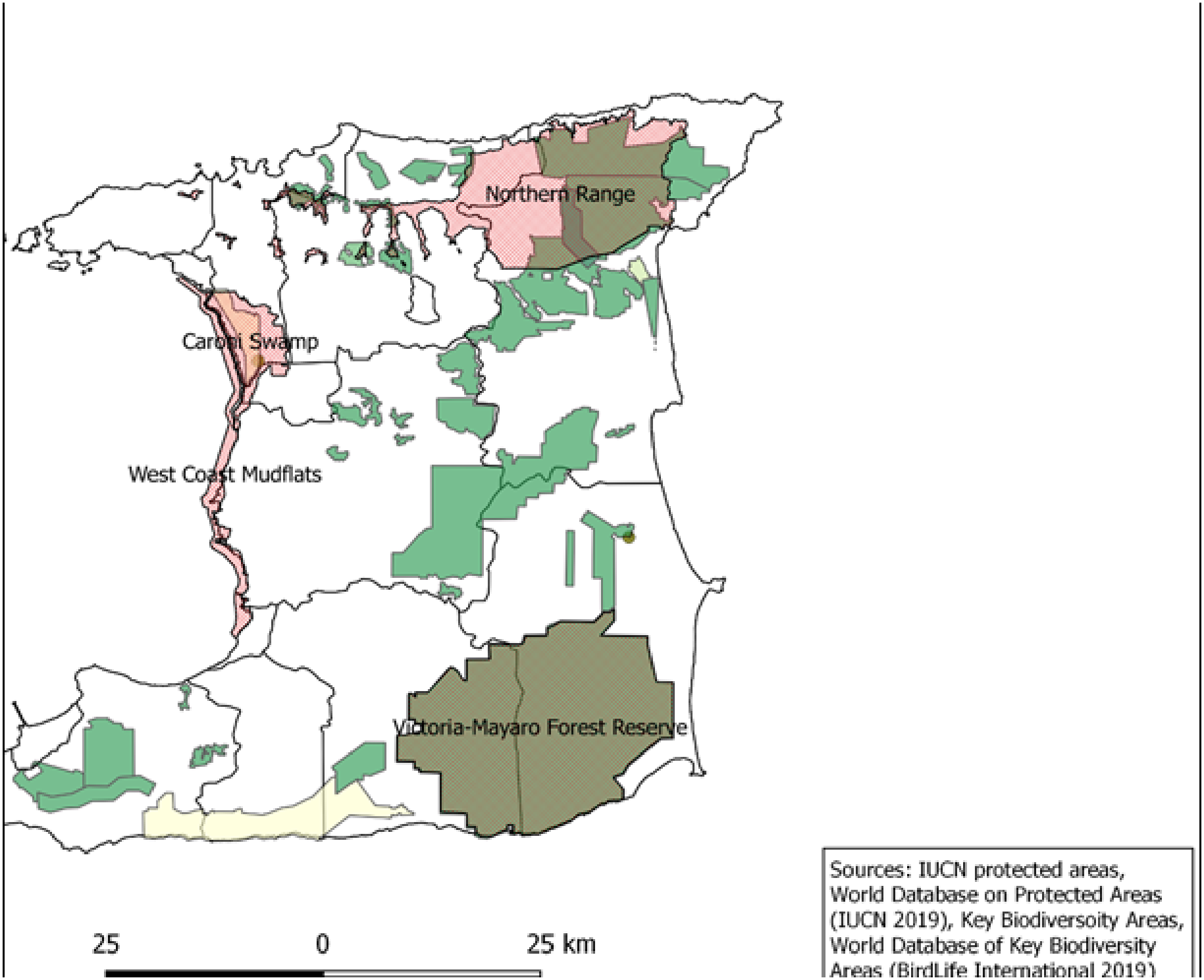

Legend
Key Biodiversity Areas
Caroni Swamp
Little Tobago Island
Main Ridge, Tobago
Northern Range
St Giles Islands
Victoria-Mayaro Forest Reserve
West Coast Mudflats
IUCN protected areas
Ecological Reserve
Marine Park
Marine Reserve
National Park
Nature Reserve
Wildlife Refuge
Main Ridge, Tobago


Northern Range
Caroni Swamp
West Coast Mudflats
Victoria-Mayaro Forest Reserve
25
0
25 km
Sources: IUCN protected areas, World Database on Protected Areas (IUCN 2019), Key Biodiversoity Areas, World Database of Key Biodiversity Areas (BirdLife International 2019)