



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/NGI

☐ CBIT

☐ NGI

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

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

Rio Markers**Climate Change Mitigation**

Climate Change Mitigation 0

Climate Change Adaptation

Climate Change Adaptation 0

Submission Date

11/3/2020

Expected Implementation Start

3/1/2021

Expected Completion Date

3/2/2025

Duration

48In Months

Agency Fee(\$)

356,455.00

A. FOCAL/NON-FOCAL AREA ELEMENTS

Objectives/Programs	Focal Area Outcomes	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
BD-1-1	Mainstream biodiversity across sectors as well as landscapes and seascapes through biodiversity mainstreaming in priority sectors	GET	1,756,274.00	11,095,894.00
LD-1-1	Maintain or improve flow of agro-ecosystem services to sustain food production and livelihoods through Sustainable Land Management (SLM)	GET	392,808.00	3,695,178.00
LD-1-3	Maintain or improve flows of ecosystem services, including sustaining livelihoods of forest-dependent people through Forest Landscape Restoration (FLR)	GET	603,080.00	2,956,143.00
LD-1-4	Reduce pressures on natural resources from competing land uses and increase resilience in the wider landscape	GET	1,000,000.00	955,415.00
Total Project Cost(\$)			3,752,162.00	18,702,630.00

B. Project description summary

Project Objective

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

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
1- Biodiversity-supportive land use planning	Technical Assistance	<p>1.1. Biodiversity-sensitive land use planning and participatory land management mechanisms established in productive landscapes (in South and West of Nariva Swamp, West of Valencia Forest Reserve, South of the Northern Range Reserve in Trinidad and in the Courland Watershed in Tobago)</p> <p>Indicators:</p> <p><i>Number of participatory land use management mechanisms established</i></p> <p><i>% of women in land use management mechanisms</i></p>	<p>1.1.1 Land use plans identifying high value conservation areas, and productive terrestrial landscapes in buffer zones, and climate change resilience measures, are developed and validated</p> <p>1.1.2 Multi-stakeholder committees are established in four ecologically vulnerable areas in South and West of Nariva Swamp, west of Valencia Forest Reserve, South of the Northern Range Reserve in Trinidad and in the Courland Watershed in Tobago</p>	GET	497,500.00	1,813,466.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
2- Landscape restoration and biodiversity protection through agroecology	Investment	<p>2.1 Land degradation neutrality achieved as degraded sites are restored and productive capacity of agricultural landscapes is enhanced</p> <p>Indicators:</p> <p><i>Number of hectares of land restored (GEF Core Indicator 3)</i></p> <p><i>Number of hectares under improved practices (GEF Core Indicator 4)</i></p>	<p>2.1.1 Diversified, integrated agroforestry production systems upscaled in 2000 hectares of degraded lands</p> <p>2.1.2 Agroecological and climate-smart best practices disseminated through farmer field schools, model farms and capacities of extension services are improved</p> <p>2.1.3 Degraded forests restored, and an integrated wildfire management system developed</p> <p>2.1.4 Invasive alien species management plan established for three sites</p> <p>2.2.1 Biodiversity data is collected in corridors between PAs</p>	GET	1,360,721.00	7,253,865.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
3- Enabling environment for green, biodiversity-friendly value chains	Technical Assistance	<p>3.1 Emerging value chains produced sustainably to build resilience to climate change while conserving biodiversity, and supporting livelihoods</p> <p>Indicators:</p> <p><i>Percentage of producers, disaggregated by sex, converting to sustainable practices</i></p> <p><i>Number of farmer field schools providing capacity training on sustainable development (disaggregated by sex)</i></p> <p>3.2 Market access for agroecologically produced agricultural products and services enhanced through the promotion of a circular economy</p> <p>Indicators:</p> <p><i>Number of small producers, (disaggregated by sex) selling to new and larger markets</i></p> <p><i>Number of producers whose income has</i></p>	<p>3.1.1 Agroecological practices are implemented along five priority green value chains (cocoa, coconut, avocado, pineapple, roots and tubers) and specialised commodities (e.g., Moruga Hill Rice)</p> <p>3.1.2 30 lead farmers are trained on sustainable land management and agroecological principles using a standardised curriculum for lead farmers</p> <p>3.1.3 20 farmer field schools on agroecology including integrated pest management, soil fertility, production focusing on diversification are conducted using a standardised curriculum for Lead Farmer Training Programme</p> <p>3.2.1 Marketing strategies and business plans are developed to increase biodiversity-friendly products in markets</p> <p>3.2.2 A minimum of three public-private sector partnerships are established to increase</p>	GET	1,091,167.00	7,253,865.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
4-Knowledge management and monitoring	Technical Assistance	<p>4.1 Improved knowledge management in biodiversity and land degradation issues</p> <p>Indicators:</p> <p><i>Number of knowledge materials produced for appropriate audiences (governments, CBOs, local communities)</i></p> <p><i>Number of public awareness campaigns on improved land use</i></p> <p><i>Number of curriculums produced for Lead Farmer Training Programme</i></p> <p>4.2. Ongoing monitoring feeds into adaptive project management</p> <p>Indicators:</p> <p><i>Number of instances where monitoring promotes adaptive management (e.g., adjustment in budget, project priorities, changes in messaging to resonate with audiences)</i></p>	<p>4.1.1 Knowledge products produced and disseminated by partner institutions</p> <p>4.2.1. Project results and gender balance monitored annually</p>	GET	624,100.00	1,813,466.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
				Sub Total (\$)	3,573,488.00	18,134,662.00
Project Management Cost (PMC)						
				GET	178,674.00	567,968.00
				Sub Total(\$)	178,674.00	567,968.00
				Total Project Cost(\$)	3,752,162.00	18,702,630.00

C. 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(\$)
GEF Agency	FAO	Grant	Investment mobilized	100,000.00
Recipient Country Government	Ministry of Agriculture, Land and Fisheries Programme	Public Investment	Investment mobilized	10,000,000.00
Recipient Country Government	Cocoa Development Company of Trinidad and Tobago	In-kind	Recurrent expenditures	829,630.00
Recipient Country Government	Environment Management Authority	In-kind	Recurrent expenditures	197,000.00
Recipient Country Government	Ministry of Planning and Development	In-kind	Recurrent expenditures	576,000.00
Recipient Country Government	Tobago House of Assembly – Division of Agriculture, Forestry and Fisheries	Public Investment	Investment mobilized	7,000,000.00
Total Co-Financing(\$)				18,702,630.00

Describe how any "Investment Mobilized" was identified

The investments mobilised were identified through consultations with the main project stakeholders, and through identification of key national plans and priorities that have guided the development of this project. Agencies and partners with comparative advantage and experience in the priority areas of this project were identified and consulted with in order to foster a collaborative vision that would mutually support the project and co-financiers' initiatives. The Government of Trinidad and Tobago has committed USD 10,000,000 through the Ministry of Agriculture, Land and Fisheries under its Public Sector Investment Programme over the four-year executing period of Bioreach. These programme areas include the, "Coconut rehabilitation and replanting programme in the East Coast of Trinidad, Rehabilitation of the Cocoa Industry, Farm to Table project, Redevelopment of the Chaguaramas Agricultural Development Project, and Establishment of Community Based Aquacultural Programmes". The Government has further committed USD 7,000,000 through the Tobago

House of Assembly – Division of Agriculture, Forestry and Fisheries towards co-financing. Projects identified include, “Development of Demonstration and Training Centre at Goldsborough, Cocoa Rehabilitation, the Invasives Plant Control Project, the Courland Agricultural Project, the Urban Forestry Project, and the Friendship Estate Agro-Park Development”. Committed funds will support proposed initiatives such as the Establishment of Agro-processing facilities, the Goldsborough Estate Irrigation Project, the Development of an Agro-Park at Friendship Estate and many other initiatives, which provide a baseline upon which the proposed project can be built upon.

D. 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(\$)
FAO	GET	Trinidad and Tobago	Biodiversity	BD STAR Allocation	1,756,274	166,846
FAO	GET	Trinidad and Tobago	Land Degradation	LD STAR Allocation	1,995,888	189,609
Total Grant Resources(\$)					3,752,162.00	356,455.00

E. Non Grant Instrument

NON-GRANT INSTRUMENT at CEO Endorsement

Includes Non grant instruments? **No**

Includes reflow to GEF? **No**

F. Project Preparation Grant (PPG)

PPG Required
☐

PPG Amount (\$)
150,000

PPG Agency Fee (\$)
14,250

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)
FAO	GET	Trinidad and Tobago	Biodiversity	BD STAR Allocation	70,210	6,670
FAO	GET	Trinidad and Tobago	Land Degradation	LD STAR Allocation	79,790	7,580
Total Project Costs(\$)					150,000.00	14,250.00

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	1500.00	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	750.00		

Indicator 3.2 Area of Forest and Forest Land restored

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

Indicator 3.3 Area of natural grass and shrublands restored

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

Indicator 3.4 Area of wetlands (incl. estuaries, mangroves) restored

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

Indicator 4 Area of landscapes under improved practices (hectares; excluding protected areas)

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

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
1000.00	1000.00	0.00	0.00

Indicator 4.1 Area of landscapes under improved management to benefit biodiversity (hectares, qualitative assessment, non-certified)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
500.00	1,000.00		

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 ₂ e (direct)	1650000	1650000	0	0
Expected metric tons of CO ₂ e (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 ₂ e (direct)	1650000	1,650,000		
Expected metric tons of CO ₂ e (indirect)				
Anticipated start year of accounting	2021			
Duration of accounting	20	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 ₂ e (direct)				
Expected metric tons of CO ₂ e (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	2,765		
Male	1,500	2,766		
Total	2500	5531	0	0

Part II. Project Justification

1a. Project Description

2.1 Project Description

The global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description).

The **main problem** that this project seeks to address is the threat to Trinidad and Tobago's biodiversity and productive landscapes from issues of human trespass, illegal occupation of land, forest fires, and unsustainable livelihood practices. The biodiversity of Trinidad and Tobago plays an important role in the provision of 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, pollination, and the provision of food.[\[1\]](#)¹

The depletion of biodiversity and land degradation reduce people's access to productive landscapes and ecosystem services which has both direct and indirect impacts on livelihoods, 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, resilient, and more diverse livelihood opportunities. 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 small island developing states (SIDS) such as Trinidad and Tobago are especially susceptible.

2.1.1 Background

Trinidad and Tobago 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 96 per cent of the population whilst Tobago is the smaller one 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. TT 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 (evergreen seasonal, semi-evergreen seasonal, deciduous seasonal, dry evergreen, montane, mangrove, herbaceous swamp, palm marsh and marsh); 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 (the Orinoco River). Because of the proximity to the equator, the country has a predominantly tropical climate with two distinct seasons—a wet and dry.

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 South-Western end, contributing to a hotbed of microbial life[2]². Overall, there are six major soil types in Trinidad and nine in Tobago.[3]³

The islands' continental origin, has contributed to their rich natural heritage, and as a result, the country has the highest biodiversity of all of the Caribbean islands with over 420 species of birds, at least 600 different species of butterflies, over 95 different mammals, 85 different reptiles, 30 amphibians, and 54

species of freshwater fishes. There are also over 2,100 different flowering plants, including over 190 species of orchids. Approximately two per cent of these flowering plants are thought to be endemic [4]⁴.

TT's rich biodiversity and natural resources have seen the development of heavy industry, rich agriculture, and a burgeoning tourism sector. The unique biodiversity in TT contributes to the economy and culture of the islands[5]⁵ and has yielded scientific research of global significance (e.g., echolocation of bats, animal chemical responses, and animal mimicry)[6]⁶.

Despite this rich context, TT's biodiversity faces threats due to land degradation, resulting in habitat loss. It is estimated that Trinidad and Tobago has lost approximately eight per cent of species from ecosystems in the country.[7]⁷ 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 which operate without licenses have led to unsustainable practices in vulnerable areas and forest reserves. A lack of a comprehensive land use planning mechanisms has led to unsustainable utilisation, overuse and degradation of the country's land resources.[8]⁸

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 over a four-day period, intense rainfall and the resultant coastal river flooding and landslides impacted 150,000 people (11 per cent of the population) and 4,100 households[9]⁹.

TT also faces annual risks from forest fires, which are largely caused by human activity. Fires are mostly deliberately set or started during the preparation of lands for farming in grasslands to prevent regeneration of the forests, or to burn waste. Despite there being severe fire events, (between 1989 and 2018 a total of 276,528.027 acres were recorded as being burnt by the Forestry Division all of which were started by human behaviour), 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.

2.1.2 Root causes

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

- **Poor governance**- The lack of clear governance on land tenure has created many of the issues that have promoted illegal occupation 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 sensitisation at the community level. One of the major concerns is that encroaching communities are often tacitly accepted by various state entities, while technically going against state land policies. Many non-regularized encroachment communities are able to obtain letters of permission from elected officials (Certificates of Comfort), granting them stay in forest reserves or other ecologically vulnerable areas. These letters, while endorsed by officials, are contrary to state regulations, which create confusion and irregularities on land use.

The lack of cross-government collaboration on this issue means that various departments have their own policies without a coherent approach, while the Office of the Commissioner of State Lands, which is designated authority for the management and enforcement of state land matters, operates without sufficient enforcement capacity. Anecdotally, it is recognised that the application process for land occupation is quite lengthy, and given that there is weak enforcement of laws governing occupation, many persons occupy and/or construct edifices in remote zones, as there is little chance of reprisal by the state due to the lack of resources and political will.

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 and the Regularisation of Tenure Act, 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.

In addition to the environmental risks this poses, there are also health risks associated with unplanned housing developments that are without proper sanitation and water resources, which can lead to the spread of disease. This practice is not restricted to single families or 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 the high cost of land, people have limited choices. Despite TT's energy wealth, a 2013 study by the Commonwealth Foundation estimated poverty levels at 20 per cent. 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 deforestation, unsustainable agricultural practices, and burning of lands in areas where fire could spread. Some of these communities are settled in zones which are identified as vulnerable forest reserves. However, with a lack of knowledge and demarcation, the communities tend to grow.

- **Agricultural legacy**- In TT, agriculture contributes less than 0.5 per cent to GDP, employs four per cent 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 or habit of product diversification.

TT is a net food-importing country, which is costly, fosters dependency on global supply and subject to price shocks. TT is impacted by increases in global food prices as evidenced by a growing food import bill, which in 2010 represented 10.1 per cent 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 USD 220 million in 2000 to USD 912 million in 2012, thereby increasing the cost of living for the national population.

In Tobago, which was historically seen as the "breadbasket of the country", there has been a reduction of the area under agriculture cultivation by 65 per cent between the period 1982 and 2004. This decline in agricultural holdings and reduction in the area under cultivation was due to land use change such as the utilisation 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. These positions are now threatened as government revenue has decreased due to falling hydrocarbon 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 remain underutilised and neglected.

Food imports are mainly in the areas of cereals, fruits and vegetables, dairy products, eggs, and meat. TT's overdependency on crucial food staples creates circumstances of food insecurity. Any transport disruption, or climate event that delays food importation can create food shortages. This was witnessed in Tobago in 2018 when the mere interruption of the intra-island ferry services between Trinidad and Tobago created food shortage and led to the spoiling of perishable products. This high level of dependency on imports and transportation services, maintains food security pressures on the island, particularly during the hurricane season.

Given TT's climate, there is great potential for TT to produce its own agricultural goods and increase the food security and health of population. The government of TT is prioritising agriculture 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 this from happening at a national level.

- Lack of knowledge- Many of the degrading practices that happen in TT occur because of the inadequate knowledge about them. Forest fires, for instance, are largely caused by human activity. Fires are deliberately set mainly during the preparation of lands 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 hectares of forest land; the total figure is expected to be even higher as not all wildfires are recorded. 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 farmers who burn land for agriculture, practice little 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^[10]¹⁰. Failure to employ the correct methods increases soil erosion and sediment loads in runoff water.

Furthermore, 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 (The 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.[11]¹¹

Research by The UWI has also determined that 50 per cent 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, or on an as-needed basis. 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[12]¹². It also creates distrust among the local population on the safety of TT products.

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 it was noted that the country imported 2,400 tons of pesticides in 2004. There is 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) and diseases- IAS and diseases also contribute to biodiversity loss and land degradation in Trinidad and are linked to the occurrence of fire. In particular, the Guinea grass (*Megathyrus maximus*) is an invasive grass that threatens ecosystems. It is extremely fire-prone and linked to fire management crises in Trinidad. Non-native grass invasion and subsequent fires result in landscape-scale conversion from forest to grassland [13]¹³ throughout the tropics. The spread of fire in Guinea grass is three to five times higher or more than in forests. In Tobago, the rapid proliferation of bamboo throughout the watersheds and on slopes not only increases the susceptibility to yearly fires but it often occupies precious land, often along riverine coastal zones that often topples over during heavy rainfall, destroying the riverbank and choking water courses.

Diverse crop production has been further limited by pests, by human-wildlife conflict (birds, agouti, iguana, sheep, etc. destroying crops) as well as by invasive species. The red palm mite (*Raoiella indica*) has accounted for a loss of over 75 per cent of palms in Trinidad. The red ring and citrus greening diseases have contributed to widespread destruction of coconut palms and citrus, respectively. With the demand for coconut products is growing globally, the destruction of coconut crop leads to significant economic setbacks. Disease also impacts the growing cocoa industry. Frosty pod has been a major threat in Caribbean islands and South America. While it has not reached TT yet, it requires constant vigilance, management and sensitisation of growers to ensure that it does not spread.[\[14\]](#)¹⁴

Additionally, the Moruga grasshopper (*Coscineuta virens*) severely affects crops in the South western and South-Eastern areas of Trinidad and are reported to feed on approximately 78 species of food crops, ornamentals, shade plants, medicinal plants, weeds and plants of religious and cultural significance. The introduction of monocultures for cocoa, coffee, teak, and other agricultural crops, clearing of forested areas as well as the introduction of exotic species, are believed to have aided the spread of these grasshoppers from their forest homes via these modern agricultural systems. In the past, outside of the natural forests of South-West Trinidad, the grasshoppers would have had to survive in a world of mixed vegetation types which limited their survival success. Control thus far, has primarily been exerted through heavy chemical application which negatively impacts other biodiversity. Other bioalternatives have yet to be explored.

- **Climate change and natural disasters**- As a small island developing state (SIDS), TT is particularly susceptible to the adverse effects of climate change. Rising temperatures and sea levels affect soil quality and increase the frequency of pest and disease outbreaks, as well as natural disasters, droughts and floods. According to an agricultural census conducted in 2004, 33.6 per cent of agricultural land in Trinidad is subject to flooding. The country is also prone to severe droughts which can lead to bush fires. In 2010, citrus and cocoa harvests were destroyed due to bushfires in the drought period. Although the government provides flood damage compensation to farmers, climate change adaptation and mitigation have not been a part of agricultural policy or integrated into training provided by extension officers.

2.1.3. Barriers

There are several barriers that prevent biodiversity loss, land rehabilitation, sustainable agricultural production and environmental protection. These include:

- ***Agricultural practices:*** The main environmental issues affecting agriculture in TT are soil erosion, water shortages, over or incorrect usage of agricultural chemicals, forest fires, and human pressures from encroaching communities living on forested hillsides. Low productivity, resource constraints (in particular labour), 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 are also barriers to sustainable agricultural production. [15]¹⁵ Crop production has also been limited by pests (birds, agouti, iguana, sheep) as well as invasive species and praedial larceny.

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 local agricultural commodities.

Sugar production came to a complete halt after 2007, with former plantations being converted for housing, small agriculture holdings and other uses. Coconut production has fallen since the nineties, as it requires new varieties that are disease-resistant and more productive. Coffee and cocoa production has fallen victim to pests, diseases, and inefficient technology, while rice production also declined 90 per cent since the nineties, due to low productivity. At the same time, production of citrus fruit, tomatoes, root crops and hot peppers have seen promising production growth rates in recent years.[16]¹⁶

- ***Illegal occupation of land and encroachment:*** The problem of illegal occupation of land and 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 that are illegally living on state lands and a further 30,000 households illegally living on private lands based in their zones of inquiry. A further 21 per cent of residents interviewed claimed that they did not know their land ownership status, which indicates that there may be larger issues of land tenure. This means that residences are established in unplanned areas, often bearing negative impacts on their immediate environment. It also means that many of these communities have been established without consideration of human impact on particular zones and without consideration of water and waste management. While many can establish connections to the power grid and have access to running water, this is done in an ad-hoc way without government approval.

- ***Lack of land use guidance, planning and enforcement:*** Another issue related to land encroachment and illegal occupation of land is that communities have no guidance on what kind of activities can be practiced where. This means that forest reserves have been destroyed and illegally occupied for habitation or small-scale agriculture, quarrying has taken place adjacent to protected areas, etc. Commercial actors have an incentive to keep these areas regulation-free as they can extract what they need, when they need it, without associated payments and licenses. While the lack of governmental enforcement is an issue at large, there are also no community-led initiatives and weak municipal structures to monitor and direct the types of development. There has been increasing enforcement of zoning and planning in urban centres, but rural areas often do not have the same resources, monitoring or enforcement available.

- ***Limited history of associative culture:*** TT has a limited history of associative culture around agricultural production. Following the state-managed plantation system, there is not a tradition to form cooperatives and farmers' associations through which people can identify common interests, concerns and strategies, or leverage prices. Farmers operate at the individual level, often competitively. Interventions in the cocoa industry are starting to promote some producer-group affiliations.

- ***Changing economic realities:*** TT's economy has recently faced difficulties due to the slowdown in the petroleum sector, making economic diversification even more pressing. Increasing agricultural production has been a government priority, but this is very volatile, shocked by structural changes and climate events, and is unable to attract labour. Inflation in the country is driven by food prices, which are in turn affected by both international food price inflation and domestic production fluctuations.

- ***Lack of access to capital:*** This issue is linked both to land rights and sustainable agricultural production. Due to the absence of land titles, it is very difficult for farmers to provide collateral and obtain credit, which prevents them from investing in the agricultural sector at all. It also limits the amount of labour that can be hired. Often, farming is available to those who previously had the resources available, creating barriers to people entering the sector, despite the need; youth are severely challenged by these limitations.

- ***Farm theft, or praedial larceny:*** Security circumstances affect sustainable activities in TT. Farmers often cite praedial larceny as one their greatest challenges and as a barrier to wanting to continue in this area of work. It is estimated that Trinidad and Tobago suffered USD 11.3 million in losses over a six-month period in 2011.^[17] A Praedial Larceny Squad was formed in 2013 to address the issue however, it has not proven successful. Information received from the Ministry of Agriculture, Land and Fisheries (MALF)

indicates that the Squad arrested 22 persons in 2019 and convicted four, while the rest await trial. It was indicated that low arrest rates are due to extreme human resource challenges, resources and inadequate capacity.^[18]¹⁸

- ***Duplicative government responsibilities:*** The MALF champions the conservation of biodiversity and sustainable development of food and non-food systems, supported by sound public policy in Trinidad. The Ministry has specific portfolio responsibilities as follows: Agricultural Extension Services, Agricultural Finance and Credit (Policy), Agricultural Infrastructure, Agricultural Land Development, Distribution and Land Regularisation, Agricultural Marketing, Agricultural Policy and Planning, Agricultural Research, Animal Health and Protection, Apiculture, Crop Production (Food and Fibre), Forestry and Wildlife, Horticulture, Hydrographic Surveys, Lands and Surveys, Land Acquisitions, Livestock Production, Marine Fisheries and Aquaculture, Plant Health and Protection, Rural Development (Agriculture), State Land Management and Enforcement. Therefore, most of the agriculture, land and water management, forestry and fishery policies and programmes were financed by the MALF's budget, which for the 2019/20 financial year received an allocation of USD 103.4 million. However, the Ministry of Planning and Development facilitates national development through various programmes. These include environmental policy, planning and management as well as to act as the focal point for much of the international and regional developmental agencies such as the Inter-American Development Bank (IDB), the United Nations system of agencies, the Global Environment Facility (GEF), the European Union and the Caribbean Development Bank. The Ministry of Health is responsible for implementing and enforcing food safety legislation, while the Environmental Management Authority's mandate is to sustainably manage the natural resources and environment of the nation; this includes assessment of the local biodiversity. The Tobago House Assembly is responsible for the agricultural development of Tobago, including efficient use of land and marine resources and marketing of agricultural products, forest protection and water management. The Central Statistical Office (CSO) cooperates with the National Agricultural Marketing and Development Corporation (NAMDEVCO) and MALF on collection and distribution of agricultural information. While the mandates are fairly clear, there are often gaps between delivery and duplication of resources creating issues of unclear and overlapping jurisdictions. With changing governments there can also be issues of continuity for programmes.

- ***Economic practices:*** Quarrying, unsustainable agricultural practices (clearing of forest reserves for short-term crops that give quick cash, etc.), unplanned residential settlements (illegal occupation/encroachment), and infrastructure development are identified as key causes of degradation. Illegal quarrying and other commercial activities can also pose security risks as many are associated with powerful entities linked with criminal activity.

It is also necessary, to delve a little deeper into the types of threats that biodiversity faces, and what type of biodiversity is threatened. In the following table, **key biodiversity areas** located in the project areas, species, as well as key pressures or threats are described with more detail.

Table 3: Biodiversity at Risk

Project location and key biodiversity area ^[2]	Biodiversity and species	Pressure/threats to key biodiversity
Main Ridge in Tobago (3,982 ha)	<p>Birds: Four species—three of which are endemic subspecies: white-tailed sabrewing (<i>Campylopterus ensipennis</i>), Venezuelan flycatcher (<i>Myiarchus venezuelensis</i>), rufous-vented chachalaca (<i>Ortalis ruficauda</i>) and copper-rumped hummingbird (<i>Amazilia tobaci</i>). 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.</p> <p>Non-bird biodiversity: One endemic snake species, <i>Erythrolamprus ocellatus</i>, and two subspecies, <i>Liophis reginae</i> ssp. and <i>Mastigodryas boddaerti dunni</i>, are currently only known from Tobago. There are 16 endemic plants listed from Tobago, most of which are likely to occur within the boundary of the Main Ridge Forest Reserve.</p>	<p>- Hunting and widespread habitat destruction</p> <p>- Hurricanes pose a serious threat, especially given the expected increase in intensity and frequency of hurricanes associated with climate change.</p> <p>- Bush fires are common during the dry season and contribute to significant habitat loss.</p>

Project location and key biodiversity area ^[2]	Biodiversity and species	Pressure/threats to key biodiversity
Part of Victoria-Mayaro Forest Reserve (52,396 ha)	<p>Birds: The site offers the possibility of a second population of the critically endangered Trinidad piping-guan (<i>Pipile pipile</i>).</p> <p>Non-bird biodiversity: 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. The Trinidad and Tobago endemic frog, <i>Eleutherodactylus urichi</i>, is found at the Trinity Hills and surrounding forest.</p>	<p>- Natural gas pipelines were recently constructed which, together with existing roads, fragments the formerly contiguous forest.</p> <p>- Gradual habitat destruction due to illegal logging or expansion of agricultural plots.</p> <p>-The survival of any population of Trinidad piping-guan is severely threatened by hunters.</p>

2.1.4 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.

- IDB- ***Building on Vetiver project*** (2019-2022; USD 957,350): This project is engaged in pilot testing and 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 IDB project seeks to use a participatory model of implementation, as does the proposed GEF project. It will be useful to identify which technical training and public awareness activities have mobilised communities.

- IDB- ***Making Agriculture Profitable and Sustainable*** (2016-2020; 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 accessing 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 four 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 harmonise activities to make use of resources spent in the baseline. Like the baseline project, the proposed project seeks to build linkages with the private sector to enhance demand for sustainably produced agricultural products, which will be delivered through training. The proposed GEF project will also examine the types of farmer training that have occurred and glean lessons learnt. The proposed project will work in different sites from the IDB project to increase coverage across the country and to add the angle of biodiversity protection.

- IDB-IMF- ***Improving Productivity of Artisanal Cocoa in Trinidad and Tobago (IMPACTT)*** (2016-2019; USD 1,491,183): This project initially had an implementation date of 2016 to 2019 but was delayed and is expected to conclude in 2020. 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 mechanisation 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 the reduction of time to obtain and renew agriculture state land leases, increase annual number of issued leases to year 2021, improve and increase accessible information on the current stock of agriculture state lands, improve efficiency and transparency (through enhanced integration of modern information technologies), share information, and improve interlinkages across state actors on common standards and processes. The project supports institutions to serve citizens by assisting them to formalise 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 support the proposed GEF project. In particular, the proposed project can consider 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; 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 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 in the region. The GEF project is an opportunity to help support this Strategy.

- Caribbean Development Bank/FAO- ***Cassava Industry – Market Assessment and Technology Validation and Dissemination – Regional*** (2016-2020; USD 1.2 million): Under this initiative, a report on the market assessment of the cassava industry in Trinidad and Tobago will be developed. Training sessions were also held for MALF and The UWI personnel for in situ propagation, efficient handling and multiplication, and phytosanitary management of tissue culture (TC) plantlets. The MALF TC laboratory facility, which received materials and supplies, is in the process of generating micro-propagated plants for multiplication and eventual distribution to farmers. The capacity of MALF personnel was built to become trainers in the weaning, hardening, macro propagation and field evaluation of cassava. The project facilitated the training of Extension Officers and Extension Training and Information Services (ETIS) personnel in the use of participatory methods to become Farmer Field School (FFS) facilitators. On-farm soft introduction was done of three high yielding, MALF-selected cassava varieties to approximately 125 farmers. Two sets of mechanical cassava up-rooters and planters were provided to the Government of Trinidad and Tobago—one set for each island. The complementary project (TCP/SLC/3604 *Sustainable Approaches to Agroprocessing and Value Chain Development of Root and Tuber Crops in the Caribbean* – 2017-2019; USD 495,000) hosted a buyers and sellers forum to link farmers to the market. The forum brought together and established linkages among farmers and processors. The CDB project outputs can contribute significantly to component 2.1.2 of this GEF project.

- **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 the gross domestic product to just over one per cent of the GDP. In the 2018 Budget Speech, the Minister of Agriculture, Land and Fisheries (MALF) indicated that the government will adopt modernised production methods throughout the sector to improve productivity, competitiveness and economic returns to the farmer and ensure environmental efficiency. In 2017, the MALF 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 MALF’s objectives through the development of green value chains and farmer field schools, rehabilitation of land, and dissemination of sustainable practices.

- **Cocoa Development Company of Trinidad and Tobago (CDCTT) Limited *Programme of Work*** (ongoing): The CDCTT 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 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 CDCTT 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 CDCTT and integrate them strategically in the interventions, which is cost-effective.

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

- **Tobago House of Assembly – Division of Agriculture, Forestry and Fisheries:** The Division 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 a potential sector has taken place, greater technical support is needed to move this to a reality.

3. Project Results

3.1 Project components, outcomes and outputs

This section describes the proposed alternative scenario with a brief description of expected outcomes and components of the project and the project's Theory of Change.

In order to challenge the drivers of 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 four 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**
4. **Knowledge management and monitoring**

Component 1: Biodiversity-supportive land use planning

The 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 with responsibilities for agriculture and the environment, low levels of awareness among communities on how they are degrading their environment, and the 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.

There is one key outcome under this component:

Outcome 1.1: Biodiversity-sensitive land use planning and participatory land management mechanisms established in productive landscapes (in South and West of Nariva Swamp, West of Valencia Forest Reserve, South of the Northern Range Reserve in Trinidad and in the Courland Watershed in Tobago)

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 illegally occupying or encroaching upon vulnerable ecosystems and fostering habitat loss through their degrading activities, are outside of the planning processes for the areas they occupy. Any improvements in land use planning will have to include those that have been previously marginalised, as well as decision-makers and other stakeholders. This project will provide a mechanism by which they can work together to improve biodiversity-friendly land use planning.

For that reason, this project will specifically work with encroaching communities that have resided in vulnerable areas for many decades, and have established long-term settlements, but have had no part in planning and development. These communities 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. Most are, however, unaware of or ignore rules and regulations, and there has been a tendency for these communities to operate autonomously. Part of the targeted activities are to ensure that they do not illegally occupy or encroach further, and that they are aware of the vulnerabilities of the ecosystems which they border, as well as cognizant of existing forest reserves. A key feature of this component will be to establish multi-stakeholder consultation groups which include local and national government representatives, local communities (former encroaching 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 greater knowledge on biodiversity and sustainable land management.

The success of multi-stakeholder management groups is anticipated as a similar model to those 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 illegal occupation 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 organising mechanisms, community-based structures, the first of its kind, will benefit future land use planning. As 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 (PAs) management sub committees that have emerged, creating greater

coordination between PAs and their surrounding areas which this project targets. The government has demonstrated interest in identifying the mechanisms that 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 and uncoordinated processes for development. For instance, the Office of the Commissioner 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 recognises 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 rationalise 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 the final stages of formulation of 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 formalise 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 encroaching communities.

There are two existing models at the local level that may be of benefit to the project. One is the municipal level urban planning structures that thus far has been successful in the capital city of Port of Spain in monitoring land use. The other is the multi-stakeholder consultation groups that have been struck up under the coordinated GEF project to improve management of protected areas. These will serve as models to inform multi-stakeholder consultation structures.

In order to ensure that there were no legal repercussions of collaborating with encroaching communities, a legal expert was retained during the project design to verify that this project is in line with all existing laws, policies and regulations. It was determined that the project does not go against any existing laws and does not pose any risks to any

communities' status. During consultations with government and local level agencies, there was a high level of endorsement of the project, as it seeks to address an issue that is either avoided or generally unmanageable by current structures. (See the final report in Annex 18.)

The project is also mindful of the fact that incentives must be provided to communities to participate in the land use planning process. As such, the project will have a complementary approach among the four components to ensure that some of the activities piloted under Components 2 and 3 can in fact be piloted in the sites identified under Component 1. This will ensure that in addition to developing participatory land use plans, the communities will be piloting sustainable agroforestry, supporting the value chains which they wish to upscale, and benefitting from the training that they require.

In the GEF-alternative, 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, and it is anticipated that establishing community-based land use planning will contribute to:

- § Greater awareness of land use, its benefits, its potential, and the ability to improve land use to mitigate environmental risks and support ecosystem services
- § Protection of vulnerable ecological zones which are adjacent to the selected sites and under pressure from individual level and commercial activities
- § Stronger local level institutional structures contributing to organisational/civic culture within communities
- § Greater clarity on what types of activities can be undertaken where, with local level monitoring in place (Component 4)
- § Sustainable livelihoods that are not at the cost of natural resources
- § Development that is biodiversity-friendly and part of a cohesive vision

This process will require complementary public awareness activities to sensitise communities on the value of biodiversity and ecosystem services, and how healthy ecosystems can support sustainable and long-term livelihoods. One of the crucial aspects of 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. Community-led enforcement mechanisms will also be determined. 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. The selected sites are those that have demonstrated community interest in engaging in such a process.

The four project sites are outside of the protected areas identified in a complementary GEF project “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 and synergise 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 prioritised in interventions under this outcome. Specifically, women’s use of land and 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 per cent of multi-stakeholder groups will include women to foster participation and mobilisation, and also enhance women’s roles in community level planning. Women and youth 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. Youth involvement will also facilitate embedding knowledge in the generation of the future to support commitment to and sustainability of the biodiversity protection process.

Initiatives under this Component, will also ensure that climate change dimensions are considered in land use planning and participatory land management mechanisms. Through land use planning, the project can increase the resilience to major climate shifts and ensure that communities are equipped with built-in mechanisms to face and adapt to such changes. Future projections will be shared with community members so that they can incorporate this knowledge in their land use planning; the project will support communities to identify targeted resilience measures. The project will also highlight the vulnerability of ecosystem resources in light of climate change impacts, so that communities can relate and interpret climate projections as impacts on specific natural resources.

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, and climate resilience measures, are developed and validated. Activities under this Output will include:

- Community mapping exercises; identification of economic/agricultural activities and location; demarcation of residential use from agriculture and development uses; identification of vulnerable areas; identification of current and projected use of land resources and how to manage them sustainably; identification of community-level incentives for producing; and implementation of the land use plan
- Gathering drone/satellite imagery/footage to obtain exact land use data

- Delineating productive landscape from high conservation areas using natural boundaries, ridges, rivers, roads through a participatory process
- Identifying how current land use and projected land use will impact women and vulnerable communities, and ensuring adequate safeguards and inclusion of equitable measures
- Establishing public awareness initiatives once land use plans have been validated,
- Identifying community-led monitoring mechanisms

Output 1.1.2: Multi-stakeholder committees are established in four ecologically vulnerable areas in South and West of Nariva Swamp, West of Valencia Forest Reserve, South of the Northern Range Reserve in Trinidad and in the Courland Watershed in Tobago. Activities under this output include:

- Identifying key stakeholders with interest in area (e.g., local communities, Rural Women's Network, Commissioner of State Lands, MALF, etc.); identifying key players that will represent community needs while ensuring representation from women and marginalised groups; and including key commercial stakeholders such as those involved in the oil and gas sectors, as well as quarrying and extractive industries.
- Convening stakeholders through participatory process and conducting community consultations to identify/respond to local level needs
- Mainstreaming understanding of land use plan; identifying key players that will represent community needs (ensuring representation from women and indigenous groups)
- Establishing multi-stakeholder committees including local representatives, encroaching communities, farmer cooperatives, MALF, Commissioner of State Lands, Ministry of Planning and Development, Ministry of Community Development, Culture and the Arts, Ministry of Rural Development and Local Government, Ministry of Energy and Energy Industries
- Conducting quarterly meetings to establish common vision and goals for land use planning
- Obtain agreement on land use practices (zoning collaboratively for specific land uses: agroforestry crops, or tree crops restrict the use pesticides)

In order to obtain success for this output, the activities will be facilitated and implemented by a project partner that has the experience and know-how in fostering collaborations between local communities, CBOs, NGOs and local governments. A relevant NGO or suitable agency will be selected to carry out all the activities under the first component with ongoing support and collaboration of government agencies and the FAO, in order to achieve the required results in the project timeframe.

Component 2: Landscape restoration and biodiversity protection through agroecology

Component 2 is organised into two key outcomes:

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

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 in the selected sites is low-producing and degrading to land and biodiversity by the use of pesticides, monocultural production, and cultivation in sensitive zones that should not be illegally occupied. Land uses such as quarrying, unauthorised settlement, oil and gas exploration and overharvesting of commercial forests have further exacerbated the pressures on the selected sites and contributed to significant biodiversity loss and land degradation.

The goal under this outcome is to reverse degraded areas and increase land productivity without further eroding land resources so that human activity has a net positive impact in the project zones. The lands in the targeted sites are all degraded: some are either old plantations or have been turned into quarries; some carry unsustainable agricultural production; some have experienced overharvesting of valuable timber species; others are dominated by invasive alien species which have hampered indigenous biodiversity and crop production.

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: Diversified, integrated agroforestry production systems upscaled in 2000 hectares of degraded lands

The project will support farmers and extension services to extend and promote agroforestry on heavily degraded lands and restore former plantations through an integrated and diversified production system. The strategy is to invest in agroforestry and restore plantations with disease and climate-resilient varieties. In TT, much of the agriculture is a remnant of the plantation system. In order to support farmers, much of the rehabilitation will require moving away from monoculture production into greater diversity and

integration of farming, and in particular diversifying products from previous cocoa, coffee and sugar plantations. These initiatives can serve to reverse degradation as well as provide alternative livelihoods and food security for small-scale farmers and vulnerable communities. This supports TT's objectives of increasing local agricultural production to enhance greater self-sufficiency and improve dietary diversity. Activities will include:

- Identifying plots of land where diverse agroforestry can take place, and especially cocoa or coconut plantations that require rehabilitation
- Identifying farmers interested in expanding diverse agroforestry or rehabilitating plantations
- Identifying optimal production system for each site (agricultural mix)
- Planting crops that involve the establishment of agroforestry systems along with disease and climate resilient varieties, identifying core inputs (water, waste management, equipment) and how they will be sustainably managed and used
- Assessing impact on livelihoods of farmers/farming households
- Providing training/capacity support for fledglings through a learning-by-doing approach

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

Agricultural 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, (iii) raise awareness of disruptive forces, invasive alien species, improved pest management and building resilience, and (iv) restore soils and systems that have been under monoculture and burdened by heavy pesticide/ fertiliser usage.

Consultations have revealed that in the past FFS were conducted over a limited 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 organisational culture. It will also allow for farmers to observe impacts

over a longer duration and have a space where they can convene. The capacity of the Ministry's Extension services Division will also be enhanced by developing skills in demonstrating how agroecology can be applied effectively in a gender sensitive manner. This will also contribute to project sustainability. 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 will be sought with various groups of stakeholders. With The University of West Indies (The UWI), the project will test for more climate-resilient strains. With NGOs such as the Wa Samaki Ecosystems, restorative techniques will be explored. Connections with Green Market Santa Cruz and the Network of Rural Women Producers Trinidad and Tobago ensure the inclusion of women and attention to gender issues will create linkages between capacitated farmers and markets.

Several stakeholders who manage or lease state lands and parts of Forest Reserves that have been illegally cleared for agriculture in the past, are now interested in restoring native or agricultural trees on their land (see Annex 15) and would be interested in partaking in activities under this output. The sites where educational training can take place and rehabilitative processes can be undertaken include:

- Aripo Livestock Station (approximately 40 hectares)
- Tunapuna, behind Hillview College (approximately 20 hectares)
- UWI Orange Grove Field Station (approximately 5 hectares)
- Wa Samaki Ecosystems Permaculture Farm (approximately 6 hectares)
- NIHERST Science City (approximately 10 hectares)
- Bunsee Trace, Siparia (between 50 and 100 hectares)

Additional activities under this output also include to:

- Establish integrated pest management farmer field school; subject will include integrated management of nutrients (composting/management of water, water harvesting, water retention, mulching)
- Identify the model farms and practices to be carried out

- Establish working arrangements between lead model farmer and team of farmers to work collaboratively in a cluster
- Demonstrate transition from monoculture towards integrated agricultural systems
- Disseminate local climate information to farmers, and potential impacts on production.
- Raise awareness on climate change impacts on the agricultural landscapes and integrate climate-smart modules in the capacity building activities (FFS and model farms).

Output 2.1.3: Degraded forests restored, and an integrated wildfire management system developed

Harvesting of commercially valuable forest species is managed in different ways in TT. One way is the *open range block system* that has been in operation since the twenties and was practised in certain areas of the Victoria/ Mayaro Forest Reserve until the harvesting had to be stopped because there were no harvestable trees left. In this widely used system, individual licensed loggers were allowed to select and harvest a specified volume or number of trees anywhere in a defined range. The selected trees are inspected and approved for felling by forest officers, who consider the minimum girth limits and availability of replacement trees within a specified distance, forest structure, wildlife, and soil considerations. However, due to a lack in supervision and enforcement this system did not prevent the degradation of the forest.

A variant of the open range block system was introduced to prevent overcutting, harvesting degradation and uneven harvesting. In this variation, harvesting is confined to a single block for a specified time after which period it may be closed. However, due to poor management and lack of monitoring, it resulted in forests with lowered diversity and lacking commercially valuable species that can be sustainably managed. This project will ensure that its activities support the long-term productivity of lowland tropical forests by restoring productivity and biodiversity to these overharvested areas. The approach will be a novel one where valuable future crop trees will be identified, monitored and liberated from their competitors by trained foresters and forest workers. These future crop trees will then represent the economic value of the stand. This approach places a strong emphasis on supporting selected trees with a high economic value with minimal intervention of the existing forest, and conservation of the biodiversity of the original forest composition. The praxis of future crop tree selection through intensified forest inventories was already tested and piloted by the Forestry Division in 2019/20 and is now ready to be upscaled.

The project will also establish an integrated wildfire management plan to decrease risks to biodiversity and protect people and assets, with specific attention to rehabilitating forests. 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 multi-stakeholder groups to establish early warning systems 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 harmonise 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 will have early warning systems in place, and understand prevention, management, warning and containment processes to preserve their habitats.

One of the first steps in creating an integrated wildfire management plan is to conduct an analysis of the underlying causes as to why so many fires are deliberately set in TT and why they become wildfires. Based on the results of this analysis a clearer description of the fire issues and their bases, expressions and origins will be formulated. FAO's experience in other countries suggests that early warning (fire danger rating), fire reporting (to enable effective response to unwanted fires), and monitoring (to improve data and strengthen understanding of fire issues) should be developed and accompanied by a legal review of the fire regulations and a review of the institutional settings to manage wildfires. Following the legal and institutional review, the project will prepare a plan, with stakeholder engagement and participation, for building the capacity of government and voluntary organisations to improve their skills to monitor, prevent, detect and fight uncontrolled wildfires.

The communities receiving sensitisation support 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 is one such method. Designing reforestation patterns to safeguard the investment in rehabilitated areas, while fostering community-level ownership over improved land management is another non-traditional approach that will be tested.

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 but are still relevant. It will be essential to streamline national regulations in order to harmonise the forest and agricultural regulations and the institutional setting to effectively implement existing rules as it relates to wildfires.

Traditionally the Forestry Division is the main state agency for forest fire monitoring and control. Its institutional set up should be analysed for 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 organisations (e.g., such as Fondes Amandes Community Reforestation Project, Anse Fromager Environmental Ecological Protection Organisation, Nature Seekers and Protectors of the Environment, among others). Supporting multi-sectoral participation will support a weakened forestry department.

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

The main activities under this output will include:

- Working with the Forestry Division (FD) at rehabilitating forests previously managed under the open range block system in selected forest reserves (Cats Hill, Moruga, Victoria-Mayaro Forest Reserve and in the Cedros Open Range.)^[19]¹⁹
- Sensitising the population and decision makers on the issues of wildfires
- Reviewing laws and regulations for forest and wildfire management
- Reviewing national institutional arrangements for wild land fire management
- Improving early warning and wildfire monitoring systems
- Providing capacity building to monitor, prevent, detect and suppress uncontrolled wildland fires
- Piloting the rehabilitation of frequently burned areas with a community management approach to oversee protection of rehabilitated sites. The sites selected for this activity are on southern slopes of the Northern Range to the east of Tunapuna and directly behind El Dorado in the East-West Corridor. This area is plagued by annual fires in the dry season caused by agricultural activity and by arson from nearby residential areas. The idea of tackling an area of state and private land together is attractive because the origin of fires in state lands and forest reserves is often on the private lands. By reforesting the private land with productive fruit trees, it is anticipated that farmers will be motivated to prevent fires, and in so doing, protect the forests on state land from fires. The idea is also to create a more coherent approach.

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

An invasive species management plan will allow communities and key stakeholders to identify their greatest threats in addition to Guinea grass and bamboo, and devise a strategy by which these can be contained, or its by-products used, and their impacts reduced. This plan will also include how IAS can be managed in the long run, both institutionally and financially, examining the public and private sector approaches to the eco-benefits and impact of supporting IAS.

One of the big threats from diseases that affect the cocoa and coconut industries in Trinidad and Tobago is that of the frosty pod disease and red palm mite (RPM) respectively. Both pests are linked to major production losses. The frosty pod disease in cocoa is not yet present in Trinidad, but is in other Caribbean islands and South America, therefore extreme vigilance, surveillance and education are required. RPM is present and has already caused significant losses since 2006. Given that cocoa is one of the value chains that will be supported in the project, and offers potential for upscaling across the country, it is of critical importance that any plan addresses prevention of and safeguarding against frosty pod disease. Locusts in southern Trinidad and red ring disease are also of great risk to national production. Activities under this output would include:

- Bringing red ring disease and its vector (palm weevil) and other stem and flower damaging insects under control through sustainable means, especially in replanting/reforesting initiatives
- Enhancing scientific capacity through exchanges between laboratories, training of staff and facilitating greater South-South collaborations
- Supporting ongoing research initiatives and testing resilient palms
- Improving access to planting materials and widening varietal gene pool
- Conducting phased rehabilitation of infected plantations, with agroforestry approach to avoid monoculture
- Pilot the removal of Guinea grass
- Conduct field studies and identify best practices to manage alien species and indigenous pests (i.e., red ring disease, locusts)
- Managing bamboo which limits the growth of other crops and trees

- Increasing the vigilance, surveillance and education activities against the frosty pod disease of cocoa
- Establishing better monitoring of inter-island movement of produce and planting materials to avoid introducing pests and invasives. This will be done through training of farmers, wholesalers and retailers, and port authorities

Outcome 2.2: Restoration of habitats and ecological corridors between protected areas

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 Trinidad piping-guan and the white-tailed 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 IFPAMTT project [GEF ID: 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 community-based nurseries will require establishment under the project. To ensure a selection of suitable provenances of trees, a special seed collection programme will be initiated.

It is anticipated that currently degraded lands (degraded forests) in the project area will be restored to tropical rainforests (lowland tropical forests, 1400 hectares) and to riparian forests (established with native species in river banks between protected areas (15 kilometres, 100 hectares). Reforestation measures will be planned and executed in coordination with private property owners adjacent to the targeted forest areas.

TT 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 an LDN project in sixteen affected country Parties worldwide. The Government of TT contributed USD 250,000 to the regional LDN project and 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. During the PPG phase, an analysis from The UWI provided input on which lands are the most promising to rehabilitate with the resources from this project, with the greatest support from communities, governments and with the promise of sustainability. Those have been the sites selected for rehabilitation. Please see Annex 20 for details.

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 and how these interact and influence one another. While there is a biodiversity database, it requires population of qualitative data. Activities under this output will be complementary to the GEF IFPAMTT project (GEF ID: 4769) that is wrapping up, to decrease pressures on protected areas. Activities under this output will include:

- Identifying appropriate biodiversity data collection method as well as which values will be measured
- Conducting ground truthing mission; determining what species exist in the site, which are at risk, patterns of movement/migration, human factors impacting habitats
- Identifying species/composition of corridor to assess conservation status
- Conducting point count/line transect/territorial or spot mapping
- Using a citizen science approach to data collection with communities, schools and resource users such as farmers—this method allows for public participation in scientific information gathering, through a collaborative approach
- Integrating this information in the EMA database of species
- Developing recommendations to establish riparian forest based on findings

Output 2.2.2: Riparian forest established with native species in river banks between PAs (15 kilometres) Target 100 hectares of degraded forest lands

Reforestation of river banks 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 river banks, particularly those that have toppled over due to large and heavy bamboo, shading of the river and decreasing heat levels of the river which negatively impact fish populations (particularly in light of climate change), protection of water resources and for allowing connectivity between protected areas.

Activities under this output are also geared towards supporting habitats for biodiversity. The targeted riparian zones connect forests across agricultural lands. Rehabilitating or reforesting them with corridors of natural habitat will reduce the fragmenting effects of agriculture.

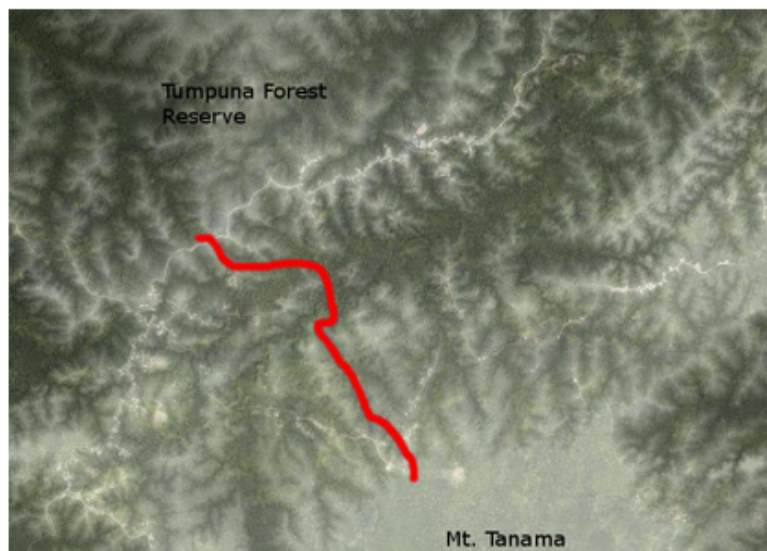
The banks of watercourses selected will be reforested with strips of forest 20 metres wide along the banks. Both sides of streams will be planted to provide shelter for animals to move across the landscape. This width would result in at least four hectares per kilometre of stream length needing to be restored. The streams suggested for restoration are based on areas identified for corridors to be formed in the protected areas management plan prepared by the IFPAMTT project. The streams and their lengths are listed below:

- Between Mt Tamana and Tumpuna Forest Reserve (~4km)
- Aripo River between Northern Range and Caroni River (~10km)
- Cumuto River between Arena Forest and Mt Tamana (~13km)
- Charuma River between Central Range Reserve and Nariva Swamp ESA (~6km)

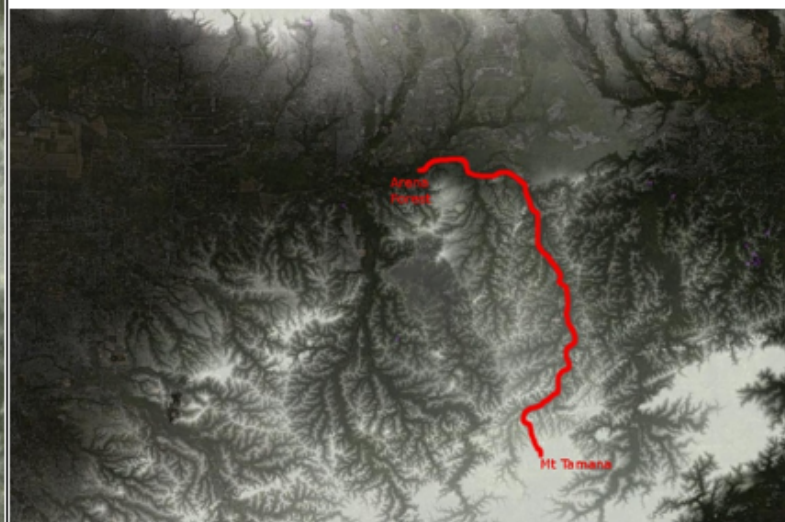
Northern Range to Arena Forest



Charuma to Nariva Swamp



Mt. Tamana to Tumpuna Reserve



Cumuto River from Arena Forest to Mt Tamana

Figure 1: Areas cited for riparian restoration

The project will also contribute to the restoration of wetlands, which are important in the provision of food, and water, which are considered provisioning services. They also reduce the impacts of storm, flood, and erosion (regulating services), and at the same time they are used for recreation and tourism. These wetlands also serve as the linkages between productive landscapes, protected areas (e.g., Caroni Swamp), rivers and the seas. Under the project two proposed activities have been identified by the Institute of Marine Affairs and the Department of Natural Resources and Forestry. These include:

- The hydrological restoration Kilgwyn Wetland in Tobago (34 hectares) to restore tidal exchange of waters and reduce pressures from poor human land use and management practices; the project will also seek to upscale and develop community based management and initiatives (mangrove honey production).
- Rehabilitate freshwater marshes that interconnect farms/ residential land uses with the Caroni Swamp Protected Area (15 hectares). The plan proposes to increase the volume and quality of water into the protected area by buffering runoff from agricultural lands; the proposed project will also seek to work with farmers towards improving their practices.

Output 2.2.3: Recovery plan for significant species (e.g., Trinidad piping-guan, white-tailed sabrewing hummingbird 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 TT and endemic to the country. Pawi or Trinidad piping-guan (*Pipile pipile*) is listed as Critically Endangered. Pawis belong to an evolutionarily old group (Cracidae) that are precursors to the galliformes. The white-tailed sabrewing (*Campylopterus curvipennis*) 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 galvanises national emotion, both providing incentives for community support.

Given the regional significance of these species, actions in TT will support regional interventions as well, and provide opportunities for South-South collaborations. Activities under this output will also include to:

- Utilise existing species management plans developed by the EMA and implement them in priority areas
- Promote community conservation approach of the pawi and white-tailed sabrewing

- Assess the feasibility of a captive breeding programme for the pawi and institute and explore opportunities for collaboration with zoos or bird parks outside of Trinidad and Tobago if required.
- Reduce the vulnerability of the white-tailed sabrewing to natural disasters through the restoration of suitable but diverse habitats and the training of personnel to monitor and report on the status of the species
- Restore lands that support songbirds and waterfowl

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

Table 4: Risks faced by the piping-guan, white-tailed sabrewing

Species	IUCN category ^[1]	Habitat and Ecology	Threats
---------	------------------------------	---------------------	---------

<p>Trinidad piping-guan (<i>Pipile pipile</i>)</p> <p>Endemic to TT</p>	<p>Critically endangered</p>	<p>Forest, Artificial/Terrestrial</p>	<p>Agriculture & aquaculture</p> <p>Annual & perennial non-timber crops</p> <p>Biological resource use</p> <p>Hunting & trapping terrestrial animals</p> <p>Logging & wood harvesting</p> <p>Climate change & severe weather</p> <p>Habitat shifting & alteration</p>
<p>White-tailed sabrewing (<i>Campylopterus ensipennis</i>)</p> <p>Endemic to TT, Venezuela</p>	<p>Near threatened</p>	<p>Forest, Artificial/Terrestrial</p>	<p>Residential & commercial development</p> <p>Commercial & industrial areas</p> <p>Agriculture & aquaculture</p> <p>Annual & perennial non-timber crops</p> <p>Livestock farming & ranching</p> <p>Transportation & service corridors</p> <p>Roads & railroads</p> <p>Utility & service lines</p> <p>Climate change & severe weather</p> <p>Storms & flooding</p>

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

Component 3: Capacity development for mainstreaming competitive, biodiversity-friendly, agroecological clusters that are resilient to climate change

This component will strengthen fledgling value chains that can benefit biodiversity while supporting livelihoods. This component is aligned with the country's aims to bolster national agricultural production while increasing employment in the 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, CBO, farmer and other stakeholder consultations and through an agroecological assessment carried out on the sector^[20]²⁰.

Key value chains

Given that the project will invest in green value chains as an incentive to reduce land degradation and biodiversity loss, it is necessary to highlight some of the key value chains in TT. These are the ones that have been observed as having a beneficial impact on both the land and people's livelihoods. The key value chains that the project will invest in include cocoa, coconut, avocado, pineapple, roots & tubers and specialised commodities such as the Moruga Hill Rice.

Cocoa: TT cocoa has historically been prized for its quality and has won awards at international cocoa awards. Its fine/flavour varieties fetch 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.

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

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 per cent 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 is in Trinidad at The UWI that houses the historic breeding programme. Trinidad also houses the International Cocoa Genebank, Trinidad (ICGT) which is the largest and most diverse collection of cocoa in the world.[21]²¹ 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 value addition or transformation, which promotes jobs and economic possibilities along the value chain.

Moruga Hill Rice (MHR): MHR (*Oryza glaberrima Steud.*) is not indigenous to Trinidad. The variety was introduced two hundred years ago following the end of the war in 1812 between the United States of America and the British. Slaves in the USA earned their freedom after joining forces with the British Royal Marines in the war. At the end of the war, these ex-slaves were resettled in south Trinidad in areas which are now known as the companies, named after each group of soldiers, that was given 16 acres of land each.

The ex-slaves cultivated crops such as maize, benne (sesame), cassava, sweet potato, okra, cowpeas, plantains and bananas. They also cultivated the red Hill Rice from seeds which they had brought with them from the southern USA. This practice of cultivating the Hill Rice was handed down over generations to the current crop of farmers. The MHR is a hardy crop, surviving on slopes in rainfed conditions and generally resistant to pests and diseases. Once dried properly, the grains can store well for several years. The MHR is grown in various locations in Trinidad, but the largest concentration of farmers is located in the neighbouring villages of St. Mary's, Marac and La Lune in Moruga which is located on the South-West peninsula. It is also grown in Rio Claro, Clarke Road and Morne Diablo in south Trinidad. The MHR is grown on family-owned or leased land from the state. It is estimated that there are approximately 50 hectares of MHR under production. The yield is low with an estimated of around 3000 kilograms per hectare.

The MHR is a good example of on-farm conservation. It is believed that up to four races are being cultivated and genetic analysis is currently being undertaken, with the support of MALF, to verify this. No genetic improvements were undertaken over the years.

In 2016, there were only 40 farmers still producing rice by this system (Moruga Hill Rice). This low number of farmers cultivating relatively small acreages coupled with growing demand has resulted in price increases and hence improved crop profitability.

The current market price locally for the rice is USD 10 per kilogram wholesale and USD 14 per kilogram retail. The growing demand has been fuelled by persons who have migrated out of the villages either to other areas in Trinidad or to foreign countries. In addition, MHR is seen as healthy, and as such, those consumers who are seeking organic and gluten-free products are also making demands. The competitive advantage of the Moruga Hill Rice is based on differentiation. Red rice is a part of the larger segment of artisan rice, and there is a range of uses and applications in a variety of industries such as food and beverage, cosmetic and wellness and healthcare.

1. Food and beverage industry - winemaking and nutritional food for consumption.
2. Cosmetic and wellness industry - red rice is a high source of antioxidants, which makes it useful in the cosmetic industry in Japan and Korea.
3. Healthcare industry - red rice is used in traditional Chinese medicine for health issues such as increasing blood flow, better food digestion and eliminating blood blockages, etc.

Roots & Tubers: Many root crops have been successfully cultivated in Trinidad and Tobago. The main types of root crops cultivated include cassava, dasheen, yam, sweet potato and cush-cush. There have been many introductions of cassava varieties over the years from the International Potato Center (CIP) based in Latin America. The MALF, the Caribbean Agricultural Research Institute and The University of the West Indies have all introduced and maintained germplasm cultivations of cassava, sweet potato and yam. Cush-cush is a native species with little or no improvements. Over the last decade, the Ministry of Agriculture has produced several guides on the cultivation of major root crops such as cassava, sweet potato, dasheen, and yam. Local root crop farmers are price competitive with imports from mainly Dominica and St. Vincent in eddoes, dasheen and sweet potato. However, the quality of these imported roots crops is consistently higher than the local ones, particularly for dasheen. Little or no cassava are imported due to the post-

harvest issues and the short shelf life of cassava. Most of the yams sold locally are harvested from the forest of abandoned agricultural areas. Cassava and sweet potatoes are grown in significant quantities. Some primary processing of root crops takes place mainly as soup packs. Small quantities are also processed into composite flours, but data on this is lacking. This is an area of potential expansion.

Pineapple: Trinidad has a long history of pineapple production. The first pineapple processing plant ceased operation in 1969 when supplies of the plant were interrupted by diseases. This legacy of pineapple production can be seen concentrated in Tableland and surrounding areas today. Pineapple production in Trinidad and Tobago declined to 1,400 kilograms in 2015. However, due to the high demand for pineapple in the country, production increased in 2019 to approximately 2,000 kilograms (MALF & CSO 2019). During the period October to December 2018, production increased further to approximately 2,500 kilograms or by 16.6 per cent as a result of an increase in acreage cultivated. Land tenure largely determines practices adopted in farming pineapples in Tableland and surrounding areas. Farmers who do not have access or have access to insufficient amounts of land are likely to illegally use state lands, clearing forested areas to grow pineapples. Heavy equipment is used to clear the forest. The land is then ploughed and rotovated. Fallow lands produce the best crop. The crop is then ratooned for up to three years. Subsequent crops are lower yield and poor-quality due to depleting nutrients and build-up of pests and diseases. If the land is owned, it will be rested for varying periods before pineapple is planted again. Local farmers can compete only with other producers in the Caribbean. Several attempts have been made to import fresh pineapples from Guyana but failed due to poor post-harvesting and handling issues causing high levels of losses after landing in Trinidad.

Coconut: Coconut production in Trinidad and Tobago is considered a priority within the region (GORTT 2017) as Trinidad and Tobago has one of the largest commercial-scale operations to produce coconut oil. On average (2010-2018), coconut production in Trinidad and Tobago remained between 6,000 to 8,000 hectograms per hectare year (FAOSTATS 2019). In 2016, under the Government Rehabilitation and Replanting Programme, approximately 3.5 square kilometres of land located on the east coast of Trinidad were replanted with coconut costing the government TTD 200,000 (GORTT 2017). In the first quarter of fiscal year 2019, the Trinidad and Tobago Central Statistical Office (MALF & CSO 2019) recorded significant increase in copra production (dried coconut kernels) when compared to the first quarter of the fiscal year in 2018. This represented an increase from approximately 2,000 kilograms to over 30,000 kilograms. The average price for large coconuts at the Northern Wholesale Market in Macoya during the years 2008-2018 was TTD 3,733.00 per kilogram. Extensive coconut plantations are concentrated along the eastern coast of Trinidad (from Mayaro to Manzanilla), the south western peninsula (Cedros and Icacos), and along the western coast of Tobago. Smaller plantations can be found scattered throughout the islands, with denser concentration located within the Orange Grove vicinity. The demand for fresh coconut and processed coconut products is not only high in Trinidad and Tobago, but the world (GORTT 2019). The fact that the islands once practised commercial-scale operations demonstrates the market's potential. In 2014, coconut ranked fourth in the country's top 10 production commodity/acreage report issued by the MALF.

A cheap and effective way to revitalise the industry would be to encourage homeowners to plant more trees. This can easily be done by forming a network or an association capable of purchasing coconuts at a fair price. At present, homeowners prefer not to sell due to the small profit margin.

The government of Trinidad and Tobago is presently conducting intense research on combating the red ring disease and the red palm mite. Once this hurdle is overcome, coconut production on both islands can become more successful.

Ecotourism: Given TT's current levels of tourism and further potential, ecotourism provides an avenue for both promoting biodiversity and strengthening livelihoods. The tourism sector in TT has been growing steadily. In 2014 tourism contributed TTD 4,882.0 million to the economy which was an equivalent of 3.2 per cent of the GDP. It is projected for the year 2025 to increase the total income to approximately TTD 6,183.1 million^[22]²². The impact is most seen from a socioeconomic perspective towards small communities who benefit from local tours and from non-traditional products, for example woodcrafts and artisan gifts^[23]²³.

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 Mt. Irvine, and tours to the Asa Wright Nature Centre located within the tropical rain forest of the Northern Range. 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. Between 2005 and 2011, Grand Riviere experienced a 300 per cent 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 32 individuals as data collectors and local tour guides, and local businesses such as hotels and restaurants, experienced increases in revenue. These examples show the potential that exists for ecotourism, especially since unregulated tourism can have deleterious impacts on small island ecosystems. Ecotourism also offers opportunities for women, both as leaders and managers of enterprises, but also in the service industries.

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 (cocoa) value chain** over the last five years. Results from these projects will be explored to see if there are lessons learnt that can be applied for Trinidad. Similarly, there has been substantial work on the **cassava value chain** in TT that can be scaled-up and replicated. Also, within Trinidad, there are various non-governmental studies on agroecology value chains (e.g., CABI, The UWI, CANARI, Rocrops Agrotec).

Developed **agro-processing industry** provides opportunities for growth of the agriculture sector in TT. While the agro-processing industry, especially manufacturing of beverages like juices and rum, is well developed in TT, there is still room to expand with other crops. While the agro-processing sector currently relies mostly on imported raw materials, its development opens opportunities for agriculture by expanding demand for the farming sector's production. Thus, the **hot pepper and tomato** processing industries are emerging and developing links with the farming sector and increasing demand for locally grown vegetables. Nestlé is one of the actors involved in this; it has signed contracts with milk producers for further agro-processing. Citrus and cocoa processors are also strengthening their links with local farmers, and local cassava is used for a number of innovative value-added foods as well as animal feed production.

In the baseline, programmes for strengthening agricultural value chains financed through capital budget expenditures, mostly involve actions to develop market infrastructure, such as financing for construction of packing houses. In the framework of the programme “*Establishment of Small Scale Packing Houses in Agricultural Production*” in 2013, five packing houses were established, and the programme continued until 2016. Agricultural and fish wholesale markets in Trinidad and Tobago are generally operated by NAMDEVCO; markets in Tobago are managed by the Marketing Division of the Tobago House of Assembly. NAMDEVCO also provides market information through the National Agricultural Market Information System Trinidad and Tobago (NAMISTT) and services to farmers at all stages of the value chain, from connecting with suppliers of high quality of seedlings to packing houses. This project will build on these packing houses and institutions, using their pre-existing services to support local producers and other parties along the value chain. Currently, most of the packing houses are underused. The project can focus on the connectivity aspect of linking sustainable producers with agro-processors (as has been done under the CDB/FAO cassava project), rather than focusing on the development of infrastructure which already exists. Similarly, NAMDEVCO has a labelling regime underway; the project does not need to create a new labelling mechanism and can rather focus on how to support producers to meet sustainability criteria.

In the baseline, the attempts of the government of TT to increase available land for agricultural production resulted in the Commercial Large Farms Programme (CLFP), which established large (100-300 acres) agricultural holdings in the form of public-private partnerships. They also provided land rights (mainly for the land previously used for sugarcane production) and the necessary infrastructure (access roads, electricity, drainage), while NAMDEVCO purchases output from these enterprises, provides services, and is

responsible for marketing and exports. Twelve commercial farms have been established, including the Caroni Green Initiative, which dedicated 320 acres to the production of hot peppers, sweet peppers, and tomatoes. However, this enterprise's operations were not economically viable and was halted. In 2017 the government decided to close Caroni Green Ltd. One of the objectives of the large commercial farming programme was to significantly reduce the import bill (rice imports in particular) by 2015. However, the increase in rice production that the programme managed to achieve was not enough to make a noticeable contribution to import substitution: rice production increased from only 1,500 to 2,500 tons, compared to domestic consumption of 26,000 tons in 2015^[24]²⁴. The initiatives under this component are designed to learn from the failures of this enterprise to avoid duplicating them. Additionally, as part of the Voluntary Separation of Employment Package (VSEP) settlement to former employees of the Caroni (1975) Ltd sugar company, lands were distributed to each employee—a two-acre agricultural parcel and a single lot residential holding. In 2003, Caroni Estate was estimated to be in the 76,000 to 77,000-acre range, which would equate to about six per cent of the country's entire land area. The Caroni lands stretch from Orange Grove in the north—just south of Trincity—to the outskirts of Princes Town in south Trinidad. Estimates suggest that 940 acres were to be used for the residential lots, with at least 16,800 additional acres to be used for the agricultural plots. The total land area to be used in these programmes would therefore be of the order of 17,740 acres, which is just under a quarter (about 23 per cent) of the estimated area of all the Caroni lands ^[25]²⁵. Unfortunately, much of the agricultural parcels that have been allocated remain under and unutilised at present.^[26]²⁶

There are three outcomes under Component 3:

Outcome 3.1: Emerging green value chain commodities produced sustainably to build resilience to climate change while conserving biodiversity, and supporting livelihoods

The project 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 fine/flavour cocoa products.

Activities under this component 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 are improvements in species diversity. Moreover, the diversity of agroforestry improves flood control. Diversity of livelihoods and combinations of certain crops can ensure pest management and build resilience in the face of extreme climate events.

While the farmer field school approach has been previously conducted in TT, one of the critiques by farmers was that these were short, without follow-up and access to demonstration sites on an ongoing basis. They also noted that extension staff did not possess the capacities to build on and advance 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 (e.g., The University of West Indies and the Cocoa Development Company of Trinidad and Tobago) in establishing ongoing relationships, observing results and impacts, and providing technical advice on optimising 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 Development Company of Trinidad and Tobago will be able to provide guidance and communication beyond the duration of this project. By investing in the organisational culture of farmer field schools, it is anticipated that linkages forged will continue beyond the project.

There are three synergistic outputs anticipated under Outcome 3.1:

Output 3.1.1: Agroecological practices are implemented along five priority green value chains (cocoa, coconut, avocado, pineapple, roots and tubers) and specialised commodities (e.g. Moruga Hill Rice). Activities under this output include to:

- Conduct baseline soil analysis as key indicator of resilience of the production system
- Document baseline production and marketing systems and quantify farm productivity levels
- Establish clusters of producers and buyers that can work collaboratively; complete detailed baseline data to characterise the status of each cluster prior to full project participation
- Develop agroecological farm and cluster plans as outputs from the Lead Farmer Training Programme
- Formalise support by the project with community or farmer groups to promote production and marketing of the priority commodities

- Develop farm plans to clarify planning and responsibilities
- Train towards ongoing monitoring of improvements in soil quality, enhancements of yield per area, quality of produce, decreased reliance on harmful chemicals.
- Establish system to monitor farms and producers to ensure developed standards or techniques are complied

Output 3.1.2: 30 lead farmers are trained on sustainable land management and agroecological principles using a standardised curriculum for the Lead Farmer Training Programme in TT.

The rationale under this output is that there are influential farmers with large parcels of land who can act as lead farmers in organising smaller farmers and convening them to demonstrate best practices on their lands. Converting practices on these larger farms will provide hands-on modelling and testing opportunities for farmers. It allows smaller farmers (some of whom may be women and youth), to cultivate on these satellite farms, and provides labour inputs for larger farmers that have a shortage of workers and want to pilot agroecological practices. This is especially the case for large plots that were previously sugarcane or coffee plantations and are overgrown and underused. Such an activity has been previously carried out by FAO which, through collaboration with CABI, has identified farms that are interested in becoming agents of change in their regions. Activities under this output include:

- Development of a standardised agroecology curriculum for the Lead Farmer Training Programme. Persons selected to be “lead farmers” are in a strict sense, already lead farmers in their various communities. This programme will enhance their skills to have a comprehensive knowledge of agroecology and equip them to train other farmers. Lead farmers will not be compelled to put into practice all the concepts all at once and as such the trainees will move around to other farms where that particular technique is being practiced. It is envisioned that the Lead Farmer Training Programme can start during the end of the first year with an average of 15 farmers from both Trinidad and Tobago and by year three, each lead farmer can take on five persons, leading to the training of potentially 100 lead farmers by the end of year four. The curriculum will seek to:
 - Change the mindset of agriculture practitioners away from farming in ways that harm biodiversity and land and erode natural resources in the short run. Bring ecological science at the centre of agricultural production and identify and resolve the conflict between agricultural activities and the natural environment.
 - Identify and resolve the barriers for transitioning to an agroecological farming model.
 - Identify approaches to address climate change impacts on agriculture.
 - Select key training institution and agree on the curriculum.

- Develop training material prior to start of the Lead Farmer Training Programme.
- Select candidates to be trained as “lead farmers” and agree on terms of participation in the programme
- Implement the Lead Farmer Training Programme for a minimum of one year. Efforts should be made to identify women and youth among the lead farmer group.
- Actively monitor trainers and trainees to ensure quality of the programme will lead to the mainstreaming of agroecology through lead farmers becoming competent to mentor existing farmers and young persons and women willing to farm along the principles of agroecology
- Provide training on integrated crop management (ICM) and integrated pest management (IPM)
- Implement multi-cropping, intercropping, vegetable and tree crop establishment or production while incorporating principles of proper soil, water, and nutrient management.
- Rehabilitate degraded lands or soils through reforestation, soil amelioration through green-manure techniques, zero-tillage agriculture and application of limestone and other techniques
- Conduct water recycling, micro-irrigation, water harvesting, fertigation
- Use natural weeds such as lemon grass to prevent use of herbicide
- Use of biological methods for soil conservation and erosion control through planting of vetiver grass

Output 3.1.3: 20 farmer field schools on agroecology including integrated pest management, soil fertility, production focusing on diversification, are conducted using a standardised curriculum for the Lead Farmer Training Programme developed under this project.

Consultations with farmers revealed that they desire farmer field school to upgrade their technical knowledge and capacities. However, consultations have also revealed that many farmer field schools (FFS) have been ad hoc without much follow up. The initiatives under this project foresee an ongoing learning process through the duration of the project so that the farmer field schools are also adaptive to the changing needs of farmers. It is anticipated that the training will evolve year to year to address the changing technical needs for support. This output will also ensure that extension services receive the training to foster the technical knowledge within national institutions. Mainstreaming the use of gender

sensitive participatory methods will be key for success. Support at the policy level will be necessary to ensure the long-term impact of FFS. This output will be tied to the usage of the standardised curriculum for the Lead Farmer Training Programme in agroecological practices and will include extension services to feedback into government or policy structures. Specific activities under this output are as follows:

- Each lead farmer will mentor 10 other farmers per year, including young farmers and women, who will produce both fresh and processed products as well as inputs of production for sale or distribution as part of a competitive cluster. The farmer field school will also be used to support this activity.
- Problems identified and solutions proposed in the farmer field schools are documented with an emphasis on efficacy and consistency with the concepts of agroecology. Policy recommendations are noted by the project management team to be upstreamed under Outcome 3.3.
- Trainees monitored for levels of adoption and practice of agroecology; transition from a reliance on the high usage of agrochemicals to more sustainable approaches of production with minimal impact on the environment.
- Competitiveness of these agroecological farms documented, comparing yield per unit area, profitability of the farm, improvement of cash flow, and quantifying reduced consumption of imported agrochemicals, improvements in the physical and chemical properties of soil structure as well as evidence of improved biodiversity.
- Public awareness campaign of agroecology to promote the project, clusters and adoption by wider community in backyards with focus on communities surrounding the protected areas.
- Training of trainers builds capacity of extension services to conduct their own field schools.
- Capacity building in field testing to improve the capacity of extension services to recognise and test for pests, diseases and measure chemical residue through field testing kits

Outcome 3.2: Market access for agroecologically produced agricultural products and services enhanced through the promotion of a circular economy

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.

TT provides an opportunity for market growth of sustainably produced products. There is an increasing interest on the part of supermarkets to include agroecologically produced commodities, as well as the emergence of smaller artisanal markets. There are examples of the GEF Small Grants Programme initiatives that have piloted value chain methodologies in rural communities around agroforestry and have been able to add value to their enterprises.

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

The value chain analysis includes addressing 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 3.2.1: Marketing strategies and business plans are developed to increase biodiversity-friendly products in markets

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 provide incentives to larger supermarkets to purchase recognisable quality. Activities under this output include:

- Evaluate the marketing strategies most suited to each cluster and develop a winning marketing strategy for each; implement the marketing strategy and monitor its performance
- Actively promote to established markets
- Business planning support provided to interested farmers or farming households
- Training on GAP (good agricultural practices) certification guidelines
- Recognisable branding exercise carried out, so consumer sees value of good agricultural practices

- Improve or facilitate distribution, packaging, processing using channels that exist (e.g., NAMDEVCO)

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

Private sector partnerships will be crucial in this domain to ensure that there is greater level of awareness and 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.

There are existing initiatives underway through NAMDEVCO, the Cocoa Development Company of Trinidad and Tobago and the Cropper Foundation, to sensitise private sector partnerships and increase procurement of sustainable produced products. The project will build upon the networks already initiated and will identify new potential partners. Proposed activities under this output include:

- Identifying viable public-private sector partnerships
- Agreeing on key terms with businesses with an emphasis on sustainability via self-financing post project.
- Establishing marketing arrangements
- Monitoring the performance of the market cost of operating, participation by the public, and incorporate suggestions from both buyers and sellers to expand the market

Output 3.2.3: Upscaling of ecotourism or agrotourism operators in four ecologically vulnerable areas

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

There is already evidence that there is an interest in TT for agrotourism and science-based tourism. The project will seek to develop this potential and support fledgling initiatives which require capacity development. Activities under this output include:

- Identifying potential ecotourism or agrotourism opportunities in each of the established clusters and/or developing tourism opportunities in agricultural areas and estates
- Developing plans to promote them via linkages with the foods produced by participating farmers in the cluster
- Supporting eco-friendly tour operators in standardisation of product
- Supporting hotels, bed & breakfasts, and tour operators to improve quality and market access
- Including partnerships with the private sector to enhance knowledge of sustainability options

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 TT products. This is a sector that requires public-private partnership, along with civil society expertise on socially responsible/sustainable production. Multi-stakeholder clusters will contribute to the roadmap to ensure that sectoral needs and considerations are included. The roadmap will then be presented to the Minister of Agriculture for endorsement. One key output is expected under this outcome:

Output 3.3.1: Agricultural policy informs national work of state agencies to actively mainstream agroecology in Trinidad and Tobago thereby increasing the supply of locally produced foods

Under this output, a multi-stakeholder group will be established to provide a consolidated space where green value chain development can be discussed. Currently, government ministries, CSOs, individual producer groups and private buyers are operating in silos without a coherent strategy in place. A roadmap will be designed to identify priority value chains, pool resources, create systematic terms by which to assess levels of sustainable practices to create shared norms and standards. Activities under this output include:

- Policy makers are aware that the Lead Farmer Training Programme exists and endorse it via linking agricultural incentives to the programme

- Opportunity is created for participation of lead farmer in giving input into the agricultural policy
- Lead Farmer Training Programme adopted as a sustainable method of training farmers
- Goals for development of green value chains are identified
- Roles of private sector, government and individual farmers are identified
- Economic and environmental benefits of green value chains are validated
- Requirements of NAMDEVCO certification integrated into capacity training. This includes the application of the TTGAP (Trinidad and Tobago Good Agriculture Practices) programme, once launched, on farms which agree to participate.

Component 4: Knowledge management and monitoring

The purpose of this component is to establish knowledge management and monitoring structures that will provide relevant data and best practices, and integrate learning from the project into other policies, activities and interventions. 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 or in response to unexpected political and other changes. Ongoing monitoring will ensure that the project promotes an adaptive approach to optimise interventions and yield results.

Best practices and experiences will also be leveraged from other countries in the Caribbean to increase regional collaboration and optimise 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, The University of the West Indies (The UWI) and farmers. Key outputs under this activity will also include a communication strategy, which will help to tailor appropriate messaging to appropriate audiences. This is critical so that the learning gleaned through the project can be disseminated in strategic ways to stakeholders.

The project will develop an evidence-based approach 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 The UWI and CSOs that work in this area to allow them to engage in research of different varieties of crops.

Improved agroecological practices, resilient species, agroforestry, and techniques for soil fertility will be shared at different levels, according to relevance. Similarly, successful interventions for protecting biodiversity can be replicated by the Environmental Management Authority and communities in other zones. Successful activities with encroaching 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 included, engaged, consulted and are active participants in the implementation of the project. Local level actions will ultimately determine whether the initiatives are successful. Sensitisation activities will be carried out to highlight the link between biodiversity and livelihoods.

Once land use plans are developed, they will be shared widely and with community leaders and actors to ensure that stakeholders are aware of the kind of activities that should take place in particular 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, and public awareness programmes.

There are two outputs anticipated under this outcome.

Output 4.1.1: Knowledge products produced and disseminated by partner institutions

This output will ensure that appropriate knowledge products are produced and disseminated by partner institutions. One of the key challenges has been that results from various initiatives are not disseminated to appropriate audiences through appropriate channels. This project will seek to create knowledge products that support current information gaps. Some of the products that the project will generate are:

- Land degradation maps as there is insufficient information on the levels of degradation, where most degradation takes place and how it is linked to other activities
- Agroecological zoning maps identifying the suitability of areas for various crops while understanding precious ecological zones, etc.
- Use citizen science approach for the collection and dissemination of biodiversity information such as the iNaturalist platform
- Generate best practices in combating land degradation while protecting biodiversity. The project will identify feasible means of doing this which can be mainstreamed for different levels of audiences: farmers, local communities, governments, etc.
- Research and list of wild plants used in TT for medicinal and consumption purposes. This is part of the value chain approach as it may support the identification of commodities that can be produced sustainably. Indigenous groups and elderly persons from rural communities can play a significant role in this activity due to their traditional knowledge.

Output 4.1.2: A communication strategy is developed to ensure project stakeholders are duly informed on progress and benefit from knowledge gathered

This output will ensure that knowledge collected by the project is not lost and is leveraged by key stakeholders so that its impact is increased. In particular, the communication strategy will ensure that appropriate messages is designed for appropriate target audiences. Communication products for government ministries, for instance, will differ from those targeting encroaching communities. The communication strategy will also be used as a tool to share progress and updates so that relevant stakeholders are knowledgeable on the progress and status of the project. Activities under this output include:

- Developing a project communication strategy at inception and revising it annually to ensure that it is updated and takes into account project progress
- Maintaining ongoing communication with stakeholders to provide oversight on the type of knowledge products being produced, identifying what purposes they are being produced for and geared to what audiences
- Maintaining quality control over the products developed
- Establishing mechanisms by which to channel information from local communities upstream to inform project activities and policy processes
- Contributing data or information to various networks and civil society groups to inform their own activities
- Sharing best practices and lessons learnt

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

This output will ensure that the project is adaptive in nature and can change course to attain optimal outcomes. For that, activities under this output will involve:

- Collecting baseline socioeconomic data disaggregated by sex and age
- Comparing progress; assessing against indicators (change course if need be)
- Leveraging support from co-financing partners and other initiatives
- Conducting focus group discussions with men, women, and youth to assess project impact on the individual social group
- Conduct Midterm Review and Terminal Evaluation to identify what was achieved, adaptive and corrective actions, identify best practices
- Conduct audit, spotchecks periodically
- Complete Terminal Report

3.2 Theory of Change

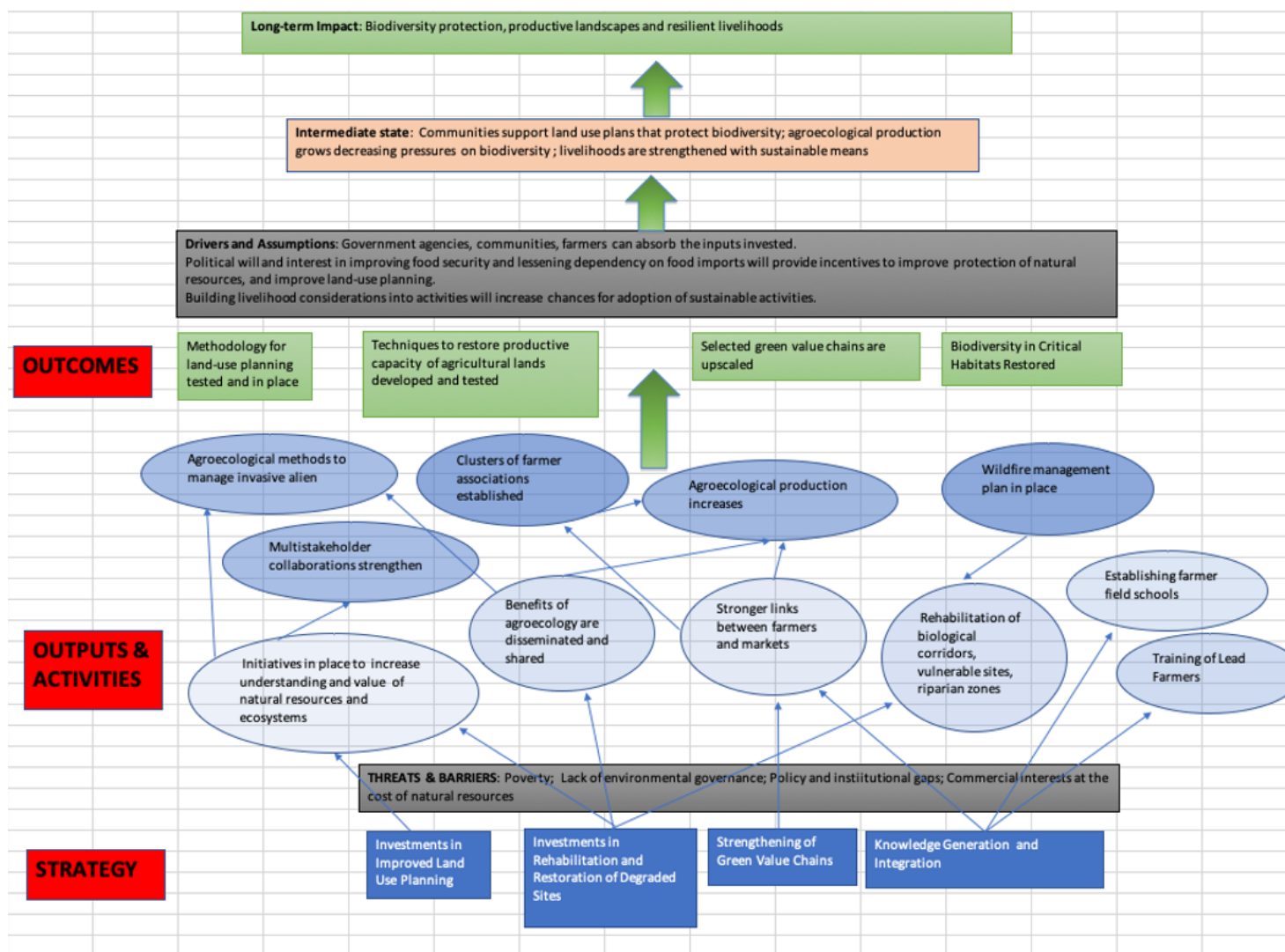


Figure 2: Theory of change

-
- [1] GORTT, *Fourth National Report of Trinidad and Tobago to the Convention on Biological Diversity*, (Port of Spain: GORTT, 2010).
- [2] Dirk Schulze-Makuch et al., "Microbial Life in a Liquid Asphalt Desert," *Astrobiology* 11, no. 3 (April 2011) <https://doi.org/10.1089/ast.2010.0488>
- [3] Nigel A. Grimes, *Agroecology Assessment of Agriculture Production Systems of Trinidad and Tobago*, (2018), <https://dgroups.org/?92mal57q>
- [4] GORTT, *National Forest Policy*, (Port of Spain: GORTT, 2011)
- [5] GORTT, *Fourth National*.
- [6] Ibid.
- [7] GORTT, *National Biodiversity Strategy and Action Plan for Trinidad and Tobago, 2017-2022*, (Port of Spain: GORTT, 2018).
- [8] Grimes, *Agroecology Assessment*.
- [9] United Nations Office for the Coordination of Humanitarian Affairs, "Trinidad and Tobago: Floods and Landslides due to intense rains, 23-10-2018," Reliefweb, last modified October 24, 2018, <https://reliefweb.int/report/trinidad-and-tobago/trinidad-and-tobago-floods-and-landslides-due-intense-rains-23-10-2018>.
- [10] GORTT. *Report on the State of Land Resources in Trinidad and Tobago*, 2005.
- [11] UWI Today, "Too Many Chemicals in the Crops," *UWI Today*, July 31, 2016, https://sta.uwi.edu/uwitoday/archive/july_2016/article17.asp.
- [12] UWI Today, "Too Many Chemicals in the Crops," *UWI Today*, July 31, 2016, https://sta.uwi.edu/uwitoday/archive/july_2016/article17.asp.
- [13] Invasive grasses can alter the occurrence and behaviour 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).

[14] Frosty pod rot (*Moniliophthora roreri*) is a fungus originating from Western Colombia/ Ecuador that commonly reduces yields by over 80 per cent within a few years of pathogen establishment. The severe losses, and occasionally complete crop failure, frequently render cocoa production economically unfeasible. The results are loss of livelihoods and abandonment and conversion of the affected agroforests to less environmentally sustainable uses, with secondary effects ranging from habitat loss for wildlife, fragmentation of forested landscapes and soil erosion. The disease has in recent years expanded its range in frosty pod has been a major threat in Caribbean islands and South America (Peru, Venezuela and Bolivia) and throughout Mesoamerica as far as Mexico and Jamaica.

[15] Grimes, *Agroecology Assessment*.

[16] ADB

[17] Intra-ACP APP Caribbean Action, "Praedial Larceny: The Domino Effect," APP eArticles, August 2016, <http://repositorio.iica.int/bitstream/handle/11324/2708/BVE17038762i.pdf;jsessionid=C22B8E62D5696308E18EBD0C77EDC084?sequence=1>.

[18] Consultation with Officer attached to the Praedial Larceny Squad (December, 2019)

[19] Each of these ranges has been closed for a number of years due to overharvesting and resulting depletion of harvestable stems. All of these sites are forest reserves, so tenure and land use are predictable during and post project. There are many forest reserves in Trinidad and Tobago that are in a similar state to the selected sites so the procedures used here will be applicable to other areas in Trinidad and Tobago. The project intervention uses a procedure developed in a recently concluded project carried out by the FD and The UWI under the guidance of the FAO, so the capacity exists within the country for this activity to proceed. Each forest reserve will have an area of at least 100 ha inventoried and mapped for all stems >25 cm DBH and from those stems "Future Crop Trees" (FCTs) will be selected and possibly freed from competition. They will form the basis of a future cutting cycle whose timing can be determined by use of growth equations previously generated by other workers in Trinidad.

[20] Grimes, *Agroecology Assessment*.

[21] Grimes, *Agroecology Assessment*.

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

[23] GORTT, *National Biodiversity Strategy*.

[24] Olga Shik et al., *Analysis of Agricultural Policies in Trinidad and Tobago*, (Inter-American Development Bank, 2018), <https://publications.iadb.org/publications/english/document/Analysis-of-Agricultural-Policies-in-Trinidad-and-Tobago.pdf>.

[25] Afra Raymond, "Our Land – The Caroni Case," AfraRaymond.net, last modified April 18, 2015, <https://afraraymond.net/2015/04/18/our-land-the-caroni-case/>.

[26] Khan A, 2019. Personal Communications with the Estate Management Business Development Company Ltd

1b. Project Map and Coordinates

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

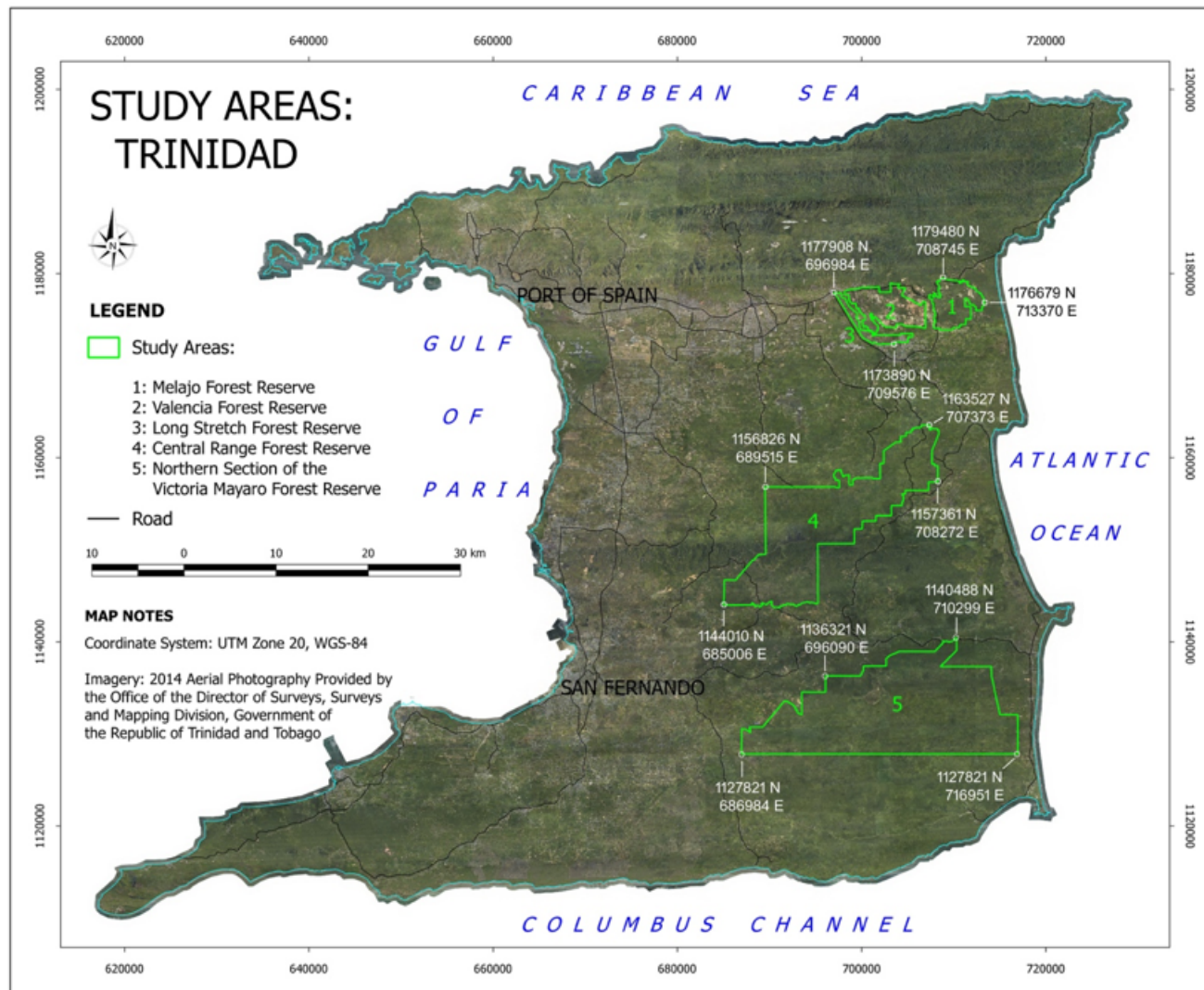


Figure 3: Proposed sites of intervention in Trinidad

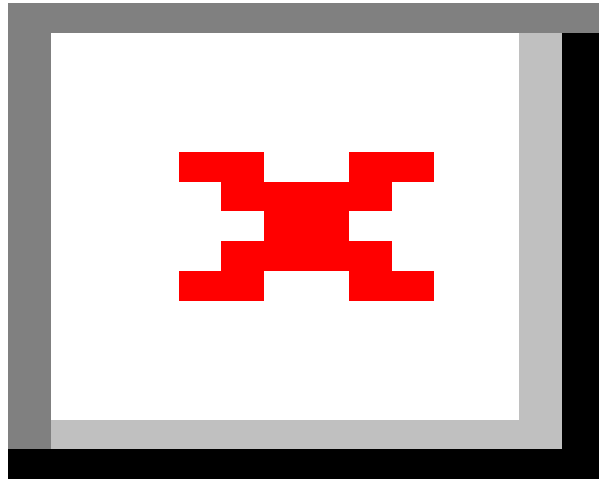


Figure 4: Proposed sites of intervention in Tobago

In Trinidad, much of the population is concentrated in urban areas in the north west (from Diego Martin to Arima), Chaguanas and its satellite communities, and in San Fernando. As such, development has concentrated in the western half of the island while the eastern half still retains much of the forest reserves, agrarian areas and other natural resource extractive uses. Unfortunately, many issues of development and poor land use practices have placed added pressures on these reserves and corridors which connect them to the productive landscapes. As a result, much of the project's activities are concentrated in the eastern half of the island where there is still a high degree of biodiversity but is under increasing pressures of changing land use and poor land management practices.

In Tobago, most of the population is concentrated in the South-West sections of the island as the northeast is covered by the Main Ridge Reserve. Therefore, areas selected are those that surround and connect to the protected areas but are the focus of human activity.

1c. Child Project?

If this is a child project under a program, describe how the components contribute to the overall program impact.

n/a

2. Stakeholders

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

Civil Society Organizations Yes

Indigenous Peoples and Local Communities No

Private Sector Entities Yes

If none of the above, please explain why:

Please provide the Stakeholder Engagement Plan or equivalent assessment.

Methodology for Stakeholder Consultation during the PPG

The stakeholder consultation process utilised a number of different approaches to interact with stakeholders by the project team. These included joint meetings with multiple stakeholders, single face-to-face meetings, email interactions, telephone interviews, as well as inception and validation workshops. Instead of waiting for project implementation to strike up a project steering committee, a multi-stakeholder PPG Steering Committee was established which convened four times during the PPG; it reviewed developments, various versions of logframes and recommended key stakeholders to consult, and issues to consider. The project team also ensured that it took into account the views of women, vulnerable groups and youth, to identify the specific barriers that different groups face. NGOs and CBOs reviewed the project documents to ensure that the project was participatory in nature. Site visits were conducted to meet stakeholders in the areas where the project will be implemented to understand the various livelihood and sustainable development challenges.

The PPG team also reviewed the list of stakeholders of previous GEF initiatives to ensure that the existing relationships and structures will be leveraged. In particular, the IFPAMTT was very successful in piloting participatory multi-stakeholder mechanisms, which this project will model and learn from.

Stakeholders Consulted

A listing of stakeholders consulted appears as Table 1 below.

Table 1. showing stakeholders consulted during the PPG phase

Meeting Date	Agency/ Institution	Name
8/10/2019	Inception workshop – Trinidad	76 participants
9/10/2019	Division of Food Production, Forestry and Fisheries – THA	Mr. Hayden Spencer (Secretary) Kinwin Sampson Crystal Edwards Darren Henry Tamika Seales-Mansano
	Division of Infrastructure, Quarries and the Environment - Tobago House of Assembly	Crystal Lawrence Howard Robin
10/10/2019	Inception workshop – Tobago	42 participants

Meeting Date	Agency/ Institution	Name
15/10/19	Fondes Amandes Community Reforestation Project	Kemba Jaramogi
	Organic Agriculture Stakeholders Association of Trinidad and Tobago	Lynette Francis
	Ah Grow	Nikita Legall
22/10/19	Wa Samaki Ecosystems	Erle Rahman-Noronha
23/10/19	Pineapple Farmers, Tableland	Ramesh Ramsumair and other Farmers
23/10/19	Estate Management Business Development Agency	Denise Nurse Sabita Ramnarine Kahlil Baksh
30/10/19	Ministry of Agriculture, Land and Fisheries – Regional South	Satie Gangapersad Rudy Ramchan Crystal Seunarine Saleem Shah
30/10/19	Moruga Hill Rice farmers/ Pineapple farmers and other farmers	Mark Forgenie Cassie Chai-Hope Curtis Green

Meeting Date	Agency/ Institution	Name
		Jerome Scott Fitzroy Johnson Lynn Leon Teesdale Shemarah Tajudeen Saheed Tajudeen Marcus Mycoo Charles Briston Rayard Khan
31/10/19	National Quarries/ IWECO/ SusTrust	Alicia Aquinq Carlton Edwards Daniel Iles
31/10/19	Land Settlement Agency	Shelley Sultanti Maharaj Tricia Ragoonan
6/11/2019	Ministry of Agriculture, Land and Fisheries	Dianne Rampadarath Sunil Ramnarine Reynold Ramdial

Meeting Date	Agency/ Institution	Name
		Wilhelmina Kissoonsingh Kirk Amour John Borgly Albada Beekham Candace Dwarika-Ramsawak Alicia Naimool-Ramdass Amel Baksh Leandra Neptune Gloria Brathwaite
11/11/2019	Bioreach Project Steering Committee Meeting	
12/11/2012	Ministry of Energy and Energy Industries	Alyx James Shaleni Gopie
13/11/12	National Reforestation and Watershed Rehabilitation Programme – Forestry Division	Dave Samayah
14/11/19	National Agricultural Marketing and Development Corporation (NAMDEVCO)	Andrea Simon Alexander Reggie Durgasingh

Meeting Date	Agency/ Institution	Name
		Christopher Alexander Nirmala Debysingh-Persad
14/11/19	Forestry Division	Denny Dipchansingh
15/11/19	Forestry Division	Conservator, Assistant Conservators, Senior Officers
19/11/19	Cocoa Development Company of Trinidad and Tobago Ltd (CDCTTL)	Lean Granger Fayaz Shah
19/11/19	Caribbean Agriculture Research and Development Institute (CARDI)	Joan Petersen
19/11/19	Dept. of Life Sciences – UWI	Dr. Mark Hulme
5/12/2019	Forestry Department - THA, NGO's and Sabre-wing expert – Tobago	Darren Henry Kamlyn Melville-Pantin Daveka Boodram Laura Williams
5/12/2019	Tobago Agribusiness Cooperative Society Limited	Lindsay Edwards
6/12/2019	Department of Environment and Natural Resource Management – THA	Linford Beckles Richard Hinds

Meeting Date	Agency/ Institution	Name
6/12/2019	Division of Food Production, Forestry and Fisheries – THA and the Tobago Cassava Products Limited	Erla Hazel Pathleen Titus Tamika Seales-Mansano Karl Murray Sandra Williams
6/12/2019	Tobago Agriculture Society	Dedan Daniel Olive James
10/12/2019	National Reforestation and Watershed Rehabilitation Programme – Forestry Division	Dave Samayah Darien Jones Yasin Baksh Avinash Ramsingh Vijai Bissookram
10/12/2019	Marillisa Farms	Lincoln Thackorie Aman Hosein Rishi Basdeo
12/12/2019	The Santa Cruz Green Market	Vicki Assevero

Meeting Date	Agency/ Institution	Name
07/01/20	UWI – Faculty of Agriculture - Soils Department	Gaius Eudoxie Julius Smith Naitram Ramnanan
07/01/20	UWI – Faculty of Agriculture – Life Sciences	Mike Oatham Julius Smith
14/01/20	Forestry Division	Denny Dipchansingh Dave Samayah Ameer Roopnarine Mike Oatham
14/01/20	Asa Wright Nature Centre	Graham White Martyn Kenefick Danielle Lewis-Clarke
15/01/20	IADB	Vashtie Dookiesingh

Meeting Date	Agency/ Institution	Name
16/01/20	CABI – Launch of Lead Farmer Curriculum	Ministry of Agriculture UWI UTT Cocoa Development Company Ltd Farmer cooperatives Established farmers
22/01/20	Ministry of Agriculture, Land and Fisheries	PS DPS Conservator of Forest Dir of Fisheries Planning Division
23/01/20	Institute of Marine Affairs	Rahanna Juman Lester Doodnath Hamish Asmath Asif Khan

Meeting Date	Agency/ Institution	Name
07/02/20	Project Steering Committee meeting	Hayden Romano Candace Clearance Dr. David Persaud Dr. Lena Depenwolf Julius Smith Darren Henry Sunil Ramnarine Petal Howell Patricia Turpin

Meeting Date	Agency/ Institution	Name
18/02/20	Meeting with the Permanent Secretary – Ministry of Planning and Development	Joanne Deoraj Dr. David Persaud Dr. Claus Ecklemann Erum Hasan Rafael Milla
19/02/20	Validation Workshop – Tobago	45 participants
20/02/20	Validation Workshop - Trinidad	54 participants

Meeting Date	Agency/ Institution	Name
27/02/20	Project Steering Committee meeting	Hayden Romano Candace Clearance Dr. David Persaud Dr. Lena Depenwolf Julius Smith Candace Amoroso Darren Henry Sunil Ramnarine Patricia Turpin

Outcomes of Stakeholder Consultations

The Inception workshops served to introduce the project concept and obtain direction and clarity on project objectives and key results. Stakeholders were able to inform project formulation and highlight the barriers they face, the concerns they had, as well as their needs. This phase also allowed stakeholders to identify all the parties that should be included, for follow-up consultations, and to help clarify which should be the priority sites of intervention, and what value chains should be prioritized in the project. The process also allowed greater collaboration between various stakeholders, allowing them to share information, connect and allow for networking opportunities.

During the various meetings/ conversations, stakeholders committed to provide the Project Team with supplementary information. Proposed changes to the various aspects of the project were recorded, reviewed and informed the various versions of draft logical frameworks and indicators. If the suggested activities were relevant to the project's objectives and feasible given the available resources, they were incorporated into the project framework and the logframe revised where necessary. The major challenge was that stakeholders would have liked all their ideas addressed under Bioreach; the project had to be strategic about what it could achieve given the timelines, objectives and budgets, and this was presented at the validation workshops in Trinidad and then Tobago, with a rationale that was agreed to.

Follow up discussions/ emails were then held with stakeholder summary reports of the meetings were circulated for agreement and further discussion.

The Validation workshops were the fora for presenting the revised project framework, the project budget, a summary of the stakeholder consultations and how they were incorporated into the project (or why they were not) and the proposed mechanism to institute and manage the project. Stakeholders were invited to provide their final inputs on the logical framework, key stakeholders, sites of intervention, budget distribution, project management arrangements, opportunities for synergies.

In summary, the project team consulted with over 200 hundred individuals that were associated with 36 Agencies, inclusive of State officials, NGO/ CBO's, private enterprises, farmer cooperatives, individual farmers, landowners, conservationist and other interested parties. The results from the consultations were the following:

- Identification and agreement on targeted sites for project implementation
- Identification of key stakeholders and the value added they can bring to the project
- Identification of beneficiary groups
- Identification of barriers in project sites, particularly those faced by vulnerable and marginalized groups
- Identification of innovations and pilots in sites
- Baseline information on gender and current socioeconomic activities
- Identification of key value chains that need to be invested in
- Identification of current plans, priorities and projects underway that can feed into this initiative
- Identification of best practices and lessons learned from previous initiatives

Organisation	Type of organisation	Role/type of engagement	Level of influence on the project
Environmental Planning and Policy Division (EPPD) - Ministry of Planning & Sustainable Development	Government	Project implementation support and technical assistance Ensuring that project activities are upstreamed to government mechanism Oversight role for project implementation	High
Central Statistical Office (CSO) - Ministry of Planning & Sustainable Development	Government	Project support and provision of data and information Conduct socio economic survey of targeted communities	Low
Minerals Division - Ministry of Energy and Energy Industries	Government	Sharing of information and possible joint community interventions Participation in land use planning exercises	Medium

Organisation	Type of organisation	Role/type of engagement	Level of influence on the project
Cocoa Development Company of Trinidad and Tobago (CDCTT)	State company	<p>Mobilisation of cocoa producers especially in communities adjacent to the Central Range Forest Reserve</p> <p>Restoration of abandoned cocoa estates with varieties tolerant to the frosty pod disease</p> <p>Cadmium mitigation of soils and increasing soil nutrient availability in cocoa plantations</p> <p>Promoting pollinators (midges) in cocoa fields</p> <p>Conducting farmer field school (FFS) for cocoa farming</p> <p>Promotion of solar drying of beans</p> <p>Participation of CDCTT staff in project training activities and in the monitoring of lead farmer and FFS activities</p> <p>Dissemination of data</p> <p>Leading public awareness campaigns</p> <p>Supporting the training of extension staff</p>	High

Organisation	Type of organisation	Role/type of engagement	Level of influence on the project
County Victoria Agriculture office – Ministry of Agriculture, Land and Fisheries	Government	Participation of staff in training activities Mobilisation and monitoring of farmers involved in FFS Sharing of information and possible joint community interventions Moruga Hill Rice demonstration plot Co-financer	High
Environmental Management Authority (EMA)	State – authority	Responsible for project execution for Component 2 Policy and legal support, peer review Partner for reforestation, habitat enrichment and biodiversity monitoring Knowledge sharing on biodiversity data Will manage biodiversity data produced by project and integrate into programmes, policies and databases	High
Forestry Division (FD) - Ministry of Agriculture, Land and Fisheries	Government	Partner for reforestation, habitat enrichment and biodiversity monitoring Key stakeholder in developing wildfire management plan Recipient of training on wildfire management Provision of seedlings and training Monitoring of reforested sites	High

Organisation	Type of organisation	Role/type of engagement	Level of influence on the project
Land Settlement Agency (LSA)	Statutory body	<p>Sharing of information on encroaching communities and/or illegal occupants and planned developments</p> <p>Stakeholder in consultations on land use</p> <p>Ensuring that land use plans take into account laws and policies on land settlement</p>	High
Ministry of Agriculture, Land and Fisheries	Government	<p>Support for capacity development, technical assistance and possible co-financing</p> <p>Participation of extension/technical personnel in training in agroecology and FFS methodology</p> <p>Mobilisation and monitoring of farmers involved in FFS</p> <p>Policy support for green value chain development</p> <p>Policy support for agroecological production and innovation</p>	High
Estate Management and Business Development Co Ltd (EMBD)	State company	<p>Rehabilitation of quarries and degraded sites and documentation of process for replication at other sites</p> <p>Provision of data related to farmers, education outreach programmes</p>	Low

Organisation	Type of organisation	Role/type of engagement	Level of influence on the project
National Agricultural Marketing and Development Corporation (NAMDEVCO)	Statutory body	<p>Project execution for Component 3</p> <p>Support for capacity development in marketing and agro processing; implementation of good agricultural practices; consumer survey; identification of lead farmers/beneficiaries</p> <p>Possible co-financing through the NAMDEVCO Model Farm Project</p> <p>Introduction of agroecological produce into market</p>	High
National Quarries Company Ltd (NCQL)	State company	<p>Support for project implementation and possible co-financing</p> <p>Application of land use plans developed by project in their own work</p>	Medium
National Reforestation and Watershed Rehabilitation Programme (NRWRP - Forestry Division)	Government	<p>Support for capacity development and possible co-financing</p> <p>Consultations on the kind of restorations that will be taking place with the appropriate species</p>	High
National Gas Company (NGC)	State company	<p>Support for capacity development</p> <p>Technical support, knowledge sharing, input into reforestation activities of the project</p>	Low
The Zoological Society of Trinidad and Tobago (ZSTT)	Statutory body	Support for capacity development and facilities development for ecotourism	Medium
Town and Country Planning Division (TCPD) - Ministry of Planning and Sustainable Development		<p>Project planning support and assistance with implementation of project activities.</p> <p>Key stakeholder on biosensitive land use planning</p>	High

Organisation	Type of organisation	Role/type of engagement	Level of influence on the project
Ministry of Tourism of Trinidad and Tobago	Government	Support for capacity development and facilities development for ecotourism Upstreaming policy advice through the ecotourism experience	High
Centre for Agriculture and Bioscience International (CABI)	International research agency	Supporting the formation of agricultural clusters Disseminating information on agroecological best practices Institute lead farmer training Linking different producer groups with one another	High
Caribbean Agricultural Research and Development Institute (CARDI)	Regional research agency	Information sharing through the Coconut Industry Development Project (CIDP) for the Caribbean	Medium
The University of the West Indies (The UWI)	University	Research and technical support on cocoa resilience, residue testing, monitoring of land rehabilitation exercises, biodiversity studies	High
Inter-American Institute for Cooperation in Agriculture (IICA)	Regional research agency	Technical support on effective agroecological practices Supporting extension staff training Providing best practices and sharing expertise	Low

Organisation	Type of organisation	Role/type of engagement	Level of influence on the project
Moruga Hill Rice Multi-purpose Co-operative Society Ltd	CBO – agricultural cooperative	Involved in project implementation Development of green value chains Source of lead farmers and farms for FFS Direct beneficiaries of project Will pilot demonstrations on agroecological practices	High
Tableland Pineapple Farmers Association Represents over 100 farmers that occupy over 5000 acres	CBO – agricultural cooperative	Involved in project implementation Development of green value chains Source of lead farmers and farms for FFS Direct beneficiaries of project Will pilot demonstrations on agroecological practices	High
The Agricultural Society of Trinidad and Tobago (ASTT)	Statutory body	Involved in project implementation Source of lead farmers and farms for FFS Will share best practices on agroecology	Medium
Tobago Agribusiness Cooperative Society	NGO – agricultural cooperative	Will support the development of green value chains by supporting the implementation of a green farmers' market in Tobago	Medium

Organisation	Type of organisation	Role/type of engagement	Level of influence on the project
Tobago Agricultural Society (TAS) Membership of 141	NGO	Will support in project implementation Development of green value chains Source of lead farmers and farms for FFS Possible support for agroecological application to pineapple production in the Windward areas	Medium
Tobago Apiculture Association	NGO	Development of green value chains Will build linkages with other sustainably producing groups	Low
Tobago Cocoa Farmers' Association	CBO	Will be involved in project implementation Development of green value chains Source of lead farmers and farms for FFS Will share knowledge and build synergies with Trinidad cocoa producers on cocoa best practices	High
Landowners in the Courland Watershed, Tobago	Private/ state	Will be involved in project implementation Support for reforestation and interventions to mitigate against fires	High
Asa Wright Nature Centre Trust	NGO	Will provide technical support to protect the pawi Mobilisation of Communities in the surrounding areas (e.g., Brasso Seco, Blanchisseuse) to participate in training to support the protection of the pawi and other fauna and flora	Medium

Organisation	Type of organisation	Role/type of engagement	Level of influence on the project
Caribbean Natural Resources Institute (CANARI)	NGO	Responsible for carrying out all of Component 1 activities and ensuring engagement of CBOs and NGOs to participate in project execution	High
Cropper Foundation	NGO	Support in agroecological adoption through pesticide and microbial certification for agriculture Mobilisation of farmers	Medium
Fondes Amandes Community Reforestation Project (FACRP)	NGO	Possible site for FFS Demonstration site for land restoration practices and wildfire management	Low
Green Market Santa Cruz	Private sector partner	Creating market access for green value chains Ecotourism support Demonstration of agroecological practices Building communities of sustainable producers and including those in the project	High
Network of Rural Women Producers Trinidad and Tobago	NGO	Identification of women for involvement in project Supporting women producers that are beneficiaries in the project Providing expertise on the needs of women producers so that the project can include these considerations Recipient of training and FFS courses	High

Organisation	Type of organisation	Role/type of engagement	Level of influence on the project
Wa Samaki Ecosystems	Private sector partner	<p>Possible site for FFS</p> <p>Demonstration site for land restoration practices</p> <p>Sharing of best practices and techniques</p>	Low
WHYFARM (We Help Youth Farm)	NGO	<p>Youth engagement, mobilisation, motivation, and entrepreneurship</p> <p>Ensuring that youth are a part of training offered and benefit from project interventions</p>	Medium
Ah Grow	NGO	<p>Training in agroecological practices</p> <p>Convene different farmers with the project beneficiaries</p>	Medium
Organic Agriculture Stakeholders Association of Trinidad and Tobago	NGO	<p>Identification of lead farmers vis a vis agroecological or organic practices</p> <p>Share best practices and experiences in organic agriculture</p>	High
Private landowners in the Northern Range, Trinidad (in the vicinity of El Dorado)	Private sector partner	<p>Partnering in efforts to mitigate land degradation and to facilitate restorative practices</p> <p>Recipient of public awareness and sensitisation activities</p>	High
Energy Chamber of Trinidad and Tobago	Civil society	Facilitate networking with energy companies to support land restoration	Low
Hoteliers and tour operators, Trinidad Hotels, Restaurants and Tourism Association, Tobago Hotel and Tourism Association, etc.	Civil society	Support the development and marketing of ecotourism opportunities	High

Organisation	Type of organisation	Role/type of engagement	Level of influence on the project
Santa Rosa First Peoples Community (indigenous group)	CBO/indigenous	Participate in the development of green value chains Recipients of training related to agroecological practices Support for the development of innovative practices/outputs emanating from agroecological practices Location for farmer field school	Medium

In addition, provide a summary on how stakeholders will be consulted in project execution, the means and timing of engagement, how information will be disseminated, and an explanation of any resource requirements throughout the project/program cycle to ensure proper and meaningful stakeholder engagement.

Stakeholder engagement

The project will engage government, civil society, research institutes and the private sector. The following table provides an overview of key stakeholders which will inform project implementation, and the areas in which they will provide their support.

Table 5: Stakeholder engagement in the project

Organisation	Type of organisation	Role/type of engagement	Level of influence on the project
--------------	----------------------	-------------------------	-----------------------------------

Organisation	Type of organisation	Role/type of engagement	Level of influence on the project
Environmental Planning and Policy Division (EPPD) - Ministry of Planning & Sustainable Development	Government	<p>Project implementation support and technical assistance</p> <p>Ensuring that project activities are up streamed to government mechanism</p> <p>Oversight role for project implementation</p> <p><i>Member of the PPG phase Project Steering Committee: Vice Chair</i></p>	High
Central Statistical Office (CSO) - Ministry of Planning & Sustainable Development	Government	<p>Project support and provision of data and information</p> <p>Conduct socioeconomic survey of targeted communities</p>	Low
Minerals Division - Ministry of Energy and Energy Industries	Government	<p>Sharing of information and possible joint community interventions</p> <p>Participation in land use planning exercises</p>	Medium

Organisation	Type of organisation	Role/type of engagement	Level of influence on the project
Cocoa Development Company of Trinidad and Tobago (CDCTT)	State company	<p>Mobilise cocoa producers especially in communities adjacent to the Central Range Forest Reserve</p> <p>Restoration of abandoned cocoa estates with varieties tolerant to the frosty pod disease</p> <p>Cadmium mitigation of soils and increasing soil nutrient availability in cocoa plantations</p> <p>Promoting pollinators (midges) in cocoa fields</p> <p>Conducting farmer field school (FFS) for cocoa farming</p> <p>Promotion of solar drying of beans</p> <p>Participation of CDCTT staff in project training activities and in the monitoring of lead farmer and FFS activities</p> <p>Dissemination of data</p> <p>Leading public awareness campaigns</p> <p>Supporting the training of extension staff</p> <p>Co-financer</p> <p><i>Member of the PPG phase Project Steering Committee</i></p>	High

Organisation	Type of organisation	Role/type of engagement	Level of influence on the project
County Victoria Agriculture office – Ministry of Agriculture, Land and Fisheries	Government	Participation of staff in training activities Mobilisation and monitoring of farmers involved in FFS Sharing of information and possible joint community interventions Moruga Hill Rice demonstration plot	High
Environmental Management Authority (EMA)	State authority	Responsible for project execution for Component 2 Policy and legal support, peer review Partner for reforestation, habitat enrichment, biodiversity monitoring Knowledge sharing on biodiversity data Will manage biodiversity or wildlife data produced by project and integrate into programmes, policies, and databases <i>Member of the PPG phase Project Steering Committee: Chair</i>	High

Organisation	Type of organisation	Role/type of engagement	Level of influence on the project
Forestry Division (FD) - Ministry of Agriculture, Land and Fisheries	Government	Partner for reforestation, habitat enrichment, biodiversity monitoring Key stakeholder in developing wildfire management plan Recipient of training on wildfire management Provision of seedlings and training Monitoring of reforested sites <i>Member of the PPG phase Project Steering Committee</i>	High
Land Settlement Agency (LSA)	Statutory body	Sharing of information on illegal use of land and planned developments Stakeholder in consultations on land use Ensuring that land use plans take into account laws and policies on land settlement	High
Ministry of Agriculture, Land and Fisheries	Government	Support for capacity development, technical assistance and co-financing Participation of extension/technical personnel in training in agroecology and farmer field school methodology Mobilisation and monitoring of farmers involved in farmer field schools (FFS) Policy support for development of green value chains Policy support for agroecological production and innovation <i>Member of the PPG phase Project Steering Committee</i>	High

Organisation	Type of organisation	Role/type of engagement	Level of influence on the project
Trinidad & Tobago Meteorological Services Division	Government	In the context of implementing the workplan of the BIOREACH project the cooperation with the Division will be sought with the purpose of streamlining the gathering of climate relevant data with regards to the cultivation of the crops the project seeks to promote under the green value chain component.	Low
Estate Management and Business Development Co Ltd (EMBD)	State company	Rehabilitation of quarries and degraded agricultural lands and documentation of process for replication at other sites Provision of data related to farmers, education outreach programmes	Low
National Agricultural Marketing and Development Corporation (NAMDEVCO)	Statutory body	Project execution for Component 3 Support for capacity development in marketing and agro processing Implementation of good agricultural practices; consumer survey; identification of lead farmers or beneficiaries; possible co-financing through the NAMDEVCO Model Farm Project Introduction of agroecological produce into market	High
National Quarries Company Ltd (NCQL)	State company	Support for project implementation and possible co-financing Application of land use plans developed by project in its own work	Medium
National Reforestation and Watershed Rehabilitation Programme (NRWRP) - Forestry Division	Government	Support for capacity development consultations on the kind of restorations that will be taking place with the appropriate species	High

Organisation	Type of organisation	Role/type of engagement	Level of influence on the project
National Gas Company (NGC)	State company	Support for capacity development Technical support, knowledge sharing, input into reforestation activities of the project	Low
The Zoological Society of Trinidad and Tobago (ZSTT)	Statutory body	Support for capacity development and facilities development for ecotourism.	Medium
Town and Country Planning Division (TCPD) - Ministry of Planning & Sustainable Development		Project planning support and assistance with implementation of project activities. Key stakeholder on biosensitive land use planning <i>Member of the PPG phase Project Steering Committee</i>	High
Ministry of Tourism of Trinidad and Tobago	Government	Support for capacity development and facilities development for ecotourism Upstreaming policy advice through the ecotourism experience	High
Centre for Agriculture and Bioscience International (CABI)	International research agency	Supporting the formation of agricultural clusters Disseminating information on agroecological best practices Institute lead farmer training Linking different producer groups with one another	High
Caribbean Agricultural Research and Development Institute (CARDI)	Regional research agency	Information sharing through the Coconut Industry Development Project (CIDP) for the Caribbean	Medium
The University of the West Indies (The UWI)	University	Research and technical support on cocoa resilience, residue testing, monitoring of land rehabilitation exercises, biodiversity studies	High

Organisation	Type of organisation	Role/type of engagement	Level of influence on the project
Inter-American Institute for Cooperation in Agriculture (IICA)	Regional research agency	Technical support on effective agroecological practices Supporting extension staff training Providing best practices and sharing expertise	Low
Moruga Hill Rice Multi-purpose Co-operative Society Ltd	CBO – agricultural cooperative	Involved in project implementation Development of green value chains Source of lead farmers and farms for farmer field schools (FFS) Direct beneficiaries of project Will pilot demonstrations on agroecological practices	High
Tableland Pineapple Farmers Association Represents	CBO – agricultural cooperative	Involved in project implementation Development of green value chains Source of Lead farmers and farms for FFS Direct beneficiaries of project Will pilot demonstrations on agroecological practices	High
The Agricultural Society of Trinidad and Tobago (ASTT)	Statutory body	Involved in project implementation Source of Lead farmers and farms for FFS Will share best practices on agroecology <i>Member of the PPG phase Project Steering Committee</i>	Medium

Organisation	Type of organisation	Role/type of engagement	Level of influence on the project
Tobago Agribusiness Cooperative Society	NGO – agricultural cooperative	Will support the green value chains development by supporting the implementation of a Green Farmers' Market in Tobago	Medium
Tobago Agricultural Society (TAS)	NGO	Will support in project implementation Development of green value chains Source of Lead farmers and farms for FFS Possible support for agroecological application to pineapple production in the Windward areas	Medium
Tobago Apiculture Association	NGO	Development of green value chains Will build linkages with other sustainably producing groups	Low
Tobago Cocoa Farmers' Association	CBO	Will be involved in project implementation Development of green value chains Source of Lead farmers and farms for FFS Will share knowledge or build synergies with Trinidad cocoa producers on cocoa best practices	High
Landowners in the Courland Watershed, Tobago	Private/ state	Will be involved in project implementation Support for reforestation and interventions to mitigate against fires	High

Organisation	Type of organisation	Role/type of engagement	Level of influence on the project
Asa Wright Nature Centre Trust	NGO	Will provide technical support to protect the pawi Mobilisation of communities in the surrounding areas, e.g. Brasso Seco, Blanchisseuse, to participate in training to support the protection of the pawi and other fauna and flora	Medium
Caribbean Natural Resources Institute (CANARI)	NGO	Possess the capacity to execute elements of Component 1 Engagement of CBOs and NGOs to participate in project execution	High
Cropper Foundation	NGO	Support in agroecological adoption through pesticide and microbial certification for agriculture Mobilisation of farmers Capacity to execute elements of Component 3	Medium
Fondes Amandes Community Reforestation Project (FACRP)	NGO	Possible site for FFS Demonstration site for land restoration practices and wildfire management	Low
Green Market Santa Cruz	Private sector partner	Creating market access for green value chains ecotourism support Demonstration of agroecological practices Building communities of sustainable producers and including those in the project <i>Member of the PPG phase Project Steering Committee</i>	High

Organisation	Type of organisation	Role/type of engagement	Level of influence on the project
Network of Rural Women Producers Trinidad and Tobago	NGO	<p>Identification of women for involvement in project</p> <p>Supporting women producers that are beneficiaries in the project</p> <p>Providing expertise on the needs of women producers so that project can include these considerations</p> <p>Recipient of training and FFS courses</p>	High
Wa Samaki Ecosystems	Private sector partner	<p>Possible site for FFS</p> <p>Demonstration site for land restoration practices</p> <p>Sharing of best practices and techniques</p>	Low
WHYFARM (We Help Youth Farm)	NGO	<p>Youth engagement, mobilisation motivation and entrepreneurship</p> <p>Ensuring that youth are a part of training offered and benefit from project interventions</p>	Medium
Ah Grow	NGO	<p>Training in agroecological practices</p> <p>Outreach to farmers</p>	Medium
Organic Agriculture Stakeholders Association of Trinidad and Tobago	NGO	<p>Identification of lead farmers vis a vis agroecological or organic practices</p> <p>Share best practices and experiences in organic agriculture</p>	High
Private landowners in the Northern Range, Trinidad (in the vicinity of El Dorado)	Private sector partner	<p>Partnering in efforts to mitigate land degradation and to facilitate restorative practices</p> <p>Recipient of public awareness and sensitisation activities</p>	High

Organisation	Type of organisation	Role/type of engagement	Level of influence on the project
Energy Chamber of Trinidad and Tobago	Civil society	Facilitate networking with energy companies to support land restoration along pipeline corridors and oil wells	Low
Hoteliers and tour operators, Trinidad Hotels, Restaurants and Tourism Association, Tobago Hotel and Tourism Association, etc.	Civil society	Support the development and marketing of ecotourism opportunities	High
Santa Rosa First Peoples Community (Indigenous group)	CBO/indigenous	Participate in the development of the green value chain Recipients of training related to agroecological practices Support for the development of innovative practices or outputs emanating from agroecological practices Location for FFS	Medium

Select what role civil society will play in the project:

Consulted only;

Member of Advisory Body; Contractor; Yes

Co-financier;

Member of project steering committee or equivalent decision-making body;

Executor or co-executor;

Other (Please explain) Yes

Civil society will play a very active role in project execution and was engaged in the PPG. The lead ministries are interested in having the civil society engage and take the leadership role on certain areas of project implementation. As a result, a civil society organization can be approached to carry out activities under various components of this project. For example, CANARI has the skill and experience in connecting and building synergies with local communities, communicating effectively and successfully sharing sustainable practices and experiences. The organization also has the ability to include the more marginalised to ensure that participation increases equal opportunities. CSOs have worked towards building resilience to climate change—a consideration that will have to be built into this project. It also has experience providing support to local communities to establish small businesses, which will support the green value chains planned under this project.

Developing land use plans will involve many different stakeholders with diverging interests. A civil society organization will facilitate multi-stakeholder coordination. The identified CSO will build on its experience with communities, farmers, government ministries and private interests to support the development of a land use plan that is inclusive and sustainable.

Civil society representatives (see table above), will be engaged at various points in implementation and have been engaged in the project formulation process. The key tasks for civil society will be the following:

- Share knowledge, expertise and best practices
- Build synergies with other mutually supportive initiatives
- Support information dissemination, public awareness campaigns and sensitization
- Support mobilization and support of targeted beneficiaries and particularly women and youth; ensuring inclusion standards are met
- Be contracted to carry out specific activities e.g. Working with communities to develop participatory land use plans; support in marketing, promotion of sustainably produced agriculturally products;
- Representation on the Project Steering Committee to ensure inclusion of stakeholders throughout the sectors and also to execute particular activities of the project

4.3 Indigenous peoples in Trinidad and Tobago and Free, Prior and Informed Consent (FPIC)

Trinidad and Tobago accounts with an organization of First Peoples, called the Santa Rosa First Peoples Community. It is the main organization of indigenous peoples in Trinidad and Tobago. The headquarters of the association is located in Arima, Trinidad. The Caribs of Arima are descendants of the original Amerindian inhabitants of Trinidad. Amerindians who originally lived in the villages of Tacarigua and Arauca (Arouca) (approx. 10 km west of Arima), were resettled to Arima between 1784 and 1786.

The Santa Rosa First Peoples Community was incorporated in 1973 to preserve the culture of the Caribs of Arima and maintain their role in the annual Santa Rosa Festival (a Catholic feast celebrated in Arima and dedicated to Santa Rosa de Lima, the first Catholic saint canonised in the New World). The Community is headed by its President Ricardo Bharath Hernandez, maintains a leadership role among similar organizations in Trinidad and is also the base for the Carib Queen.

The Santa Rosa First Peoples Community was officially recognised by the State in 1990 as representative of the indigenous Amerindians ancestry of Trinidad and Tobago¹. Amerindians descendants are living in mixed communities with other populations of Trinidad and Tobago and are part of the mixed ethnic composition of the country which accounts with Africans, East Indians, Europeans, Asians, Arabs and Amerindian heritage.

Trinidad and Tobago has no specific legislation on indigenous peoples' rights but it has voted in favor of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). At the same time, there is no official census category for people of Amerindian descent in the country. It is estimated that approx. 1% of the population of Trinidad and Tobago has some form of indigenous ancestry. To preserve their cultural traditions the government recognizes them as a cultural group and they were granted a land lease of 25 acres north of Arima to set up a museum featuring the Amerindian heritage of the country.

In the first year, the project will consult with the Santa Rosa First Peoples Community to identify local communities in Trinidad and Tobago with Amerindian ancestry in order to ensure adequate provisions to carry out an FPIC process for project activities with relevance for local communities with indigenous roots.

3. Gender Equality and Women's Empowerment

Provide the gender analysis or equivalent socio-economic assesment.

Gender at the national level

The Constitution of Trinidad and Tobago recognises the rights of all citizens regardless of sex, age, religion, or ethnicity. The United Nations Development Programme's (UNDP) Human Development Report provides a measure of gender-based inequalities through the Gender Inequality Index (GII) by assessing reproductive health, empowerment, and economic activity. The 2017 index indicated that Trinidad and Tobago had a GII value of 0.324, ranking it 73 out of 160 countries. The GII ranking is marginally better than that of the Latin American and Caribbean group which stands at 0.386 and therefore reflects some positive aspects to achieving gender equality from a regional perspective.

In Trinidad and Tobago, 30.1 per cent of parliamentary seats are held by women, and 74.4 per cent of adult women have reached at least a secondary level of education compared to 69.1 per cent of their male counterparts. For every 100,000 live births, 63 women die from pregnancy related causes; the adolescent birth rate is 30.1 births per 1,000 women of ages 15-19. Female participation in the labour market is 51.0 per cent compared to 73.7 for men.

While Trinidad and Tobago continues to strive towards fulfilling its commitment to gender mainstreaming and gender equality, greater effort and commitment seems to be needed. There has been an inordinate delay in the approval and adoption of the National Gender Policy which was drafted since 2012 and only transitioned to a green paper in 2018 to acquire approval by the Cabinet. Further, while the *Vision 2030 - The National Development Strategy of Trinidad and Tobago 2016 - 2030* mentions the planned attention

to social justice, vulnerable groups and the disabled there is no specific mention of women.[1] The document also mentions the government's commitment to the decent work agenda and legislation to reform worker rights, compensation and productivity but does not mention gender equality as a specific goal.

Gender results forecasted by the project

The following sub-sections provide a context of gender issues and considerations in TT, which are necessary to elaborate to highlight the frame of reference in which this project will unfold. A Gender Plan in Annex 16 highlights the details of the interventions that will help improve gender engagement and results for women. In particular the project will seek to:

- § Ensure women's inclusion both as implementers of activities and as beneficiaries;
- § Provide leadership opportunities to ensure that women can shape the project to benefit from its results;
- § Reduce barriers that women face in achieving food security and equal participation; and
- § Strengthen livelihood and learning opportunities.

The project will also make use of women's knowledge and ensure that it is incorporated and highlighted in its communications. Women's use of ecosystem resources, and their influential roles in households and communities will be of particular relevance to ensure sustainability of interventions proposed. In particular, the project will conduct the following activities to ensure women's equal participation in the project:

- Ongoing gender monitoring and tracking during the life of the project to measure results and impacts of the project on women
- Obtaining sex and age disaggregated data to identify women and young farmers who are involved in economic and/or agricultural activities or who may be residents in targeted areas
- Ensuring women and youth are beneficiaries from any community-level incentive plans developed by the project, and are part of multi-stakeholder groups and platforms, also ensure that barriers are not preventing their participation (time, location of meetings, opportunities to speak, etc.)
- Identifying how current land use and projected land use will impact women and vulnerable communities, and ensure adequate safeguards
- Ensuring that women and youth participate in public awareness initiatives on land use plans
- Including women and youth in community-led monitoring mechanisms
- Collaborating with women's organisations to ensure synergies, leveraging of results, and building on shared resources and knowledge.

- Identifying and supporting agroforestry value chains that are beneficial to women
- Ensuring that facilities (e.g., wash or changing rooms) are provided to accommodate women who are involved in field activities
- Ensuring that training provided to women have been identified by them as priorities to better their circumstances

Gender, income and poverty

The poverty rate in Trinidad and Tobago is considered to be USD 1.25 per day which translates to a rate of 16.7 per cent[2]. A gender analysis of the Household Budgets Survey[3] and supplemented by available information from the 2014 Survey of Living Conditions[4] revealed that male-headed households in Trinidad are TTD 1,741 gross per month better off than female-headed households but have the same average number of children[5]. While there were more male-headed households than female, there were more single female-headed households with children (7.1 per cent) than single male-headed households (1.1 per cent).

Single parent female-headed households with children were found to have more children, on average, than male-headed households and were TTD 585 a month worse off. The percentage distributions of households by income group, sex, and age group of the head of household showed that the wealthiest households were headed by males (92.9 per cent of households in the TTD 23,000 per month income group) [6]. The data shows that the poorest households in Trinidad are likely to be headed by a female with or without children.

Gender and agriculture

The contribution of agriculture to the economy of Trinidad and Tobago has fluctuated over the past five years attaining a low of TTD 530 million in 2014 and a high of TTD 682.7 million in 2017. [7] The food import bill continues to be a challenge with the FAO[8] reporting that USD 833 million was expended by Trinidad and Tobago in 2011. Unconfirmed sources have identified the 2018 food import bill as being USD 891 million. Such expenditure will continue to place pressure on an economy which is negatively affected by low oil and gas prices, its major income earner, and associated foreign exchange scarcities. Such a situation demands a strategy which can support the growth of the

agricultural sector and facilitate greater use of locally produced agricultural products. The continued high import bill and increased demand on foreign exchange can trigger upward trends in food prices which will negatively impact consumers inclusive of poor women, many of whom are heads of households.

It has been noted that the 2011-2015 Strategy Plan of the Ministry of Agriculture, Land and Fisheries had as a goal “Expanded opportunities for productive employment and improved social conditions for small-scale producers, including women and youth”, with the associated objective of developing the livelihood initiatives to accommodate women and youth.

Employment in the agricultural sector

Table 6: Labour force in the agriculture sector

Year	Employment in agriculture (000's)	Per cent of total labour force
2017	22.3	3.52
2016	19.8	3.10
2015	21.3	3.30
2014	22.9	3.48
2013	22.0	3.38

While this data is not disaggregated by sex it is assumed that the majority of persons counted were male. The data over the period 2013-2017 shows that paid employment in the sector was generally constant, women making up approximately 3.36 per cent of the labour force.

Current records from the MALF (data from March 2017), shows that a total of 4,936 (22 per cent) of registered farmers are women (see table below). The information[9] provided by the Agricultural Society of Trinidad and Tobago (ASTT) also indicates an expected larger proportion of males to females in a ration 3:1 based on their membership. This is further supported by the research conducted by the National Training Agency (NTA)[10] where 25 per cent of the respondents in their survey were female. The ASTT notes that most farms are family-oriented with the man playing the lead role and the woman supporting his efforts. This indicates that there could be a lot more labour that women can be providing but that is not fully captured in the “supportive” role.

It was noted in an analysis [11] of family farms in the Caribbean that some 53.5 per cent of the total agricultural establishments in Trinidad and Tobago were family farms. This proportion is the lowest amongst the Caribbean countries which has an average of 88.4 per cent being family farms.

It is assumed that labour on family farms may not necessarily be directly remunerated when provided by family members, which may lower the number of women calculated as part of the sector. This assumption is supported by a study conducted on primary agriculture production in the sector by the National Training Agency[12] which found that the ratio of male to female employees was 4:1. The study further indicated that there was preference for male farm workers given that it was felt that they could lift and carry heavier equipment when compared to female employees. Sex disaggregated data for employment in areas other than primary production was not available. These areas included agro processing.

The following table captures the number of women registered with the Ministry of Agriculture as producers in the project sites.

Table 7: Farmers registered with the Ministry of Agriculture by county

County	Male	Female
St. Andrew/ St. David	500	100

County	Male	Female
County Caroni	1,358	458
St. George East	312	93
St. George West	363	70
Nariva/Mayaro	3,164	1,055
Victoria	6,375	2,125
St. Patrick East	3,275	400
St. Patrick West	1,907	635
Total	17,254	4,936

The ASTT further informed that they observed that there was some level of observed sex disaggregation by type of agricultural commodity as follows in Table 8. This speaks to the socialisation of boys and girls impacting on their roles on the farm.

Table 8: Agriculture-related activities disaggregated by sex

Agricultural activity	Predominant sex
Horticulture	Female
Livestock	Male
Fruit and vegetables	Male and Female

Training

While data was not available, personnel from the Ministry of Agriculture and the ASTT indicated that more women than men participated in agricultural training programmes. It was noted, however, that in most instances the training did not transition into business activities. It was also not determined if such training transitioned to increased subsistence production since this too can supplement incomes, support agricultural production, and possibly contribute to reduction of the food import bill through reduced demand.

Access to resources

It was reported that all persons were eligible to apply for the government agricultural support programmes, however the data provided showed that:

- Of the 3826 farmers who accessed the government's Agricultural Incentive Programme only 12 per cent were women.[\[13\]](#)
- 90 per cent of the applicants for agricultural lands from the state were men[\[14\]](#).
- Women attached to the Network of Rural Women Producers of Trinidad and Tobago (NRWPTT) are often single heads of households with limited resources and therefore it is often a challenge to attend training due to lack of funds and support for childcare[\[15\]](#).
- Men were the majority recipients of lands distributed to ex-Caroni workers by the Estate Management Development Company Limited given that most of the workers of the company were male. In most instances where women were recipients, this was as a result of being an heir due to the death of their spouse.[\[16\]](#)

While empirical data was not available, it is possible that access to funding may also be a challenge for women given that they, more than men may not be able to provide the necessary collateral which may be required to obtain loans.

Gender and the environment

Changes in the environment can impact both animal and plant life and by extension human life. Changing weather patterns can result in droughts which can impact water supply and have repercussions on agricultural production and other income generating activities as well as general household functioning, which is often the purview of women. Scarcity of water in the household can present added challenges especially if sanitation related issues develop which can impact health and wellness and further burden women who are often the main caregivers of sick relatives.

Disruption of ecosystems can have an impact on the natural productive sources which can affect the households. Women are often considered as the natural caretakers of the environment since they are mindful of the need for a sustained and healthy production of produce. In this regard they seem to be more involved in agroecological principles if involved in agriculture and may be more inclined to readily adopt such principles. In a current project[17] to enhance the environment in an active quarry in Trinidad, women make up 87 per cent of the participants and have demonstrated a willingness to learn, adopt and independently practice measures to sustain the environment through reforestation, crop production and other conservation methods.

Strategic gender entry points

The following entry points were identified as areas where gender will be especially considered and integrated into activities (a detailed gender plan is provided in Annex 16; gender indicators are also included in the logical framework):

- Training of technical support personnel from the project team and associated agencies in gender issues to encourage a more sensitive and focused approach to providing support to male and female farmers
- Linking technical agricultural training to business development, business mentoring and markets to women
- Creating linkages to facilitate access to resources such as finance, skills, and expertise
- Ensuring women's participation and consideration in land use planning development to ensure that plans take into account women's needs and uses of natural resources
- Ensuring women's participation and access to benefits e.g., targets for training, employment, project specific gender strategies
- Monitoring and evaluation will ensure ongoing measurement of project impacts on women

- Tracking utilisation of training undertaken by women. That is, whether knowledge used to start or improve subsistence production or a business enterprise
- Training of policy makers in gender to increase greater awareness given the absence of gender considerations in related policy documents
- Training of women and men, CBOs, and NGOs to increase knowledge of prevailing environmental issues and interventions to mitigate incidences
- Strengthening women's organisations and networks to provide the necessary support to women and girls who may be impacted by adverse environmental conditions

[1] GORTT, *Vision 2030 - The National Development Strategy of Trinidad and Tobago 2016-2030*, (Port of Spain: GORTT, 2016), <https://www.planning.gov.tt/sites/default/files/Vision%202030-%20The%20National%20Development%20Strategy%20of%20Trinidad%20and%20Tobago%202016-2030.pdf>.

[2] UNDP (2017) The missing dimension in poverty. <https://tinyurl.com/l962zz5> .

[3] Republic of Trinidad and Tobago, Ministry of Planning, Economic and Social Restructuring and Gender Affairs (2010) Household Budgets Survey 2008/2009. [CD] CSO.

[4] KAIRI Consultants Ltd., "Survey of Living Conditions Trinidad and Tobago," International Labour Organization, last modified 2014, <https://tinyurl.com/le29w3u>

[5] Republic of Trinidad and Tobago, Ministry of Planning, Economic and Social Restructuring and Gender Affairs (2010) Trinidad Table 1.7. Summary characteristics of households by gender, age group and ethnic group of head.

[6] Republic of Trinidad and Tobago, Ministry of Planning, Economic and Social Restructuring and Gender Affairs (2010) Trinidad Table 2.22. Data on age of household head is not disaggregated by sex. Percentage distribution of households by income group, sex and age group of head.

[7] Ministry of Finance, *Review of the Economy 2018 "Turnaround"*, (Port of Spain: GORTT, 2018), <https://www.finance.gov.tt/wp-content/uploads/2018/10/Review-Of-The-Economy-2018.pdf>.

[8] FAO, CARICOM, "Food Import Bill, Food Security and Nutrition", 2013. <http://www.fao.org/3/a-ax740e.pdf>

[9] No empirical data was available

[10] National Training Agency (2015) Agriculture (Primary Production) Quantitative Report

[11] Sergio Schneider, *Family Farming in Latin America and the Caribbean: Looking for New Paths of Rural Development and Food Security*, (Brasília: The International Policy Centre for Inclusive Growth, 2016), <http://www.fao.org/3/a-i5534e.pdf>.

[12] National Training Agency (2015). Agriculture (Primary Production) Quantitative Report.

[13] The sex disaggregation was done based on names and not actual male female information sex disaggregated data is not collected

[14] Reported by the ASTT

[15] Reported by the NRWPTT

[16] Reported by the EMBD

[17] Integrated Water Lands and Ecosystems Management in Caribbean Small Island Development States

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;

Improving women's participation and decision making Yes

Generating socio-economic benefits or services or women Yes

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

Yes

4. Private sector engagement

Elaborate on the private sector's engagement in the project, if any.

Private Sector Engagement

Commercial interests encroach heavily on the natural resources in TT. In order to have any sustainable and lasting impact, the project will have to seek partnerships with the private sector. In addition, some of the degraded lands or fires are set on private lands and then impact other communities and people. The following table reflects the ways in which private sector partners will be liaised with throughout the project:

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

Table 9: Private sector engagement

Component	Private sector engagement	Proposed parties
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.	Developers, quarry operators, oil and gas operators, relevant chambers of commerce
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.	Private landowners, The Energy Chamber of Trinidad and Tobago, privately operated farmer field schools

Component	Private sector engagement	Proposed parties
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.	Supermarket Association of Trinidad and Tobago, The Tobago Tourism Agency, Trinidad Tourism Limited, The Trinidad Hotels, Restaurants and Tourism Association, Tobago Hotel and Tourism Association

5. Risks to Achieving Project Objectives

Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.(table format acceptable):

Section A: Risks to the project

Table 10: Risk identification and classification

#	Description	Potential consequence	Mitigation measures	Risk category	Probability and impact (1–5)	Responsible party
<i>Local-level risks</i>						

#	Description	Potential consequence	Mitigation measures	Risk category	Probability and impact (1–5)	Responsible party
1	Lack of community buy-in for protecting biodiversity through agroecological practices	Risks to biodiversity, land degradation, pressures on vulnerable ecosystems	<p>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 resource management. The project will apply a bottom-up approach.</p> <p>One-to-one outreach methods may be employed in some instances where there may be poor attendance at community forums (e.g., Courland, Tobago)</p> <p>Commodity based agencies will be used to mobilise farmers to participate (e.g., the Cocoa Development Company of Trinidad and Tobago and NAMDEVCO to be used to mobilise farmers).</p> <p>A civil society organisation that has expertise in operating at the local level, should execute Component 1 to improve chances of participation and engagement.</p> <p>The project will also carry out awareness-raising activities on the value of biodiversity and ecosystem services.</p>	Social	<p>P = 2</p> <p>I = 4</p>	<p>Project Coordinator,</p> <p>Project Steering Committee</p>
2	The high cost of agricultural labour and inputs prevent the recommended approaches from being adopted in the sector	Business-as-usual; further loss of employment and production in agricultural sector	The project will promote value chains that require fewer 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 and seek training.	Economic	<p>P = 3</p> <p>I = 3</p>	<p>Project Coordinator</p> <p>MALF</p>
National						

#	Description	Potential consequence	Mitigation measures	Risk category	Probability and impact (1–5)	Responsible party
3	Political changes	An election is constitutionally due in 2020—this 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 protecting biodiversity, mitigating risks such as fires which are anticipated to resonate with all political parties. In order to mitigate against any political changes, the project established a Project Steering Committee during the PPG instead of waiting for project implementation. This PSC has been a part of every phase of the PPG to maintain continuity once the project begins implementation, regardless of government changes. It is composed of both public servants and CSOs, and men and women of have diverse representation. The Project Steering Committee can also be revised once the project is implemented to ensure a wide as possible representation. A detailed stakeholder ID and analysis would be performed upon project implementation to reveal any existing gaps.	Political	P = 3 I = 1	Project Steering Committee
4	Limited funds available to sustain project benefits	Interventions will not be sustainable after project closure	Biodiversity conservation activities are designed to bear benefits, which will provide incentives to BD/NR managers after project closure.	Economic	P = 3 I = 2	Project Steering Committee

#	Description	Potential consequence	Mitigation measures	Risk category	Probability and impact (1–5)	Responsible party
5	<p>Natural hazards and climate shocks.</p> <p>(The Climate Risk Screening in Annex 16) highlights extreme precipitation, lack of precipitation, storms, winds, sea-level rise, landslides and wildfires as risks due to climate change)</p>	Floods, droughts and disease may diminish project results	Agroecology and improved land management are anticipated to increase climate resilience of farming systems. Resilient species will be selected to survive periods of climate variability. Farmers and extension staff will be provided with training on how to improve water resource management and manage production during periods of climatic uncertainty. Training for early warnings on fire will be integrated into the fire prevention plan.	Natural	<p>P = 3</p> <p>I = 4</p>	Project Steering Committee
6	New pests and diseases	Changing climate may increase exposure to new pests and diseases	This risk will be mitigated through crop diversity, soil rehabilitation, and the use of tested plant varieties through model and demonstration farms.	Natural	<p>P = 3</p> <p>I = 4</p>	MALF

#	Description	Potential consequence	Mitigation measures	Risk category	Probability and impact (1–5)	Responsible party
7	COVID-19 threats are prevalent during the project design and can have long-lasting impacts on people's health, security, safety and economic conditions.	Delays, implications on health and participation of stakeholders; economic impacts from less tourism and economic activity.	- Due to the rapid spread of the pandemic, risk mitigation procedures will be developed to address possible operational delays or pauses on an ongoing basis, to follow the latest guidance and advisories. Increased communication will be considered when consulting with local beneficiaries regarding possible impacts, and site specific protocols will be followed. Changes in the scope or timing of planned activities may be necessary through workplan adjustments. The Steering Committee should monitor and address significant financial constraints arising due to both exchange rate fluctuations. In some cases, collaboration with smaller organizations may happen through proxy institutions that are in proximity and have access technology/communication tools that can be shared. Whatsapp and mobile phones, which many have access to, will be used for communication and exchange of information. The Project Coordination Unit will have to be mindful of the kind of resources that are available to beneficiary groups. The Communications Strategy should include specific considerations for communication, public awareness and exchange of information under these circumstances.	Health Safety Economic	P=5 I=5	PCU EMA NAMDEVCO

Moderate residual risks have been identified for:

1. Limited funds available to sustain project benefits
2. Natural hazards and climate shocks (Please refer to Climate Risk Screening for additional information).

High risks have been identified for: Covid-19

While the significance of these risks has been lowered once proposed mitigation actions are instituted, some of the factors are external (natural hazards) and unavoidable. However, measures are proposed to reduce the impact of such events. Please see table below.

The future sustainability of the project can be a potential issue as identified in the risk assessment. To reduce the risks of funding and sustainability of the initiatives, the approach is to support existing or proposed projects, groups and other programmes that are aligned with the objectives of Bioreach. This way, resources which are already identified and committed can then be used to continue beyond the timeline of this project. The project is also anchored in complementary government programmes and initiatives, and it is anticipated that these entities will want to continue to support a project that is in line with national objectives. Another way of ensuring that the project has greater sustainability, is to anchor it in local level interventions. There is a greater chance for sustainability if local level actors and communities have the capacity and the knowledge, and if project activities enhance their livelihoods and quality of life. The project has purposely built in initiatives that can be both led and managed at the local levels so as to increase local ownership and buy in. Livelihoods have been prioritized to ensure that people have incentives to continue initiatives, and can witness betterment from sustainable activities.

Risks will be addressed through the project's M&E system during project implementation. This M&E system will allow for regular assessment of whether these risks have changed so that corrective action can be taken. Early detection of project risk and advising control should be performed by the FAO given its experience with similar projects at the local, regional and international levels. An adaptive management approach will be prescribed with the aim of reducing uncertainty over time. The format is based on a learning process and managing against slow implementation by utilising a structured yet iterative process.

It is advised that six-monthly Project Progress Reports (PPRs) be utilised as the main tool for project risk monitoring and management. These reports will include a comprehensive section on actions taken to follow up on risks and mitigation actions identified in previous PPRs. They will also have another section that identifies new risks or risks that continue to need attention, their gravity, potential mitigation actions including identification of who should carry out those actions, and when they should be completed. The project team will monitor the risk management closely and follow up if needed, providing support for the adjustment and implementation of risk mitigation measures by project stakeholders. Reporting

risk monitoring and rating will also be part of the annual Project Implementation Review submitted to the GEF Secretariat. The structure of project governance also (the Project Board and Project Steering Committee) provides increased opportunities for mitigating any risks.

Table 11: Risk mitigation

Risk identified	Risk classification (pre intervention) High, Moderate or Low	Mitigation action (s)	Risk classification with mitigation action(s) instituted	Indicator/mean(s) of verification	Progress on mitigation action
------------------------	--	------------------------------	--	--	--------------------------------------

Risk identified	Risk classification (pre intervention) High, Moderate or Low	Mitigation action (s)	Risk classification with mitigation action(s) instituted	Indicator/mean(s) of verification	Progress on mitigation action
Lack of community buy-in for protecting biodiversity through agroecological practices	P = 2, I = 4 High	The project document will be developed through in-depth stakeholder consultation to ensure that needs are addressed in a way that fosters community interest. All interventions will be built on the premise of strengthening peoples' livelihoods and immediate environment thereby incentivising participation. Groups that have historically not been part of consultations will be invited to multi-stakeholder collaborations thereby giving voice and improving inclusion. A civil society partner that has proven track record in working with local communities will be contracted to execute Component 1 and create stronger acceptance and engagement in the project.	P = 1, I = 2 Low Risk classification with mitigation actions instituted is expected to be low in significance. If the proposed measures are adequately rolled out during the project, the probability of occurrence will decrease (Not likely to Slight). The impact on social and environmental systems will also decrease to minor levels. To adequately address this, programmes must first focus on detailed stakeholder identification and analysis and the establishment of a communication strategy that is 'tailor made' for different stakeholders. Crucially, proposed measures should be supported through the use of working examples that are will not negatively affect the livelihoods of the beneficiaries.	-Targeted communication strategy -Multi-stakeholder consultation minutes and consultation lists - Inclusive land use plans	To be monitored during project implementation; thus far preliminary consultations have taken place and a civil society organisation has been identified to manage Component 1.

Risk identified	Risk classification (pre intervention) High, Moderate or Low	Mitigation action (s)	Risk classification with mitigation action(s) instituted	Indicator/mean(s) of verification	Progress on mitigation action
The high cost of agricultural labour and inputs prevent the recommended approaches from being adopted in the rural sector	P = 3 I = 3 Moderate	<p>The project will promote value chains that require fewer external inputs (i.e., agroecology) and lower medium to long term labour inputs as a result of crop selection.</p> <p>Farmers will also be targeted for the Lead Farmer Training Programme that will give first-hand, practical knowledge about agroecological methods. The project will support business plan development, which will include plans to access financing.</p> <p>In the short term, the challenge of agricultural input will be dealt with by using the resources in the project (FFS, clusters, demonstrations) as on-farm labour to carry out pilots. This will also serve as a model of how farmers can work together on larger plantations.</p>	<p>P = 1 I = 2 Low</p> <p>With the mitigation actions instituted, farmers will benefit from reducing the quantity of external inputs and also labour requirements overtime can decrease. Additionally, diversified crop systems will contribute to additional income and lowered risk to the farmer, therefore allowing for a better standard of living and ability to reinvest/ expand operations.</p> <p>The pilots in the project and the increased interaction among farmers will also contact and reveal possibilities of labour and collaborations, given that the organisational culture is quite weak and individualised.</p>	<p>- Interviews</p> <p>- Surveys</p>	To be monitored over the project's lifetime

Risk identified	Risk classification (pre intervention) High, Moderate or Low	Mitigation action (s)	Risk classification with mitigation action(s) instituted	Indicator/mean(s) of verification	Progress on mitigation action
Political changes	P = 3 I = 1 Low	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 protecting biodiversity, mitigating risks such as fires which are anticipated to resonate with all political parties. In order to mitigate against any political changes, the project established a Project Steering Committee during the PPG instead of waiting for project implementation. This PSC has been a part of every phase of the PPG to maintain continuity once the project begins implementation, regardless of government changes. It is composed of both public servants and CSOs, men and women to have diverse representation.	P = 3 I = 1 Low Project Steering Committee and Stakeholders already familiar with the objectives of Bioreach. Significantly, stakeholders have been central to the design of the project framework and selection or activities which are relevant to their needs.	- Annual reports (PIR) - Project Steering Committee minutes	To be monitored during implementation

Risk identified	Risk classification (pre intervention) High, Moderate or Low	Mitigation action (s)	Risk classification with mitigation action(s) instituted	Indicator/mean(s) of verification	Progress on mitigation action
Limited funds available to sustain project benefits	P = 3 I = 2 Moderate	<p>Biodiversity conservation activities are designed to bear benefits, which will provide incentives to biodiversity and natural resource (BD/NR) managers after project closure.</p> <p>Project will focus on what is relevant based on determining stakeholder needs; therefore, resources will be directed to supporting and upscaling existing activities as much as possible. This ensures that endeavours where there is already support and commitment that are in line with the project objectives are pursued.</p> <p>Restoration/ rehabilitation and wildfire control activities are designed with strong community integration elements that will include initiatives to make the projects sustainable (e.g., setting up of plant nurseries, including tourism opportunities, allowing employees to cultivate their own crops in the project areas).</p> <p>Lead Farmer Training Programme also developed to continue after the project because it allows for lead farmers trained under the project to train other farmers that can provide labour on their farms while the project is ongoing. Additionally, the programme is designed around existing training modules already</p>	P = 3 I = 2 Moderate <p>Even with the proposed mitigation measures, there is still the risk that when the funding ends or the project officially ends that activities will also end. One approach to having the objectives of the project continue beyond the project timeline is to equip beneficiaries with knowledge and skills that they will continue to use and also to ensure that livelihoods and dependent natural systems are also improved so that persons will continue with initiatives. Additionally, project execution should be geared towards institutions with lower administrative costs so that activities can continue.</p>	- Terminal evaluation - Post-project survey	Monitored over project's lifetime

Risk identified	Risk classification (pre intervention) High, Moderate or Low	Mitigation action (s)	Risk classification with mitigation action(s) instituted	Indicator/mean(s) of verification	Progress on mitigation action
<p>Natural hazards and climate shock</p> <p>(The Climate Risk Screening in Annex 16) highlights extreme precipitation, lack of precipitation, storms, winds, sea-level rise, landslides and wildfires as risks due to climate change)</p>	<p>P = 3</p> <p>I = 4</p> <p>High</p>	<p>Agroecology and improved land management are anticipated to increase climate resilience of farming systems. Resilient species will be selected to survive periods of climate variability.</p> <p>Specific projects to be pursued to lower vulnerability of endemic species.</p> <p>Restoration of degraded landscapes, riparian zones and wetlands will strengthen natural systems' abilities to absorb the impact of hazards.</p> <p>Farmers and extension staff will be provided with training on how to improve water resource management and manage production during periods of climatic uncertainty. Diversification of crops will decrease the impact of natural disasters to farmers.</p> <p>Training for early warnings and on fire and species selection will be integrated into the fire prevention plan.</p> <p>Proposed business plans and technologies to focus on low investment and maintenance cost, therefore decreasing the impact of natural disasters on farmers.</p>	<p>P = 3</p> <p>I = 4</p> <p>Moderate</p> <p>The project cannot decrease the probability of a natural disaster occurring but will serve to lower its impact through the execution of its various activities which are in line with the overall objectives. Heightened biodiversity, lower levels of land degradation and the promotion of agroecological principles will have a tremendous impact on lowering the risk to natural disaster a building resilience to climate change and variability.</p>	<p>- Site visits during project duration</p> <p>-Existence of fire management plan</p> <p>-Application of early warnings by relevant stakeholders</p>	<p>To be monitored over the project's lifetime</p>

Risk identified	Risk classification (pre intervention) High, Moderate or Low	Mitigation action (s)	Risk classification with mitigation action(s) instituted	Indicator/mean(s) of verification	Progress on mitigation action
New pests and diseases	P = 3 I = 4 High	<p>This risk will be mitigated through crop diversity, soil rehabilitation, and the use of tested plant varieties through model and demonstration farms.</p> <p>Strong training and education component will focus on integrated pest management and promotion of disease resistant varieties (e.g., cocoa, coconut, etc.).</p> <p>Local/ indigenous knowledge of crops to be captured by the project and promoted</p> <p>Project will also focus on building surveillance and monitoring against pests and diseases that are not yet present.</p>	P = 2 I = 2 Low The probability of new pest and diseases being introduced is expected to decrease once measures to increase surveillance and monitoring are implemented. Additionally, the impact is also expected to decrease through the promotion of diversity, agroecology, training, and promotion of indigenous varieties.	- Site visits - Field testing results carried out under Component 2	To be monitored over the project's lifetime

Risk identified	Risk classification (pre intervention) High, Moderate or Low	Mitigation action (s)	Risk classification with mitigation action(s) instituted	Indicator/mean(s) of verification	Progress on mitigation action
COVID-19 or similar crises delay project implementation, affect health of beneficiaries, limit areas in which the project can be implemented, limit face-to-face consultations among stakeholders, further marginalize the disenfranchised that have limited access to resources and technology	P=4 I=4 High	- COVID-19 threats are prevalent during the project design and can have long-lasting impacts on people's health, security, safety and economic conditions. Due to the rapid spread of the pandemic, risk mitigation procedures will be developed to address possible operational delays or pauses on an ongoing basis, to follow the latest guidance and advisories. Increased communication will be considered when consulting with local beneficiaries regarding possible impacts, and site specific protocols will be followed. Changes in the scope or timing of planned activities may be necessary through workplan adjustments. The National Steering Committee should monitor and address significant financial constraints arising due to both exchange rate fluctuations and any delays or failures in co-financing delivery. In some cases, collaboration with smaller organizations may happen through proxy institutions that are in proximity and have access technology/communication tools that can be shared. Whatsapp and mobile phones, which many have access to, will be used for communication and exchange of information. The Project Management Unit will have to be mindful of the kind of resources that are available to beneficiary	The external risk of Covid-19 may remain high and the project may be vulnerable to factors beyond its control. The part that the project can control, is the management of the COVID-19 threats and guidelines within implementation, and how it will ensure the participatory approach and inclusion despite external guidelines. The final phases of the PPG were carried out under COVID-19, yet the PPG team was able to contact, interview and consult with key stakeholders. That has prepared the Steering Committee, the FAO-R office and many of the stakeholders of what is to come. The project will have to prioritize livelihood activities, especially since one of the impacts of COVID has been reduced tourism to the islands. For this, the project may promote socially distanced training sessions, hold multiple farmer field school sessions with reduced participants to reduce risk, while still having reach; organize meetings outside, etc...	COVID-19 considerations in communications plan COVID-19 considerations/guidelines identified at project inception	

Section B: Environmental and Social Risks from the project (further details are provided in Annex on Project Risk Classification)

Identified Risk	Risk Rating	Mitigation Measures	Indicator / Verification Means	Progress on mitigation actions
Project will be implemented on the boundaries of a Protected Area	Moderate	The project is purposefully being carried outside the Protected Areas, as much of the activities in the buffer zones have negative impacts and encroach upon the PAs, and to build on/reinforce previous GEF investments that established the PAs (IFPAMTT project). In order to ensure that activities do not have a negative impact on the PAs, the project will implement participatory processes for establishing land use plans that include strategies for protecting vulnerable natural resources. The project will also provide capacity building, techniques, tools and methodologies for decreasing the pressures in the buffer zones while protecting communities.	<ul style="list-style-type: none"> - Land use plans with specific strategies for protecting vulnerable areas and resources - Capacity building interventions that increase knowledge and management of the buffer zones to vulnerable sites - Ongoing monitoring, including monitoring by drone to ensure that activities do not infringe PA boundaries 	

Project involves access to genetic resources for their utilization and/or access to traditional knowledge associated with genetic resources that is held by indigenous local communities and/or farmers	Moderate	The project will support farmers to combat pest and invasive species, particularly in the key value chains identified, and especially in cacao. For some of the interventions, the projects will seek guidance from local communities/indigenous groups to share strategies and best practices (e.g. Moruga Hill rice), to be shared with other small farmers desiring to transition to sustainable production. The demonstration groups and sites will be voluntary so as to ensure that they are willing participants, and that there is no imposition of the project. In some cases, in partnerships with universities and testing sites, some plant species may be studied for resilience to pests—this will be done in agreement and with interest from individual farmers.	<ul style="list-style-type: none"> - Interest expressed by NGOs/CBOs or individual farmers in conducting demonstrations, capacity building exercising, sharing knowledge - Oversight by project management team - Transparency and partnership between farmers and research institutes testing resilience of crops 	
Project will provide seeds/planting materials for their cultivation	Moderate	The project will provide seeds and planting materials for rehabilitation of degraded forests, lands, riverbanks, degraded plantations and agricultural lands, watershed. However, these will be varied native species with demonstrated resilience.	<ul style="list-style-type: none"> - List of seeds planting materials reviewed by biodiversity expert (under FAO AGP oversight) 	

Project will supply or use modern plant biotechnology and their products	Moderate	The project will support green value chain development according to sustainability guidelines established by NAMDEVCO. This may require community groups or farmers to use biotechnology, facilitated by research institutes, to strengthen the resilience of certain varieties. However, the aim of any intervention will be to support sustainable production in order to replace degrading practices.	- Any testing of plant biotechnology or use of resilient varieties will be reviewed by the biodiversity expert, and the research division of MALF, as well as the Cocoa Company.	
Project will establish/manage planted forests	Moderate	The project will restore degraded forests and riverbanks with resilient and native species.	- Review with the forestry department of the sites of rehabilitation and the species to be used. Biodiversity expert will review list of species planned.	
Project located in or near an internationally recognized conservation area or some other nationally important habitat	Moderate	The project will be in buffer zones of coastlines, forest reserves, protected areas, and wetlands. The very purpose of establishing the project in these sites is to provide protection for vulnerable natural resources, and establish the community ownership and strategies on how best to manage them.	- Land use plans detailing how vulnerable sites are to be protected	
Project can change the water quality and quantity in the project area	Moderate	The hydrological restoration of Kilgwyn wetland in Tobago (34 hectares) to restore tidal exchange of waters and reduce pressure from human impact/pollution/stressors, may enhance water quality.	- Oversight from project management team, the THA to ensure that no negative impacts take place.	

6. Institutional Arrangement and Coordination

Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.

Institutional arrangements for project implementation

The Environmental Management Authority (EMA) and the National Agricultural Marketing and Development Corporation (NAMDEVCO) will have the executing and technical responsibility for the project, with FAO providing oversight as GEF Agency as described below.

The project will have a lead National Project Coordinator. In order to provide a coherent framework, the National Project Coordinator will be outside of the two executing entities and will be supporting coordination and oversight but will not be managing funds. The National Project Coordinator and the Project Management Unit will be hosted in the Office of the FAO Representation.

A Tobago Local Coordinator will also be placed within the Tobago House of Assembly to ensure that activities are being carried successfully on the island. Given, that both Trinidad and Tobago have different governance mechanisms, this is a means to ensure that Tobago benefits from the project, according to its own needs. This Tobago Local Coordinator will also be considered part of the Project Management Unit.

The EMA and NAMDEVCO, as external execution partners, will be responsible for the day-to-day management of project results entrusted to them in full compliance with all terms and conditions of the Operational Partners Implementation Modality (OPIM) signed with FAO. They will be responsible and accountable to FAO for the timely implementation of the agreed project results, operational and technical oversight of implementation activities, timely reporting, and for effective use of GEF resources for the intended purposes and in line with FAO and GEF policy requirements, as per their responsibilities.

During this project preparation phase, however, it was determined that government entities are capable of supporting execution and should do so for greater country ownership and retention of institutional knowledge. The selected executing agencies are being approved through capacity assessments and have the comparative advantage of successfully carrying out similar work. The Project Management Unit will be housed in the Office of the FAO Representation, which will add a further layer of oversight and coordination of the Operational Partners.

Due COVID-19 lockdown the Operational Partners Capacity Assessments (2) have started but not yet finalized. They are expected to be completed by September 2020. Based on the OPs risk classification, a risk mitigation plan by Operational Partner will be developed and agreed between FAO and the OPs before starting project execution.

A **Project Steering Committee** will be established. This entity will be the political face of the project and will include the Permanent Secretary of Ministry of Planning and Development, the Permanent Secretary of the Ministry of Agriculture, Land and Fisheries from Trinidad, and Secretaries from Division of Infrastructure, Quarries and the Environment and the Division of Food Production, Forestry and Fisheries in Tobago, the National Project Coordinator, the Chair and Vice Chair and FAO to ensure ongoing accountability, addressing of any issues that may arise, and ensure coherence to support project implementation. As this project will be managed by country institutions for the first time, the idea is to involve relevant institutions at various levels of management to ensure cross-cutting support, highlight opportunities for synergies and complementarity of the project and maintain oversight. The PSC will meet at least twice per year to ensure: (i) oversight and assurance of technical quality of outputs; (ii) close linkages between the project and other ongoing projects and programmes relevant to the project; (iii) timely availability and effectiveness of co-financing support; (iv) sustainability of key project outcomes, including up-scaling and replication; (v) effective coordination of government partner work under this project; (vi) approval of the six-monthly Project Progress and Financial Reports, the Annual Work Plan and Budget; and (vii) making by consensus, management decisions when guidance is required by the National Project Coordinator of the Project Management Unit (PMU) as described below.

A **Technical sub-Committee** of the Project Steering Committee will be convened—this will be more hands-on. This will be a larger body, including other government agencies and civil society, and will be tasked with administrative tasks such as reviewing work plans, budgets, and reviewing targets and indicators on an ongoing basis to ensure adaptive management. This Technical sub-Committee will include representatives from each of the executing and implementing partners, Ministry of Planning and Development – Environmental Policy and Planning Division; the Environmental Management Authority; The National Agriculture Marketing and Development Corporation; Ministry of Agriculture, Land and Fisheries; Division of Food Production, Forestry and Fisheries – Tobago House of Assembly; Agricultural Society of Trinidad and Tobago; the FAO and various other conservation and agriculture NGOs/ CBOs from both Trinidad and Tobago. The members of the Technical sub-Committee will each assume the role of Focal Point for the project in their respective agencies. Hence, the project will have a Focal Point in each concerned institution. As Focal Points the members will: (i) technically oversee activities in their sector; (ii) ensure a fluid two-way exchange of information and knowledge between their agency and the project; (iii) facilitate coordination and links between the project activities and the work plan of their agency; and (iv) facilitate co-financing arrangements with the project.

In order to ensure civil society participation in the project, the activities of Component 1 will be executed by a representative service provider- an external execution partner. It is understood that the activities under Component 1 require specialised sensitivity, especially with regard to working with local communities, fostering trust and ensuring that the land use plans that are developed are participatory in nature.

The project organisation structure is presented on the next page as follows:

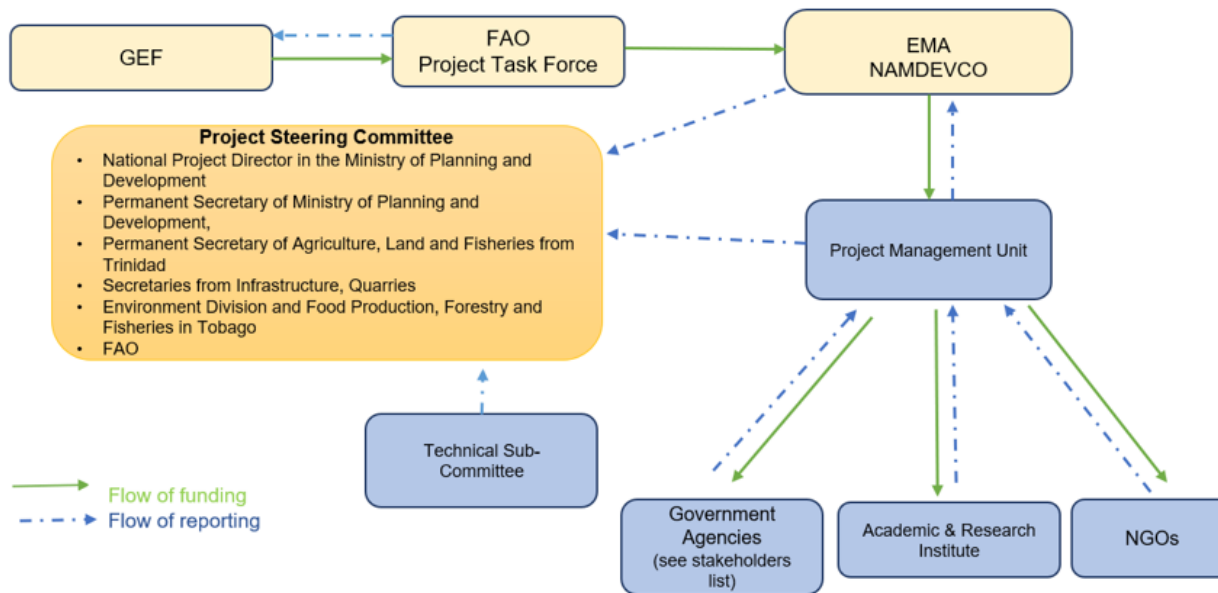


Figure 5: Proposed project organisation structure

Technical Project Director- The government will designate a Technical Project Director (NPD) located in the Environmental Policy and Planning Division (EPPD) in the Ministry of Planning and Development. A key responsibility of the Technical Project Director would be the coordination of other key partners and stakeholders and other ongoing and complementary initiatives and projects. The Technical Project Director will be supported by the Project Steering Committee that will provide monitoring and guidance for the implementation of the project and support for developing the sustainability strategy to maintain the results post project.

The TPD will serve as Chair of the Project Steering Committee that will be the main governing body of the project. The PSC will approve Annual Work Plans and Budgets on a yearly basis and will provide strategic guidance to the Project Management Team and to all executing partners.

A Project Management Unit (PMU) will be co-funded by the GEF and work under the guidance of the Project Steering Committee and be fully accountable to the FAO. The main functions of the PMU are to ensure overall efficient management, coordination, implementation and monitoring of the project through the effective implementation of the annual work plans and budgets (AWP/Bs). During the project inception period, the PMU will review the project's work plan, the project's procurement plans; implementation and M&E plans and propose adjustments, as necessary. The PMU will include the National Project Coordinator in Trinidad, a Tobago Local Coordinator and other technical specialists.

National Project Coordinator (NPC) will be in charge of daily implementation, coordination, administration and technical supervision of specific areas of the project, within the framework delineated by the FAO and the PSC. S/he will be responsible, among others, for:

- § coordination with relevant initiatives;
- § ensuring a high level of collaboration among participating institutions and organizations at the national and local levels;
- § ensuring that external execution partners comply with timely reporting;
- § coordination and close monitoring of the implementation of project activities;
- § tracking the project's progress and ensuring timely delivery of inputs and outputs;
- § providing technical support and assessing the outputs of the project national consultants hired with GEF funds, as well as the products generated in the implementation of the project;
- § reviewing requests from external execution partners for provision of financial resources ;
- § monitoring project budgets to ensure accuracy of financial reports;
- § following up with external execution partners on timely submission of requests for funds, financial and progress reports to FAO as per external execution reporting requirements;
- § providing oversight for the project's monitoring and communications plans;
- § directing the organization of project workshops and meetings to monitor progress and preparing the Annual Work Plans and Budgets (AWP/B);

- § submitting the six-monthly Project Progress Reports (PPRs) with the AWP/B to the PSC and FAO;
- § preparing the first draft of the Project Implementation Review (PIR) Report;
- § supporting the organization of the Mid-Term Review and Terminal Evaluation in close coordination with the FAO Budget Holder and the independent FAO Office of Evaluation (OED);
- § submitting the OP six-monthly technical and financial reports to FAO and facilitate information exchange between the OP and FAO when needed;
- § inform the PSC and FAO of any delays and difficulties as they arise during the implementation to ensure timely corrective measures and support; and
- § play the role of Secretary to the Project Steering Committee

A **Local Tobago Coordinator** will be hired to provide support with the implementation of project activities in Tobago. S/he will support with coordination and close monitoring of project activities; tracking the project's progress and ensuring timely delivery of inputs and outputs; providing technical support and assessing the outputs of the project; contributing to the six-monthly Project Progress Reports (PPRs) and other reports and with the preparation of the AWP/B to be submitted to the PSC and FAO; Supporting with preparation of the documents for the Project Steering Committee Meetings

A full-time **Secretary/Assistant** will be hired with project funds and placed at the PMU for day-to-day operations of the project. Provide support to PMU such as preparing/typing documents, (progress reports, work plans, terms of references and other materials and correspondence) and facilitating meeting arrangements and other events of the project; maintain databases/files/records files; follow-up on deadlines for the PMU and other project personnel; select a variety of information from various sources (e.g. Intra-/ Internet, office files, FAO information and documentation); compile background information and reference material as appropriate; review outgoing correspondence and documentation for correct format, grammar, spelling and conformance with FAO Style and country policies and procedures, attach necessary background information and maintain a follow-up system. S/he will work closely with the Project Coordination Unit, under direct supervision of Project Technical Coordinator.

A Communications and Monitoring and Evaluation Specialist will recruited part-time and will be hosted at the PMU. The **Communications Consultant** will support with the development of communication tools and channels; public awareness campaigns and activities together with indicative schedules; support in the implementation of all plans and campaigns.

The **M&E Consultant** will support in designing a system for monitoring and evaluating the Project; develop data collection and assessment methodologies for all relevant elements in the monitoring and evaluation system; specify data collection and assessment tools to be used by PMU members, external execution partners, and other relevant stakeholders; ensure that project beneficiaries are selected in a fairly and equitably manner and that all projects and interventions take into account the National Gender Policy as well as FAO's Gender Policy; ensure that M&E findings are disseminated to all project personnel and all relevant stakeholders to ensure fine-tuning of project implementation; contribute to periodic reports on the progress of the project.

The Knowledge Management Specialist will support the coordination and implementation of the project's Knowledge management strategy, ensuring the drafting and summarizing of project material and results for sharing with a range of stakeholders; facilitating records maintenance and retrieval. He/she will gather, analyse and disseminate project products and facilitate storage for easy retrieval. Ensure continuous liaison with project partners and stakeholders to ensure timely and accurate publication of project results and information

The Gender Expert will review the project's work plan and provide support on the scheduling and management of activities focused on achieving the results of the Gender Work Plan defined in the project. Support the compilation, analysis and interpretation of all gender data generated by the project; facilitate knowledge building and gender mainstreaming of gender related perspectives into the defined project areas; support with the establishment of targets, monitoring of achievements; complete the preparation of gender reports and documents.

The GIS/Data Support Specialist will support the planning and coordination of the GIS activities to meet project goals; including supporting data flow and distribution activities aimed at supporting GIS; ensuring accurate data capture; maintaining and retrieving documentation for project use. The consultant will also lend support to other data management activities of the project.

The **Food and Agriculture Organization of the United Nations (FAO)** will be the GEF Implementing Agency (IA) for the project, providing project cycle management and support services as established in the GEF Policy. As the GEF IA, FAO holds overall accountability and responsibility to the GEF for delivery of the results. In the IA role, FAO will utilise the GEF fees to deploy the different actors within the organisation to support the project:

- the Budget Holder, which is usually the most decentralized FAO Office, will provide oversight of day to day project execution;
- the Lead Technical Officer(s), drawn from across FAO will provide oversight/support to the projects technical work in coordination with government representatives participating in the Project Steering Committee;
- the Funding Liaison Officer(s) within FAO-GEF Coordination Unit, Climate and Environment Division will monitor and support the project cycle to ensure that the project is being carried out and reporting done in accordance with agreed standards and requirements.
- HQ Technical Officer to be added
- The Project Task Force which is a multidisciplinary team of FAO Staff members with expertise in the technical areas the project is working on.

FAO responsibilities, as the GEF IA, will include:

- Overseeing project implementation in accordance with the project document, work plans, budgets, agreements with co-financiers, external execution and other rules and procedures of FAO;
- Providing technical guidance to ensure that appropriate technical quality is applied to all activities concerned;
- Conducting at least one supervision mission per year;
- Reporting to the GEF Secretariat and Evaluation Office through the annual Project Implementation Review, the Midterm Review, the Terminal Evaluation and the Project Closure Report on project progress; and
- Financial reporting to the GEF Trustee.

Coordination with other GEF-financed projects and other initiatives

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 (IFPAMTT)*- The proposed project was designed to complement this existing GEF project. While IFPAMTT focuses on protected areas, the proposed project will be outside of those in buffer zones, and corridors to decrease pressures on the protected areas. The project will therefore support the work of the IFPAMTT project and will also benefit from lessons learnt during that project.
- The proposed project will support TT'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 supports 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 Obsolete Pesticides* including Persistent Organic Pesticides (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 and 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

Describe the consistency of the project with national strategies and plans or reports and assessments under relevant conventions from below:

NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.

The Government of Trinidad and Tobago has developed a **Draft National Development Strategy (NDS) 2016-2030 (Vision 2030)**, which seeks to incorporate the principles and objectives of the Sustainable Development Goals (SDGs). The NDS aims to guide development by understanding the immediate and future needs of citizens. Significantly, the development strategy's "Theme V" places the environment at the centre of social and economic development. It has been acknowledged that economic activity is driven by environmental exploitation and the environment should, therefore, be placed at the heart of the country's development focus. In order to provide a high quality living environment for all citizens, the strategy cited that it is critical for a healthy environment to be maintained. Additionally, the strategy also notes the extreme importance of food security, most notably the need to ensure that the country is able to produce most of the food it consumes itself through sustainable agriculture [1].

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 recognises 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.^[2] The proposed project supports this policy through its interventions on improving land management.

The policy also notes that 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 overhunting is a priority. The proposed project supports this aspect by addressing drivers of biodiversity loss such as deforestation, fire, and invasive species.

The project is also in line with:

- The **National Forest Policy (2011)**: The goal is to guide the sustainable management of the forest resources of Trinidad and Tobago to provide for the social, economic, ecological, cultural and spiritual needs of its citizenry, contribute to sustainable development of the country and enhance quality of life while simultaneously protecting biological diversity and ecological processes. This project will focus on supporting principles of sustainable forest management and its resources.
- The **National Protected Areas Policy (2011)**: The goal of the policy is to establish an appropriate framework for the selection, legal designation and coherent management of a national system of protected areas. This project will seek to enhance and support these protected areas by rehabilitating these buffer, productive landscapes and through the formulation of the multi-stakeholder land use planning initiatives in the sites surrounding the protected areas.
- The **National Wildlife Policy (2013)**: The goal is the sustainable management of the wildlife resources of Trinidad and Tobago to provide for the social, economic, ecological, cultural, and spiritual needs of present and future generations and wildlife management that contributes to the sustainable development of the country and enhances human life while protecting ecological processes. This project seeks to protect these vital ecological processes by decreasing pressures on natural systems through biosensitive land use planning and agroecology.

- **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), restore wetlands and riparian areas (Target 6) and preventing extinction of wildlife through developing species recovery plans (Target 12). The first two years of the NBSAP have targets set for the forestry and agriculture sectors:
- (1) 7a. By 2020 at least 30 per cent of areas under agriculture are managed sustainably, ensuring conservation of biodiversity.
- (2) 7c. By 2020 at least 50 per cent of areas under forestry are managed sustainably, ensuring conservation of biodiversity.” The project will have synergies with these targets as it will occur in forested areas or be on the edges/boundaries of acreages under agriculture.

Target 7a’s output of the NBSAP which 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 three sites, aligns with the 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: 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 prioritise the critical importance of biodiversity protection and land restoration; and supporting early warnings for fire prevention and work at the local community level.

- **LDN Targets:** TT 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 TT establishes the baseline data for the requisite parameters for LDN 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.”^[3]

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 (2018):** This 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 precondition for people-centred sustainable agricultural and rural

development[4]. The project will support this initiative by ensuring women's participation and leadership in agricultural interventions and land use planning. Please refer to Gender Action Plan for additional information on how gender will specifically be targeted by the project.

- **National Tourism Policy (2010):** Policy to guide tourism development in the country. Objectives include the enhancement, protection and preservation of the natural and social environment. The project will support ecotourism initiatives to ensure that tourism provides livelihoods while supporting sustainability.
- **National Integrated Water Resources Management Policy (2013):** Promotes the protection of critical watershed areas and coastal areas. This project will seek to align itself by restoring riparian and wetland areas; the policy shall guide the selection of priority areas.
- **Draft National Standard on Good Agricultural Practices (GAP):** The draft standard seeks to build and assure food safety and quality for primary production of fresh fruit and vegetables. It is aimed towards the prevention or minimisation of risks of hazards to food, the environment, worker health, safety and welfare and to produce quality in fresh fruit and vegetables. The standard can serve as the vehicle to integrate and principles of agroecology into the national landscape.

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

[1] GORTT, *Vision 2030 - The National Development Strategy of Trinidad and Tobago 2016-2030*, (Port of Spain: GORTT, 2016), <https://www.planning.gov.tt/sites/default/files/Vision%202030-%20The%20National%20Development%20Strategy%20of%20Trinidad%20and%20Tobago%202016-2030.pdf>.

[2] National Environmental Policy; draft (2017). Available online at: https://www.planning.gov.tt/sites/default/files/NEP_Draft_1.pdf

[3] GORTT, *National Spatial Development Strategy for Trinidad and Tobago*, (Port of Spain: GORTT, 2018), https://www.planning.gov.tt/OurTnTOurFuture/documents/Executive_Summary_web.pdf. get d

[4] GORTT, *National Policy on Gender and Development of the Republic of Trinidad and Tobago A Green Paper*, (Port of Spain: GORTT, 2018), <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

Elaborate the "Knowledge Management Approach" for the project, including a budget, key deliverables and a timeline, and explain how it will contribute to the project's overall impact.

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 restoration zones. Collaborations will be sought with the UWI and CSOs that work in this area to allow them to engage the research of different varieties of crops. Farmer field schools will further be used to advance and reinforce technical knowledge and capacity. As much as possible, the project will involve people on the ground so that the knowledge generated is shared by those with experience and those that most require the knowledge.

Public awareness will be a cross-cutting theme to ensure that communities feel included, engaged, consulted and are active participants in the implementation of the project. Local-level actions will ultimately determine whether the initiatives are successful; sensitisation activities will be carried out to highlight the link between biodiversity and livelihoods. In order to ensure that there is a coherent approach to public awareness, FAO will carry out knowledge management activities, and support cross-cutting activities across various components.

Once land use plans are developed, these will be shared widely including with community leaders and actors to ensure that people are aware of the kind of activities that should take place in various zones. Similarly, the fire early warning plan will be taught 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 decision-making level and vice-versa.

A civil society organisation will be responsible for executing Component 1 through a Letter of Agreement (LOA). The identified CSO must have demonstrable experience of working at the local level and on stakeholder engagement and participatory methods. This expertise will be leveraged to ensure effective communication at the community level and to ensure that local experiences and knowledge are captured and fed back into project activities.

There will also be increased advertising of sustainably produced commodities. This will be done in collaboration with private sector partners (supermarkets and local markets) and NGOs that support social enterprises. Civil society has expertise that the project will rely on; there are organisations that have already worked on enhancing participatory governance and development of social enterprises. The project will liaise with these partners to prevent duplication of work and learn from their experiences. When possible, the project will use resources already invested by these institutions to optimise their investments.

The project will also incorporate key lessons learnt from other initiatives. In particular, the GEF-supported IFPAMTT project provides valuable lessons learnt on how to work with stakeholders managing vulnerable natural resources, how to ensure meaningful participation of multi-stakeholder groups, and how to enforce community-based guidelines on protection of resources.

There will be various levels of knowledge management activities:

- 1) Local level—increasing ownership, knowledge of importance of sustainable natural resources for long-term, how to prevent and manage forest fires, creating technical capacity through farmer field schools and on-site demonstrations.
- 2) Government Ministry level—increasing knowledge, capacity of ministries’ officers to manage forest fires, agroecology, and sustainable value chains.
- 3) Cultural level at broader society—holding public campaigns, increasing awareness of the value of ecosystems, and of sustainably produced products.

Table 12: Knowledge management activities

Deliverable	Timeline	Cost USD
Technical guidance documents (Farmer Field School Products)	Yearly	5,000

Public awareness campaigns on land use plans (process and outcome)	Yearly	5,000
Biodiversity data collected for EMA database	End of project	15,000
Advertising of sustainably produced products (in collaboration with NAMDEVCO/Cropper Foundation)	Yearly	10,000
Roadmap for forest fire management	End of project	5,000
Roadmap for sustainable value chain development	End of project	3,000
Workshops to share lessons learnt/benefit from other baseline projects	Yearly	15,000

9. Monitoring and Evaluation

Describe the budgeted M and E plan

The project will ensure transparency in the preparation, conduct, reporting and evaluation of its activities. This includes full disclosure of all non-confidential information and consultation with major groups and representatives of local communities. The disclosure of information shall be ensured through posting on websites and dissemination of findings through knowledge products and events. Project reports will be broadly and freely shared, and findings and lessons learnt made available.

The following plan highlights activities/expenses:

Table 13: M&E plan and budget

Monitoring and Evaluation Plan and Budget			
GEF M&E requirements	Responsible parties	Indicative costs (USD)	Time frame
Inception Workshop	Project Coordinators/M&E Consultant Project Steering Committee	674	Within 90 days of CEO endorsement of this project
Inception Report (to include M&E Plan-Gender, ESS strategies, Stakeholder Engagement)	Project Coordinators/M&E Consultant	Included in consultants cost.	Within 120 days of CEO endorsement of this project
Monitoring of Core Indicators and Project Results Framework	Project Coordinators /Gender Expert/M&E Consultant	Included in consultants costs	Ongoing
GEF Project Implementation Report (PIR)	Project Coordinator FAO	Included in consultants cost.	Annually typically between June-August
Supervisory Missions	Technical Staff	Nil	To be agreed
Site Visits	Project Coordinator/M&E Consultant/Executing entity Staff	30,000	
Monitoring of risks and management plans	Project Coordinator/M&E Consultant	Included in consultants costs.	On-going

Monitoring and Evaluation Plan and Budget			
GEF M&E requirements	Responsible parties	Indicative costs (USD)	Time frame
GEF Tracking Tool Updates	Project Coordinator	Included in consultants cost	Updates also at MTR and Evaluation
Monitoring of gender, indigenous peoples	Project Gender Expert	Included in consultants costs.	On-going
Monitoring of stakeholder engagement plan	Project Coordinator/M&E Consultant	Included in consultants costs.	On-going
Monitoring of gender action plan	Project Gender Expert/M&E Consultant	Included in consultants costs.	On-going
Project Steering Committee Meetings	Project Coordinator	32,000	Annually (Min of 2 Steering Committee and 2 Technical Meetings)
Reports of Project Steering Committee Meetings	Project Coordinator	Included in consultants costs	Annually
Independent Midterm Review (MTR) and management response	Independent evaluation consultants	30,000	Midterm

Monitoring and Evaluation Plan and Budget			
GEF M&E requirements	Responsible parties	Indicative costs (USD)	Time frame
Independent Terminal Evaluation (TE) and management response	Independent evaluation consultants	40,000	Six months after project ends
Travel Evaluation Consultants		10,000	DSA and air ticket for 2 persons x \$5000
Terminal Report	Project Coordinator	7,000	Two months prior to the end of the project
TOTAL indicative COST		188,674	
Excluding oversight/consultants cost. Other Project Costs included in Component 4 KM and in the PMC			

10. Benefits

Describe the socioeconomic benefits to be delivered by the project at the national and local levels, as appropriate. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF)?

The project is expected to result in positive social, economic and ecological changes which will yield further benefits to communities.

Social impacts

- Utilisation of lead farmers and the potential for the establishment of clusters will support social cohesion, strengthening of agricultural groups and communities

- Use of agroecologically produced foods with far less pesticides will yield a change in food habits, such as healthier diets, and possibly contribute to a decrease in the incidences of non-communicable diseases like hypertension and diabetes
- Creation of more opportunities in the targeted rural areas may decrease the rural-urban migration especially of younger persons

Economic

- Increased income: Multicropping (less dependence on monocrop), greater utilisation of natural fertilisers through composting and manure production, and development of green value chains can contribute to increased selling price for produce which is deemed to be healthy. Expanded marketing opportunities through ecotourism activities. In addition, mixed cropping systems may lead to a reduction in household expenditure on food and by extension may impact the national food import bill.
- Employment: Development of the value chains presents opportunities for employment. Mixed production ensures that farmers are employed as farmers throughout the year without having to seek employment elsewhere. There will be the creation of employment opportunities with the possibility of more persons entering the agriculture sector or expanding their involvement as farmers, processors, producers of bio fertilisers or pesticides, tour guides, hoteliers, restaurateurs, machinists, etc.

Ecological

- Reduced use of synthetic pesticides and improved agroforestry can result in presence of fauna such as birds which can be used as a tourist attraction in ecotourism (e.g., bird watching). Further birds may prey on pests resulting in more favourable harvests in some instances.
- Increased ground cover will lead to less erosion and decreased risk of flooding and associated negative impacts on communities.

Direct beneficiaries

While the project primarily seeks to support a sustainable environment, it also anticipates that persons in and around the targeted project areas will also be able to benefit. In addition, producers and others along the value chain of identified commodities can also be deemed to be beneficiaries of the project. Table 14 below provides an estimate of some of the direct beneficiaries of the project.

Table 14: Estimated numbers of direct beneficiaries

Beneficiary	Number (estimated)	
	Trinidad	Tobago
Pineapple farmers	100	
Moruga Hill Rice Association members and affiliates	125	
Coconut farmers	305	
Cocoa farmers	660	45
Santa Rosa First Peoples	30	
Chocolate/value added processors	31	5
Farmers in targeted areas	1035 ^[1]	121
Extension staff (exposure to training in order to support sustainability of project)	37	9
Forestry personnel (exposure to training in order to support sustainability of project)	16	12
Non-formalised communities (encroachment)	3000 ^[2]	
Total	5339	192

Other beneficiaries will include the wider population who may benefit from employment or opportunities to start or develop their small businesses in the ecotourism sector. Table 15 provides an indication of the total population^[3] of communities in the targeted areas.

Table 15: Estimated populations for targeted communities

Targeted sites	Surrounding communities	Total population
South and West of Nariva Swamp	Basseterre	27 391
	Biche	
	Brickfield/Navet	
	Brothers Road	
	Canque	
	Cushe/Navel	
	Fifth Company	
	Four Roads Tamana	
	George Village	
	Indian Walk	
	La Lune	
	Moruga	
	Piparo	
	Plum Mitan	
	San Pedro	

Targeted sites	Surrounding communities	Total population
Sites adjacent or contiguous with Valencia Forest Reserve	Cunaripo Guaico Melajo Valencia	20 141
South of the Northern Range Reserve	Acono Blanchisseuse Brasso Seco Caura El Dorado La Baja La Laja La Mango Village La Seiva Maracas St. Joseph	23 321

Targeted sites	Surrounding communities	Total population
Courland Watershed in Tobago	Arnos Vale Belmont Black Rock Concordia Easterfield Golden Lane Les Coteaux Mary's Hill Mason Hall Moriah Mt Irvine/Black Rock Plymouth Whim	12 294
Total		83 147

[1] Estimate based on farmer population in area and/or farmer group association

[2] Based on estimated number of encroaching/illegal settlement homes in the Valencia Forest Reserve

[3] Central Statistical Office, *2011 Population and Housing Census Community Register*, (Port of Spain: GORTT, 2011).

11. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification *

PIF

CEO Endorsement/Approval

MTR

TE

Medium/Moderate

Measures to address identified risks and impacts

Elaborate on the types and risk classifications/ratings of any identified environmental and social risks and impacts (considering the GEF ESS Minimum Standards) and any measures undertaken as well as planned management measures to address these risks during implementation.

Section B: Environmental and Social Risks from the project (further details are provided in Annex on Project Risk Classification)

Identified Risk	Risk Rating	Mitigation Measures	Indicator / Verification Means	Progress on mitigation actions
Project will be implemented on the boundaries of a Protected Area	Moderate	The project is purposefully being carried outside the Protected Areas, as much of the activities in the buffer zones have negative impacts and encroach upon the PAs, and to build on/reinforce previous GEF investments that established the PAs (IFPAMTT project). In order to ensure that activities do not have a negative impact on the PAs, the project will implement participatory processes for establishing land use plans that include strategies for protecting vulnerable natural resources. The project will also provide capacity building, techniques, tools and methodologies for decreasing the pressures in the buffer zones while protecting communities.	<ul style="list-style-type: none"> - Land use plans with specific strategies for protecting vulnerable areas and resources - Capacity building interventions that increase knowledge and management of the buffer zones to vulnerable sites - Ongoing monitoring, including monitoring by drone to ensure that activities do not infringe PA boundaries 	

Project involves access to genetic resources for their utilization and/or access to traditional knowledge associated with genetic resources that is held by indigenous local communities and/or farmers	Moderate	The project will support farmers to combat pest and invasive species, particularly in the key value chains identified, and especially in cacao. For some of the interventions, the projects will seek guidance from local communities/indigenous groups to share strategies and best practices (e.g. Moruga Hill rice), to be shared with other small farmers desiring to transition to sustainable production. The demonstration groups and sites will be voluntary so as to ensure that they are willing participants, and that there is no imposition of the project. In some cases, in partnerships with universities and testing sites, some plant species may be studied for resilience to pests—this will be done in agreement and with interest from individual farmers.	<ul style="list-style-type: none"> - Interest expressed by NGOs/CBOs or individual farmers in conducting demonstrations, capacity building exercising, sharing knowledge - Oversight by project management team - Transparency and partnership between farmers and research institutes testing resilience of crops 	
Project will provide seeds/planting materials for their cultivation	Moderate	The project will provide seeds and planting materials for rehabilitation of degraded forests, lands, riverbanks, degraded plantations and agricultural lands, watershed. However, these will be varied native species with demonstrated resilience.	<ul style="list-style-type: none"> - List of seeds planting materials reviewed by biodiversity expert (under FAO AGP oversight) 	

Project will supply or use modern plant biotechnology and their products	Moderate	The project will support green value chain development according to sustainability guidelines established by NAMDEVCO. This may require community groups or farmers to use biotechnology, facilitated by research institutes, to strengthen the resilience of certain varieties. However, the aim of any intervention will be to support sustainable production in order to replace degrading practices.	- Any testing of plant biotechnology or use of resilient varieties will be reviewed by the biodiversity expert, and the research division of MALF, as well as the Cocoa Company.	
Project will establish/manage planted forests	Moderate	The project will restore degraded forests and riverbanks with resilient and native species.	- Review with the forestry department of the sites of rehabilitation and the species to be used. Biodiversity expert will review list of species planned.	
Project located in or near an internationally recognized conservation area or some other nationally important habitat	Moderate	The project will be in buffer zones of coastlines, forest reserves, protected areas, and wetlands. The very purpose of establishing the project in these sites is to provide protection for vulnerable natural resources, and establish the community ownership and strategies on how best to manage them.	- Land use plans detailing how vulnerable sites are to be protected	
Project can change the water quality and quantity in the project area	Moderate	The hydrological restoration of Kilgwyn wetland in Tobago (34 hectares) to restore tidal exchange of waters and reduce pressure from human impact/pollution/stressors, may enhance water quality.	- Oversight from project management team, the THA to ensure that no negative impacts take place.	

Supporting Documents

Upload available ESS supporting documents.

Title	Module	Submitted
BIOREACH_Environmental and Social Risk Identification Checklist	CEO Endorsement ESS	

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Objective: To promote biodiversity conservation, restore degraded lands, and improve livelihoods of rural communities in targeted productive landscapes.							
Component 1: Biodiversity-supportive land use planning							

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<p><u>Outcome 1.1:</u> Biodiversity-sensitive land use planning and participatory land management mechanisms established in productive landscapes (South and West of Nariva Swamp, West of Valencia Forest Reserve, South of the Northern Range Reserve in Trinidad and in the Courland Watershed in Tobago)</p>	<p>Number of participatory land use management mechanisms established</p> <p>Percentage of women in land use management mechanisms</p>	<p>Land Settlement Agency has done land use plans for the Valencia area in adjacent communities.</p> <p>National Quarries are doing quarry rehabilitation works on seven acres at Valencia, through a complementary GEF project.</p> <p>Oil exploration plans with requisite approvals planned in area north of Trinity Hills.</p> <p>Plymouth Adventure Estate Land Acquisition; driven by the community for improved and sustainable management of natural resources.</p> <p>Castara community environmental practices implemented by the community, driven by tourism.</p> <p>IWEco/Sustrust/IAM Project (Valencia) –A regional project which will employ/train 21 women and two men in the rehabilitation of decommissioned</p>	<p>2</p> <p>At least 20 per cent</p>	<p>4</p> <p>At least 40 per cent</p>	<p>Finalized land use plans</p> <p>Interviews</p> <p>Workshop minutes</p>	<p>Community organizations, local communities are interested in developing participatory land use plans to manage their natural resources and activities</p>	<p>Project Coordination Unit (PCU)</p>

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<u>Output.1.1.1</u> : Land use plans identifying high value conservation areas, productive terrestrial landscapes in buffer zones, and climate change resilience measures, are developed and validated	Land use plans with clear strategies for management of vulnerable resources/sites Validation by communities of land use plans	See outcome-level baseline.	Draft land-use plans are developed	Final land use plans are finalized and endorsed	Existence of land use plans Meeting minutes documenting endorsement Interviews	Land use plans will be developed in a timely manner and involve key stakeholders and representatives from vulnerable groups	PCU

[illegible]

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<p><u>Outcome 2.1:</u> Land degradation neutrality achieved as degraded sites are restored and productive capacity of agricultural landscapes is enhanced</p>	<p>Number of hectares of land restored</p> <p>Number of hectares under improved practices</p>	<p>Carbon Zero Initiative ongoing at various locations (working primarily with schools) on importance of reforestation</p> <p>IWEco/Sustrust/IAM Project: regional project focused on rehabilitating decommissioned acreages of National Quarries</p> <p>Fondes Amandes Community Reforestation Project: mainly in the St. Ann's Valley; focuses on forest fire prevention, environmental education, reforestation.</p> <p>National Gas Company reforestation programme: selected areas, initiated along the 56-foot pipeline running from Galeota to Pt. Fortin.</p> <p>National Reforestation and Watershed Rehabilitation Programme, Forestry Division: nationwide programme funded from URP budget with supplementary staff</p>	900 hectares	2,000 hectares of degraded lands restored	<p>GIS/drone footage</p> <p>Site visits</p> <p>Interviews</p>	There are no climate hazards, natural disasters or hardships that prevent or delay rehabilitation and restoration of sites.	PCU

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<u>Output 2.1.1:</u> Diversified, integrated agroforestry production systems upscaled in 2,000 hectares of degraded lands	2,000 hectares of agroforestry on degraded lands	Degraded sites identified during PPG, where there is interest on the part of stakeholders and the biophysical capacity to benefit from agroforestry	Initial planting underway	Agroforestry underway in identified degraded sites	<ul style="list-style-type: none"> - Site visits - GIS recording 	There are no climate-related or procurement delays in materials, equipment, labour, or climate hazards that prevent successful establishment of agroforestry in targeted sites.	PCU EMA
<u>Output 2.1.2:</u> Agroecological and climate-smart best practices disseminated through farmer field schools, model farms and capacities of extension services are improved	Number of farmer field schools Number of trainings for extension services	Farmer field schools have been carried out in the past, but they were short-term with little follow up. Communities were not able to use those resources over time, and much of the trainings did not inform	Model farms identified and piloting activities	Farmer field schools	<ul style="list-style-type: none"> - Farmer field school curriculum - Training programme curriculums - Site visits 	Farmer field school and trainings are able to provide follow up and respond to the farmers' most pressing needs	PCU EMA

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<u>Output 2.1.3:</u> Degraded forests restored and an integrated wildfire management system developed	Integrated wildfire management system developed	Wildfire management is disparate and undergoing transition; many of the community-level mechanisms have been underused in combating and increasing awareness of the risk of fire.	Stakeholders have collaborated on defining key priorities combating fires. Roles and responsibilities in fire management have been clarified. Equipment has been purchased. Public awareness campaigns are underway.	Wildfire management system has been developed and adopted	Consultation with Forestry Department and local communities.	Fire management system addresses the root causes and education/awareness in collaboration with firefighting abilities.	PCU
<u>Output 2.1.4:</u> Invasive alien species management plan established for three sites	Invasive alien species management plan for three sites	No such plan exists	Key invasive alien species have been identified, best practices to manage them have been identified	Invasive alien species management plan for three sites	Invasive alien species management plan for three sites	Key stakeholders are able to collaborate on this issue: government ministries, local know-how, research institutes and labs effectively work together to identify best practices.	PCU EMA MALF

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<p><u>Outcome 2.2:</u> Restoration of habitats and ecological corridors between protected areas</p>	Number of hectares of restored	<p>National Reforestation and Watershed Rehabilitation Programme in Trinidad and Tobago</p> <p>Protectors of the Environment based in the Lopinot valley carried out replanting and education exercises- one off event but may be repeated</p> <p>GEF-IWEco- project with aim to work with National Quarries in Turure to rehabilitate quarries. Sites not yet finalised.</p> <p>Nature Seekers reforestation project in Matura Protected Area.</p> <p>The Trinidad and Tobago Field Naturalists' Club (TTFNC) is planning to launch a herpetofauna conservation and education study and campaign across protected areas in Trinidad and Tobago</p> <p>Adopt a River Programme-a community-based approach to watershed management-has been</p>	50 hectares	100 hectares with restored habitats	<p>GIS/drone footage</p> <p>M&E reports</p>	<p>There are no climate disasters</p> <p>There are no procurement challenges</p> <p>Other infrastructure, development priorities do not impede the restoration of biological corridors</p>	<p>PCU</p> <p>EMA</p>

[illegible]

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<p><u>Outcome 3.1:</u> Emerging value chains produced sustainably to build resilience to climate change while conserving biodiversity, and supporting livelihoods</p>	<p>Percentage of producers, disaggregated by sex, converting to sustainable practices</p> <p>Number of farmer field schools providing capacity training on sustainable development (disaggregated by sex)</p>	<p>Cropper Foundation with IDB, is developing a voluntary certification programme for pesticide usage and microbial content, even use of child labour on the farms. Programme will be monitored by NAMDEVCO and testing will be conducted by CARIRI.</p> <p>Currently, Talparo Estate sustainably produces garlic, pepper, cinnamon and encourages the growth of wild tobacco and wild senna. Wild tobacco seeds are preferred food for birds in that area.</p> <p>Farmers in Moruga involved in production of Hill Rice, benne (Sesame Seed), and corn (Warao). The waste from rice promotes the production of additional offspring from agouti. Instead of one or two, they may be able to produce up to four. The farmers are working with The UWI, using CO2 to alter the colour of the meat to a pinker hue to</p>	<p>At least 30 per cent</p> <p>At least 4</p>	<p>At least 60 per cent</p> <p>At least 8</p>	<p>Interviews</p> <p>Site Visits</p>	<p>Farmers and local producers will persevere with emerging value chains, even if livelihood increases come in the later phases of project implementation—i.e. there will be sufficient incentives built in to the process o farmers are committed and see various types of long-term benefit</p>	<p>PCU</p> <p>NAMDEVCO</p>

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<u>Output 3.1.1:</u> Agroecological practices are implemented along five priority green value chains (cocoa, coconut, avocado, pineapple, roots and tubers) and specialized commodities (e.g. Moruga Hill Rice)	Types of agroecological practices implemented along five priority, sustainable, value chains	See outcome-level baseline	Trainings, farmer field schools and capacity building initiatives on agroecological practices have been conducted.	Farmers and producers along five priority, green value chains are employing agroecological practices in production.	Site visits Interviews	Farmers/producers will be interested in employing agroecological means of production. Consumers will be interested in purchasing products produced through agroecological means.	PCU NAMDEVCO
<u>Output 3.1.2:</u> 30 lead farmers are trained on sustainable land management and agroecological principles using a standardized curriculum for lead farmer	Number of farmers trained on sustainable land management	See outcome-level baseline	15 lead farmers are trained on sustainable land management	30 farmers are trained on sustainable land management	Training lists and curricula Site visits Interviews	Lead farmers will transmit knowledge to other community members through assistance of the project	PCU EMA

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output 3.1.3: 20 farmer field schools on agroecology including integrated pest management, soil fertility, production focusing on diversification are conducted using a standardized curriculum for Lead Farmer Training Programme, developed under this project	Number of farmer field schools on agroecology including integrated pest management, soil fertility, production focusing on diversification are conducted using a standardized curriculum for Lead Farmer Training Programme	See outcome-level baseline	10 farmer field schools on agroecology including integrated pest management, soil fertility, production focusing on diversification are conducted using a standardized curriculum for Lead Farmer Training Programme	20 farmer field schools on agroecology including integrated pest management, soil fertility, production focusing on diversification are conducted using a standardized curriculum for Lead Farmer Training Programme	Training lists and curricula Site visits Interviews	Lead farmers will transmit knowledge to other community members through assistance of the project	PCU EMA
Outcome 3.2: Market access for agroecologically produced agricultural products and services enhanced through the promotion of a circular economy	Number of small producers, (disaggregated by sex) selling to new and larger markets Percentage of producers whose income has increased through sustainable production	Existing markets: Las Hermanas Estate, Santa Cruz; Wa Samaki, Freeport; Toco Foundation	100; 50 per cent of which are women At least 10%	At least 200; 50 per cent of which are women At least 20%; half of which are women	Interviews Tracking distribution chain of beneficiary producer groups	There is capacity and demand in the market to accommodate more sustainable production	PCU NAMDEVCO

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<u>Output 3.2.1:</u> Marketing strategies and business plans are developed to increase biodiversity-friendly products in markets	Percentage of producers developing business plans/strategies to increase biodiversity products in the markets	See outcome-level baseline	At least 10% in targeted sites	At least 20% in targeted sites	Business plans	Business plans and marketing strategies will support enterprises to be more viable.	PCU NAMDEVCO
<u>Output 3.2.2:</u> A minimum of three public-private sector partnerships are established to increase consumption of agroecologically produced products	Number of public-private sector partnerships are established to increase consumption of agroecologically produced products	4 public-private sector partnerships exist for the marketing of agroecologically produced products	At least 1 public-private sector partnership is established to increase consumption of agroecologically produced products	At least 3 public-private sector partnerships are established to increase consumption of agroecologically produced products	Site visits Interviews Contracts/Proof of purchase	Public private partnerships will enhance consumption, marketing and distribution of sustainably produced products.	PCU NAMDEVCO
<u>Output 3.2.3.:</u> Upscaling of ecotourism/agritourism operators in four ecologically vulnerable areas	Increase of ecotourism/agrotourism operators	To be confirmed at inception; 3-4 agrotourism operators in TT	Eco-tourism and agrotourism operators with potential and desire for growth are identified	Increased number of established ecotourism and agrotourism operators in TT	Site visits Tour operators' websites and establishments	Tourism demand for these types of activities will continue	PCU NAMDEVCO
<u>Outcome 3.3:</u> Green value chains policy informs national level agricultural development	Number of roadmaps produced outlining green value chains policy	0	0	1	Meeting minutes Roadmap	Roadmap will serve as the baseline document supporting future value chains policies	PCU NAMDEVCO

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<u>Output 3.3.1:</u> Agricultural policy informs national work of state agencies to actively mainstream agroecology in Trinidad and Tobago thereby increasing the supply of locally produced foods	Number of agricultural policies including agroecological considerations	To be finalized at inception	Agricultural policy recommendations developed	At least 1 agricultural policy includes agroecological considerations	Agricultural policies Interviews	Agricultural policies will be an effective tool through which to mainstream successful agroecological practices	PCU NAMDEVCO
Component 4: Knowledge management and monitoring							
<u>Outcome 4.1:</u> Improved knowledge management in biodiversity and land degradation issues	Number of knowledge materials produced for appropriate audiences (governments, CBOs, local communities)	0	At least 4	At least 8	Knowledge materials Communication strategy Interviews	Institutions and communities have the capacity of incorporating knowledge products into programmes of work, and activities.	PCU
	Number of public awareness campaigns on improved land use						
	Number of curriculums produced for Lead Farmer Training Programme	0	At least 2	At least 4		Improved knowledge and capacity building will lead to positive impacts on issues related to biodiversity and land degradation.	
		0	1	1			

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<u>Output 4.1.1.:</u> Knowledge products produced and disseminated by partner institutions	Number of knowledge products produced and disseminated by partner institutions	None for this project	At least 5	At least 8	Knowledge products (including but not limited to public awareness materials, guidance documents, best practices, websites, etc...)	Institutions have the capacity of incorporating knowledge products into programmes of work	PCU
<u>Output 4.1.2.:</u> A communication strategy is developed to ensure project stakeholders are duly informed on progress and benefit from knowledge gathered	Number of communication strategies	None for this project	1	1	Existence of Communications Strategy	The strategy includes targeted approach to different audiences, and success is monitored periodically	PCU
<u>Outcome 4.2:</u> Ongoing monitoring feeds into adaptive project management	Number of instances where monitoring promotes adaptive management (e.g., adjustment in budget, project priorities, changes in messaging to resonate with audiences)	0	2	4	Mid-Term Review Terminal Evaluation PIR	Rigorous monitoring will allow adaptive management of project	PCU
<u>Output 4.2.1.:</u> Project results and gender balance monitored annually	Number of monitoring exercises	PIR/PPRs, mid-term review and terminal evaluation conducted for IFPAMTT project; 0 for this phase	At least three monitoring exercises conducted	At least five monitoring exercises conducted, with clear findings	Monitoring reports, including but not limited to PPR, PIR, midterm review, terminal evaluation	Rigorous monitoring will allow adaptive management of project	PCU

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

Council comments

Council comments	FAO response at CEO Endorsement submission
------------------	--

Council comments	FAO response at CEO Endorsement submission
<p>Comments from Canada:</p> <p>In general, the project and approach looks fairly well thought out. It also appears to have a relatively strong emphasis on gender.</p> <ul style="list-style-type: none"> • The STAP Review of the project states: 'However, one concern is the repeated statement that after "... land use plans are developed they should be shared widely with community leaders and actors to ensure that people are aware of what kind of activities should take place in which zones." (p. 44). • Waiting to engage community leaders after the plans are developed rather than include them in the process is a recipe for disaster.' • We echo this view and emphasize the importance of project co-development with local communities, Indigenous peoples and women and youth. • The proposal has almost no references to engaging Indigenous peoples in this project. They should be included as key partners in the project. 	<p>The project preparation team appreciates the input from Canada, which has contributed to further elaboration of these points in the final project document. On the first point, the document now more clearly demonstrates that the land use planning process will in fact be participatory and multi-stakeholder driven. It is community members, governments and NGOs that will collaboratively identify their land uses, the threats they face, and identify ways in which to zone their activities. This will be a bottom-up approach, and will include the most marginalised, including encroaching communities which are usually out of such activities. The land use planning exercise will be carried out by a CSO, CANARI, which is known to work with local communities in empowering ways. In fact, one could argue that the thrust of activities in Outcome 1.1 are less about just the final land use plan document, and more about the process of including parties who are having great impact of vulnerable ecosystems but have been outside of land use planning exercises. Details of this can be found on pages 23-26.</p> <p>The Gender Action Plan highlights the inclusion of women and youth in the project. In particular, youth will be included in agricultural activities due to the aging population and lack of other forms of employment.</p> <p>Indigenous groups are included in the stakeholder participation table (pages 52-53). The table highlights that indigenous groups will be asked to participate in the development of the green value chains, will be recipients of training related to agroecological practices, and will receive support for the development of innovative practices/outputs emanating from agroecological practices, and host a farmer field school.</p> <p>It is also important to understand the unique composition and context of Trinidad and Tobago. East Indian and people of African descent make up a majority of the population; 37.6 per cent and 36.3 per cent respectively (2011 Census). The remainder of the population is mostly of mixed ethnicity drawn from European, Chinese and Syrian-Lebanese minorities. Tobago's population is almost entirely of African origin.</p> <p>Euro-Trinidadians, especially descendants of the colonial class, are often referred to as French Creoles although they may have descended from British, Spanish, Portuguese or German settlers. There are also mixed-race Cocoa Panyols whose ancestors were migrant labourers of Spanish, African and Indigenous origin who came from Venezuela between the nineteenth and twentieth century to work on cocoa estates.</p> <p>In this context, there is a very small population of people who can trace their ancestry to the Carib, and they are organised in the Santa Rosa First Peoples Community. The community was the first to get official recognition as indigenous by the state in May 1990. The Santa Rosa First Peoples Community maintains certain distinctive traditions in horticulture, cassava processing, herbal knowledge, hunting practices, building houses and weaving traditions, as well as holding the annual Santa Rosa Festival in honour of their patron saint. The project will provide joint demonstrations, facilitate knowledge exchange opportunities, seek their participation on land use committees (even if they are not located in the zone of intervention) to have representative indigenous voices and experience in consultation processes.</p> <p>Due to COVID-19 restrictions, a fully-fledged FPIC process could not be conducted during the project formulation phase. Nevertheless, consent will be sought through the implementation of the FPIC process during the first semester of year 1 and in any case before enacting any activity that could have an impact on indigenous peoples.</p>

Council comments	FAO response at CEO Endorsement submission
<p>Comments from Germany:</p> <p>Germany agrees with the proposal, which will promote biodiversity conservation, restore degraded lands and improve livelihoods of rural communities. At the same time, Germany has the following comment that it suggests be addressed:</p> <p>Suggestions for improvements to be made during the drafting of the final project proposal:</p> <p>Germany would like to highlight the importance of relevant indicators for monitoring and evaluation (M&E). In this context, Germany therefore suggests that with further project development, indicators for Component 3 should be included in order to ensure efficient and sustainable achievement of this component, bearing in mind that a change in land management practices by farmers must at least maintain, if not improve, their livelihoods and incomes.</p>	<p>The proposal now incorporates relevant indicators for M&E under Component 4 on knowledge management and monitoring. These indicators cover:</p> <ul style="list-style-type: none"> • the generation of knowledge materials for local communities, governments and community-based organisations. • public awareness campaigns conducted • budget revisions, adjustments on project priorities carried through <p>The project includes SMART indicators, under Outcome 3.2, and has included ways of measuring whether farmers' access to the market has increased, thereby assessing whether their products can reach broader consumers.</p>

Council comments	FAO response at CEO Endorsement submission
<p>Comments from the United States:</p> <p>The below comments from the United States were provided prior to the Council meeting. An initial agency response was provided and can be found in the list of documents specific to the project in the GEF Portal.</p> <p>Recognising that the intent of these projects is to mitigate or reverse deforestation, the United States needs to officially confirm for internal purposes that the following projects will not involve any logging of primary forests. Can the GEF please affirm that no logging of primary forests will occur during the implementation of projects: 10125, 10184, 10188, 10192, 10198, 10206, 10208, 10220.</p>	<p>Project activities outlined in the project proposal do not involve any logging of primary forests.</p>

GEFSEC comments

GEFSEC comments		FAO response at CEO Endorsement submission	
Question	Comment at PIF/Work Program inclusion		

GEFSEC comments		FAO response at CEO Endorsement submission
<p>Indicative project/program description summary</p> <p>Are the components in Table B and as described in the PIF sound, appropriate, and sufficiently clear to achieve the project/program objectives and the core indicators?</p>	<p>Continue to develop the thinking on the structures and systems necessary to help regularize land rights and tenure systems while avoiding further encroachment. We acknowledge that this is a challenging problem and likely context dependent. At the same time, this is an innovative aspect of the project and we hope that the knowledge and experience from this project (and likely other FAO work) can be shared outside TT as well.</p>	<p>First, during PPG phase a legal consultant was retained to review all laws and regulations to ensure that any suggested activities in the project, or land use plans that could result from the project, or consultations with encroaching communities and those that illegally occupy land, would not contravene any laws. Upon successful review the activities under Component 1 were further developed. The Legal Report is uploaded separately.</p> <p>The very purpose of activities under this project is to prevent further encroachment and the illegal occupation of land. The project will not comment on who has land tenure, as that is a different legal process, but will take note of the boundaries of existing communities and highlight how these are infringing upon vulnerable forest reserves and seek to create a participatory-based approach to prevent further encroachment. The idea is to engage communities so that they may themselves see the value in protecting their resources, based on the types of training that are to be carried out in their areas. The project will also conduct sustainable livelihood activities as a means to incentivize communities to safeguard their natural resources. In particular, clusters of farmers will be supported in agroforestry production, value addition of their sustainable production, facilitating partnerships with private sector partners to promote a circular economy. The project will support agrotourism and ecotourism opportunities.</p> <p>Moreover, as was recently uncovered in the Terminal Evaluation of the GEF-funded IFPAM project, multi-stakeholder mechanisms in the rural areas have been fairly limited, and were greatly appreciated under the IFPAM project as one of the key successes. This project will learn from this lesson, ensure that the multi-stakeholder mechanisms under this project are truly representative and diverse, represent differing local-level needs, and are not onerous in the work required, and provide value addition to local communities' quality of life. There is baseline-level experience from the IFPAM project on successful multi-stakeholder mechanisms—the key here will be to downscale further, ensure that participation is not only from the larger civil society groups, but also from vulnerable and marginalized populations, and that sustainable livelihood interests form the considerations for land use planning.</p> <p>The proposal points out that Outcome 1.1 will establish biodiversity-sensitive land use planning and participatory land management mechanisms, and has highlighted specific activities such as:</p> <p>Under Output 1.1.1:</p> <ul style="list-style-type: none"> • Performing community mapping exercises • The identification of community level incentives for producing and implementing

GEFSEC comments		FAO response at CEO Endorsement submission
	Develop an indicator to measure improvements in small farmers' income, earnings, and/or wellbeing.	<p>An indicator measuring the increase of producers' income through sustainable production has been included for Outcome 3.2. It is expected that at the end of project intervention, producers' income will have grown by 20%:</p> <p>Outcome 3.2 Market access for agroecologically produced agricultural products and services enhanced through the promotion of a circular economy.</p> <p>Indicators:</p> <p><i>Number of small producers, (disaggregated by sex) selling to new and larger markets</i></p> <p><i>Number of producers whose income has increased through sustainable production</i></p>
	Draw on lessons from the Pacific islands in promoting local crops and purchasing of domestically grown produce.	The project has – under Output 3.3.1: <i>Agricultural policy informs national work of state agencies to actively mainstream agroecology in Trinidad and Tobago thereby increasing the supply of locally produced foods</i> - considered that agricultural policies are a strong tool to promote the supply of local crops.

GEFSEC comments		FAO response at CEO Endorsement submission
	<p>Carefully assess where interventions are needed to address the green supply chain challenges (farmer organizations, buyers, government agencies, etc.)</p>	<p>The project will address the five keys aspects of the supply chain: 1/ Input supplier, 2/ Producer, 3/ Processor, 4/ Retailer and 5/ Consumer. Outcome 3.1 will intervene on the first three aspects of the supply chain, while Outcome 3.2 will concentrate on the latter two.</p> <p>There are several baseline issues at play that have been barriers to sustainable green value chain development, which the project will address. These includes:</p> <ul style="list-style-type: none"> - Lack of market linkages - Lack of labour and agricultural inputs - Lack of know-how on how to maintain sustainability standards established by NAMDEVCO - Lack of knowledge on resilient species that can weather climate change impacts - Lack of knowledge on farm-wide processes that can support on another for sustainable production - Low levels of production; atomized individual farmers with small production levels <p>Under Outcome 3.1, agroecological practices will be implemented along five different supply chains, farmers will be trained on SLM and agroecological principles, and Farmer Field Schools including pest management, diversified production and soil fertility will be developed.</p> <p>Under Outcome 3.2, market strategies and business plans will be developed by involving producers to access resources. Moreover, public-private sector partnerships will be established, The project will strengthen procurement mechanisms of sustainably produced products by schools (canteens), hospitals, public agencies, partner restaurants, hotels, and supermarkets.</p>

GEFSEC comments		FAO response at CEO Endorsement submission
<p>Coordination</p> <p>Is the institutional arrangement for project/program coordination including management, monitoring and evaluation outlined?</p> <p>Is there a description of possible coordination with relevant GEF-financed projects/programs and other bilateral/multilateral initiatives in the project/program area?</p>	<p>Yes. At CEO Endorsement, the project could include collaboration with CAF on their high-value cocoa initiative.</p>	<p>The CAF project referenced is the “Strengthening the Fine Cocoa Value Chain for Sustainable Production” (GEFID 10339)—this project was rejected in September 2019.</p> <p>The project has however established collaborations with other projects, in particular strong linkages have been established with the IADB-funded “Making Agriculture Profitable and Sustainable (MAPS)” project. This initiative has invested substantially in the packaging and distribution of sustainable value chains, and the Bioreach project will use many of the channels fostered by the IADB project. There are also collaborations underway already at PPG stage with research institutes that are testing more resilient varieties of cocoa. The oldest Cocoa Research Centre is in Trinidad and that body of knowledge and science will be leveraged throughout the project.</p>

STAP comments

Part I: Project Information	What STAP looks for	STAP Response (at PIF inclusion in WP stage)	FAO Response at CEO Endorsement submission
B. Indicative Project Description Summary			

Outcomes	<p>A description of the expected short-term and medium-term effects of an intervention.</p>	<p>Numerous outputs under each Component can be considered the short-term building blocks necessary to achieve the main objective which is landscape restoration and green value chains. The first Component - land use planning - is a good first step but perhaps not an outcome as much as an essential first step in the process.</p>	<p>The results framework and the theory of change further clarify the different levels of attainment planned for this project. For instance, Outcome 1.1: “Biodiversity-sensitive land use planning and participatory land management mechanisms established in productive landscapes”, require a myriad of outputs and activities to achieve it. The most significant step to achieve this outcome, are the processes necessary to foster the kind of participatory mechanisms that will include relevant stakeholders/beneficiaries, allow communities to plan their own activities and land use, foster engagement and collaboration, understand use of and necessity of ecosystem services, identify the necessary livelihood activities and how these interact with land use, and these will ultimately inform land use planning. But for successful land use planning to happen, outputs such as multi-stakeholder platforms and land use plans need to be developed through collaborative means.</p>
----------	---	---	---

Outputs	<p>A description of the products and services which are expected to result from the project. Is the sum of the outputs likely to contribute to the outcomes?</p>	<p>There are many outputs associated with each Component (17 in total!) that encompass a wide variety of activities (e.g. wildfires, plans, BD data, partnerships, strategies, IAS, farmer field schools, etc.) While all of these outputs are interesting and useful and add value to the larger effort it will be critical that these activities are ordered and managed carefully so as not to overwhelm the project objective through a lack of clear focus.</p>	<p>This point is very well appreciated and it is essential that the project not be bogged down by a series of plans and outputs that do not serve a broader outcome. One of the ways the project will challenge this, is by promoting an integrated approach. For instance, the land use planning process, is not merely about producing plans, but also of strengthening civic culture, community-building, ensuring the participation of the disenfranchised to promote some sense of ownership and management of shared natural resources. The various outputs will not be seen as discrete items to check off a list, but will be integrated into various forms of trainings, consultations and public awareness. Fire management, for instance, will also be discussed in the scope of land use planning, as will be resilient agroforestry or pest management. Instead, of one-offs, the project will approach these components as complementary vehicles for broader sustainable development.</p> <p>The project has also learned from the ongoing Terminal Evaluation of the IFPAM project, where there was the concern that the project produced a lot of baseline-level reports. This project does not intend to do that, and is being responsive to next level planning needs expressed by communities and government. On the livelihood's aspect, the project will be focused on specific activities that will facilitate the production and consumption of sustainable goods. Similarly, with fire management, there are specific activities to be undertaken for fighting fire, for regeneration of degraded lands, for public awareness and management.</p>
---------	--	--	--

1. Project description. Briefly describe:			
1) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description)	Are the barriers and threats well described, and substantiated by data and references?	The barriers are listed as 1) agricultural; 2) encroachment; and lack of LU guidance, planning and enforcement. However, it is not clear what these are barriers to. There is nothing between the threats and barriers section to explain what the barriers are standing in the way of and therefore why they are highlighted as opposed to others. Further, at least some of these barriers are not really barriers to change so much as drivers of environmental degradation (e.g. "encroachment").	This section has been adjusted slightly from the PIF. While it is true that encroachment, for example, is a driver for environmental degradation, there has been a negative feedback loop, which has cemented the encroachment practices so that they have become barriers to sustainable development and resilient land use. It is one that is observed both at the local and government levels. Planning tools have historically simply ignored encroaching communities, which does not address the challenge. This project seeks to address this challenge by making these communities part of the land use planning process, so that they have a stake in the management of natural resources and the ability/capacity to engage with other stakeholders that have historically ignored them.
2) the baseline scenario or any associated baseline projects	Is the baseline sufficiently robust to support the incremental (additional cost) reasoning for the project?	Unclear	Please see the Coordination section of the project document. The baseline is robust and there is great interest on the part of co-financiers of engaging with the project.
6) global environmental benefits (GEF trust fund) and/or adaptation benefits (LDCF/SCCF)	Is the scale of projected benefits both plausible and compelling in relation to the proposed investment?	Yes - though many outputs may need to be scaled back or prioritized	Please see response to question on Outputs.
7) innovative, sustainability and potential for scaling-up	Is the project innovative, for example, in its design, method of financing, technology, business model, policy, monitoring and evaluation, or learning?	Not really apart from the acknowledgement and engagement of squatters who are normally treated as external to the project.	The project is innovative in the context of Trinidad and Tobago, where the culture of participatory processes is limited, where farmers are fairly isolated and atomized and where much of the economy is focused on energy revenues and energy-related activities.

1b. Project Map and Coordinates. Please provide geo-referenced information and map where the project interventions will take place.		Map is provided but not clear and no geo-referencing. More information is needed on proposed project sites.	Addressed. Higher resolution maps have been provided for CEO Endorsement request document. Coordinates are now clearly visible.
2. Stakeholders. Select the stakeholders that have participated in consultations during the project identification phase: Indigenous people and local communities; Civil society organizations; Private sector entities. 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.	Have all the key relevant stakeholders been identified to cover the complexity of the problem, and project implementation barriers?	Yes. However, one concern is the repeated statement that after "...land use plans are developed they should be shared widely with community leaders and actors to ensure that people are aware of what kind of activities should take place in which zones." (p. 44). Waiting to engage community leaders after the plans are developed rather than include them in the process is a recipe for disaster.	Addressed- This point has been clarified in the project document. The land use plans will be developed through a participatory multi-stakeholder mechanism. Community leaders, beneficiaries and stakeholders will be the ones generating the land use plans.
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	Are the identified risks valid and comprehensive? Are the risks specifically for things outside the project's control?	Most of the risks listed are internal to the project with the exception of political changes which the project will mitigate by working at the local level. However, the main executing partner is the Environmental Management Authority. It will be important to get buy in from communities and the private sector.	Addressed- an additional risk: "Lack of community buy-in for protecting biodiversity through agroecological practices" has been added and has been considered through the formulation of this project.

	Are there social and environmental risks which could affect the project?	It is unclear what the relationship is between the 'squatters' and others. Seems like there may be potential for conflict which is not addressed in this project.	The risks have been augmented at the CEO Endorsement phase. The sites that have been selected to be worked on are those that exhibit the most promise for these types of collaborations and are on the buffers of a previous GEF project. A legal analyst has reviewed the project to ensure that there is no infringement of rights and laws. Conflict is not foreseen as the encroaching communities that will be collaborated with, are long-standing established communities. If anything, there is an interest nationally to create mechanisms for collaborations to ensure that future/further encroachment into forest reserves do not occur. This is seen as being of interest to both government and to the people that have already settled in buffer zones. Further, the process is community-led—there are no forced interventions, and communities will be invited to manage this participatory process themselves with support from PCU.
	Has the sensitivity to climate change, and its impacts, been assessed?	No	Addressed. A climate risk screening has been provided (Annex 16 of the Agency Project Document). This screening highlights extreme precipitation, lack of precipitation, storms, winds, sea-level rise, landslides and wildfires as risks due to climate change.

6. Coordination. Outline the coordination with other relevant GEF-financed and other related initiatives	Is there an adequate mechanism to feed the lessons learned from earlier projects into this project, and to share lessons learned from it into future projects?	none mentioned	Addressed- Please see the coordination section. The project preparation phase liaised with other project teams to identify which activities would be of greatest value, which should be replicated or upscaled and which should be avoided. The GEF-funded IFPAM project and the IADB-funded MAPS project have been key in identifying the areas and the activities with promise.
--	--	----------------	---

ANNEX C: Status of Utilization of Project Preparation Grant (PPG). (Provide detailed funding amount of the PPG activities financing status in the table below:

PPG Grant Approved at PIF: USD 150,000			
<i>Project Preparation Activities Implemented</i>	<i>GETF/LDCF/SCCF Amount (\$)</i>		
	<i>Budgeted Amount</i>	<i>Amount Spent To June 2020)</i>	<i>Amount Committed</i>
<i>Salaries Professional</i>	7,143	7,224	0
<i>Consultants</i>	74,000	69,235	5,460
<i>Contracts</i>	40,457	33,551	0
<i>Locally Contracted Labour</i>	0	1,781	0
<i>Travel</i>	15,000	11,045	0
<i>Training</i>	11,000	18,443	0
<i>Expendable Procurement</i>	2,400	1,250	0
Total	150,000	142, 529	5,460

ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used)

Provide a calendar of expected reflows to the GEF/LDCF/SCCF/CBIT Trust Funds or to your Agency (and/or revolving fund that will be set up)

n/a

ANNEX E: Project Map(s) and Coordinates

Please attach the geographical location of the project area, if possible.

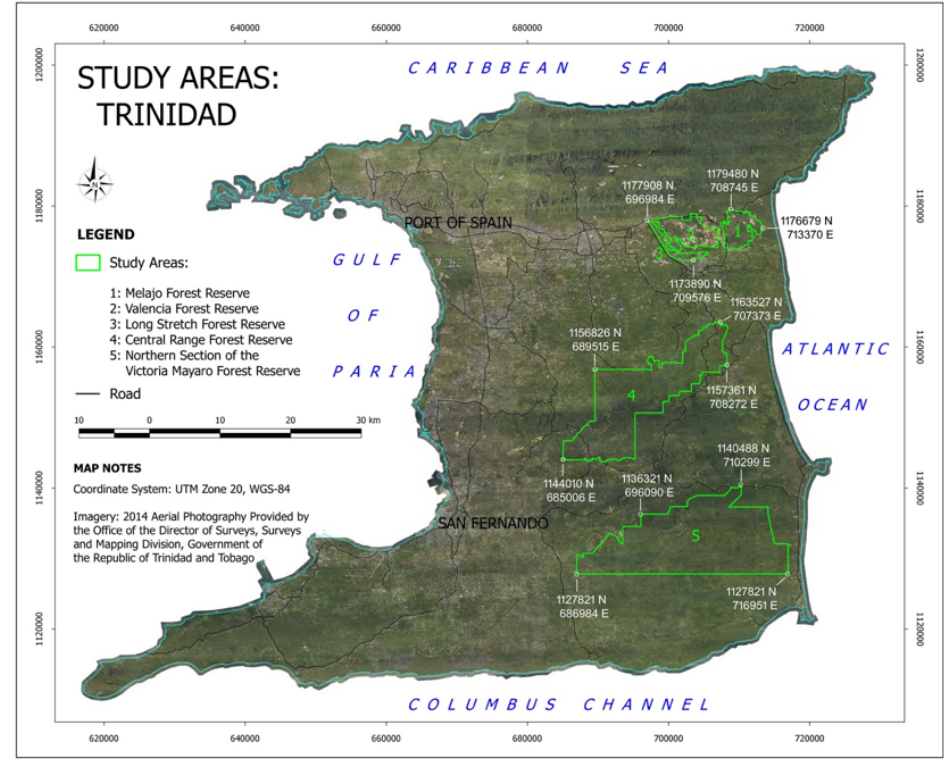


Figure 6: Map of Trinidad with proposed sites

In Trinidad much of the population is concentrated in urban areas in northwest Trinidad (from Diego Martin to Arima), Chaguanas and its satellite communities, and in San Fernando. As such, development has concentrated in the western half of the island while the eastern half retains much of the forest reserves, agrarian areas and other natural resource extractive uses. Unfortunately, many issues of development and poor land use practices have placed added pressures on these reserves and corridors which connect them to the productive landscapes. As a result, much of the focus of activity of this project is concentrated in the eastern half of the island, where there is still a high degree of biodiversity but is under increasing pressures of changing land use and poor land management practices. In Tobago, most of the population is concentrated in the South-West sections of the island as the Northeast is covered by the Main Ridge Forest Reserve. Therefore, areas selected are those that surround and connect to the protected areas but are the focus of human activity.

Proposed sites cited for the biodiversity-supportive land use planning are as follows:

With reference to Figure 6 above, sites 1: Melajo Forest Reserve, 2: Valencia Forest Reserve and 3: Long Stretch Forest Reserve are all located in the same geographic area of Valencia and are contiguous but separated by roads; 4 represents the Central Forest Reserve while 5 represents a segment of the Victoria-Mayaro Forest Reserve. These are the main sites for project implementation.

The primary rationale for site selection is that these contain significant levels of biodiversity and variable levels of natural vegetative cover. Additionally, these areas also provide resources for a multitude of human uses, many of which are deleterious to the biodiversity and land resources. The mixed uses of these vulnerable areas offer optimal opportunities for the project which could see improved community management, while ensuring rehabilitation and restoration.

1. 2167.28 hectares of land was proclaimed as the Melajo Forest Reserve in 1944. It is bounded to the east by the Toco Main Road; to the north by the Toco Main Road and the Rio Grandes Trace; to the west by the Rio Grande Trace, privately owned lands and the Rio Grande River; to the South by privately owned and other parcels of state lands. The reserve is drained primarily by the Melajo river which flows from north west to South East and flows into the Oropouche river that empties into the east coast along the Manzanilla coastline; these rivers historically have had populations of the West Indian manatee (*Trichechus manatus*[\[1\]](#)), but the present status is unknown. The smaller Arena

River also flows west to east along the South boundary into the Oropouche river. The coastline is located approximately 2.1 kilometres from the south eastern most extent of the reserve. Two main soil types are found within the reserve. The most dominant along the south half of the reserve is the 'Long Stretch series' which is described as a silty clay that is frequently waterlogged in the rainy season and desiccated in the dry; it is further described as being extremely acidic and generally low in available nutrients[2]. The next dominant soil type found within the northern half of the reserve is the 'Piarco series' which is a low terrace soil that is also prone to waterlogging in the wet season and desiccation in the dry.

The vegetation of the area was first described in detail by J.S. Beard (1946) in "The Natural Vegetation of Trinidad". The area was known for its associations of evergreen seasonal forest where *Mora excelsa* was the dominant single species[3]. Mora is generally found in conditions of poorly drained or swampy soils. The mora dominant forest shows a structure normally typical of rain forest with its continuous canopy layer (36-42 metres), a feature that is markedly different from the seasonal forests. Mora itself commonly comprises from 85-95 per cent of the trees in the canopy layer. Above the canopy layer there are not generally any emergent, though single mora trees may emerge. Below the canopy layer two other discontinuous strata, a middle (12-28 metres) and lower story (3-10 metres) can be distinguished. Mora forests are described as being remarkable for the number of large trees they contain, with many having girths (dbh) of 2-3 metres and above. As a result, mora forests have been heavily exploited for timber and much of the areas are devoid or of much lower densities.

The reserve has been encroached upon by humans; there now exists significant agricultural areas to the south, central and east along with settlements in the southern areas and extensive quarrying in the south and north east. In 1974 approximately 56 5-acre (2.02 hectares) parcels were surveyed and subdivided and subsequently leased to farmers for agricultural purposes. Interestingly, the soil type where the agricultural lands were leased is the 'Long Stretch series' that was previously described as extremely acidic and generally low in available nutrients. The report by R.K. Cunningham et al in 1963 further went on to state that when the native vegetation is cleared and planted with crops, the soil is only able to sustain one or two good harvests before organic material is used up and the results are an unproductive soil which are often abandoned. Within and directly adjacent to the Melajo Forest Reserve are three spontaneous or unauthorised settlements (encroaching communities). They are the 1) Melajo village, 2) Sahodeen Trace village, and 3) Vega de Oropouche village. Heavy mining of aggregates (sand and gravels) also occur within the reserve in the southern and north eastern areas. The total hectareage of this activity calculated from 2014 satellite imagery is approximately 221.7 hectares, which is just under 10 per cent of the total land area of the reserve. The main conflicts therefore are the loss of the native primary forest community (mora forests), encroachment by agriculture, encroaching communities and quarrying.

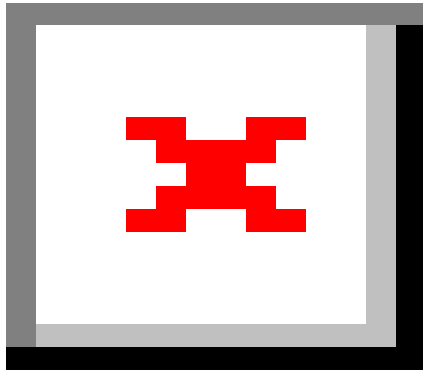


Figure 7: Map of the Central Range FOREST Reserve

2. The Central Range Forest Reserve occupies a total land space of 16,819.88 hectares. The range extends diagonally across a large part of the centre of the island; it includes lower lying eastern areas and slopes. The highest peaks are Mount Tamana (307 metres), Mount Harris and Brigand Hill. There are numerous rivers that flow from the out from the range. These include, the Cunapo, L' Ebranch Cuche, Nariva, Colenso and Navet rivers. Of significance is the Navet dam located on the north western area of the reserve. This dam is one of the major reservoirs supplying potable water to many central and southern communities. The entire reservoir area covers 324 hectares of land with a capacity of 1,900,000 cubic metres (4.2 billion gallons)[4]. Much of the reserve appears to be under native forest cover; some encroachment and illegal occupation of land exists along the periphery of the reserve boundaries. These activities include agriculture and small settlement types that are more apparent in the south western regions of the range. A significant feature surrounding the reserve is the high density of cocoa plantations which produce fine/flavour cocoa of Trinidad and Tobago. Areas such as Gran Couva, Talparo, Tamana,

Coalmine, and Tabaquite, have as much as 1100 hectares of land under cultivation with cocoa[5]. Oil and gas exploration and production also occur within the Central Range in the south western segment. The Forestry Division also manages some blocks for timber production which are mainly teak and pine in some instances. A map showing these blocks are presented below as Figure 8. Hunting of game species also occurs within the reserve. Of all the other cited areas, this reserve can be described as being in its most natural state. Potential conflicts include the oil and gas expansion at the expense of the biodiversity and encroachment by settlements, as well as illegal occupation of land, and agriculture which can affect not only the biodiversity of the production of potable water supplies, monoculture plantations of timber and cocoa and with hunters in the reserve.

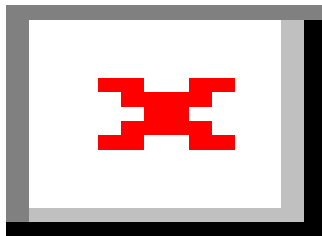


Figure 8: The timber blocks under management by the Forestry Division in the Central Range Forest Reserve

3. The area labelled as '5' in Figure 6 above represents a part of the Victoria-Mayaro Reserve which is located in south eastern Trinidad. The area of the entire reserve 52,396 hectares with the study area representing approximately 2444 hectares. The main river that flows through the area is the Ortoire river that from the north west to north east and then out into the Atlantic Ocean on the east coast of Trinidad. At the eastern most point of the reserve, the distance to the sea is approximately two kilometres. The two main soil types in this part of the reserve are the Saunders Road series which is described as a sandy clay shale with imperfect drainage. It is further described as strongly acidic but with adequate nutrients. The other main soil type is that which belongs to the Moruga series. This is a mixed soil (sand, silt and clay) that is strongly acidic, heavily leached and low in all major nutrients. The predominant vegetation communities as described by J.S. Beard (1944) in the reserve is the

Crappo-Fineleaf-Carat and the Crappo-Mora associations which are representative of evergreen seasonal forest. 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. The Trinidad and Tobago endemic frog, *Eleutherodactylus urichi*, is found at the Trinity Hills and surrounding forest. The reserve is reportedly home to some indigenous communities, with descendants still residing in the surrounding communities. While there are no established communities within the reserve, the adjacent ones are Basseterre, Fifth Company, George Village, Indian Walk, La Lune, Moruga, Piparo, Princes Town, Sixth Company and Tableland. Road access through the reserve is via the Saunders Road and Cat's Hill roads from west to east and then the Rio Claro/ Guayaguayare road from north to the south east. Forestry Division operates many timber blocks for commercial sale under the Open Range Block system, where commercially valuable species are sold to concessionaires over time. The blocks are closed off for sale to allow for regeneration but this is not done as frequently as it should be controlled. The Ministry of Agriculture also operates the Mora Valley Farms on 1650 acres of land within the reserve. This is a livestock breeding and research station, which maintains herds of the 'Buffalypso' which originated from the crossing of the River breeds of water buffalo and developed in Trinidad. The main human activities within the reserve include hunting (legal and illegal), roads which fragments the forests, timber production and management by the Forestry Division and oil and gas exploration and production by various operators. Along the western boundary of the reserve, there are issues of agricultural encroachment by mostly farmers involved in the growing of pineapples. Therefore, the main conflicts are the loss of natural areas to expansion by agricultural practices and deleterious practices, along with oil and gas operations.

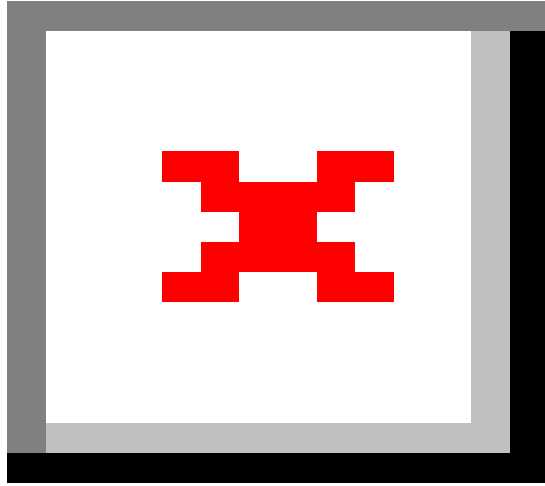


Figure 9: Map of a segment of the Victoria/Mayaro Forest Reserve

4. Maracas Valley is situated along the East West Corridor in the foothills of the Northern Range, about 16 kilometres east of Port of Spain, and runs due north from the town of St. Joseph which was the first Spanish settlement and capital of Trinidad. It is one of several valleys which form the watershed area of the Northern Range and provide approximately 80 per cent of the water supply of Trinidad. The area includes the area from the junction of the Maracas Royal Road and Riverside Road to the north of El Luengo Village and also includes the Acono area. It is a long, narrow valley with only one entry or exit, surrounded by steep hills and comprising many villages and, more recently, many mainly dormitory residential communities. There are footpaths which link Maracas Valley to Las Cuevas and Maracas Beach to the north, to Caura Valley to the east and Santa Cruz Valley to the west. 70 per cent of the land in Maracas Valley is under tree cover, of which seven per cent is forest reserve. Most of this land is steeper than 1:3 (1v:3h) or 20 per cent slope. This situation has almost certainly changed, however, because of the areas denuded by forest fires during the dry season. The existing forest types range from lower montane rain forests to secondary growth and young bush. These are usually found on slopes on the sides of the streams. Three-tier forests with crappo (*Carapa guianensis*) and guatacare (*Eschweilera subglandulosa*) as dominant trees, still cover some of the high altitude areas and the slopes of the peak El Tucuche. (The slopes of El Tucuche are constituted into a Forest Reserve.) Despite progressive destruction of forests in the northern part of the Maracas watershed since the sixteenth century, owing to inaccessibility, this reserve at the head of the watershed remains well covered with good natural forests.

Prior to 1970, residents of Maracas Valley were mainly engaged in agricultural pursuits, living close to and working on estates which varied in size from 15 acres to over 300 acres. Trees were planted and maintained as cash crops and fruits and vegetables were grown around the houses and on low fertile land. Recreational pursuits mainly centred on the land and rivers (e.g., hunting, fishing, swimming, etc.).

Commencing in the mid-sixties these estates were subdivided into progressively smaller plots of land, forming mainly dormitory residential communities. More recently planning permission has been granted for several multi-family residences or townhouses. The result of this has been a 134 per cent increase in population, 250 per cent increase in the number of buildings constructed, 117 per cent increase in built up areas, and 226 per cent increase in the road network. The one continuously operating quarry in Acono has also increased in size by 283 per cent. The loss in forest cover was 17.5 per cent between 1970 and 2005.

This rapid increase in construction and quarrying activities has had a considerable negative effect on the land, roads and rivers systems in the Valley. Heavy trucks increased run off from construction sites, increased traffic have caused landslides and the riverbeds have been raised considerably by silt and debris. Pools where children learnt to swim have been filled with silt. Large rocks which slowed the river flow are no longer visible. Feeding beds which provided a source of food for fish have also been destroyed, resulting in the death of much of the aquatic life in the river. This has been compounded by non-functioning sewage treatment plants associated with some of the large developments and other sources of pollution which have effectively turned parts of the Maracas River into an open sewer in the dry season – totally unsuitable for bathing. Natural habitats for wildlife

have been destroyed and a disturbing loss of biodiversity recorded. Quarrying operations have also had a negative effect on the amount of potable water obtained from the WASA substation at Acono and concern has been expressed that if permission was granted for another quarry at Ortinola, this would further deplete the supply of water from the Acono plant.

The predominant environmental issues in the Maracas Valley are as follows:

- § Loss of land available for agricultural purposes
- § Loss of forest cover on fragile hillsides
- § Blocked roads, drains and river courses
- § Loss of habitat and food sources leading to a loss of biodiversity, both land based and aquatic
- § Reduction in water supply
- § Rise in level of riverbeds, with subsequent loss of pools for recreation purposes and the covering of large rocks which assisted in checking the flow of flood waters
- § Higher peak river flows in rainy season and lower base flows in dry season
- § Flooding in the St. Joseph, Valsayn and Caroni Plain areas

These negative effects of the development in construction and industry are exacerbated by traditional slash and burn methods of agriculture and recent instances of encroaching on the steep slopes of hillsides. Because of the rapid increase in population:

§ There is a much greater pressure on the one access road which is nearing its maximum capacity.

There is an urgent necessity improve infrastructure to keep pace with the demand, particularly in relation to sewerage systems. Presently, these are faulty or non-existent and are presently polluting the river[6].



Figure 10: Map of the Maracas Valley^[7]



Figure 11: Map of Tobago showing potential study areas

The project sites being considered in Tobago for the biodiversity-supportive land use planning are in areas located south west of the Main Ridge Forest Reserve. The main proposed site is the Courland and lower Buccoo watersheds.

One of the main rivers that originate from the Main Ridge, is the Courland river which drains north. The Courland Watershed (Figure 12) is described as the islands most important catchment and largest watershed. This watershed contributes a large percentage of the potable water available to the citizenry in Tobago produced via the Courland intake with an annual average capacity of 3.3 million cubic meters per year. It has a catchment area of some 38.6 square kilometres of land area, much of which is comprised of steep slopes and deep valleys. The quality and quantity of the water that can be accessed from this system is under increasing threat. The principal watershed concerns are as follows:

- § High nutrient levels due to the presence of land-based sources of sewage from soakaways, septic tanks and inadequate levels of treatment from small sewage treatment plants
- § Dramatic loss of vegetation due to expanding coastal developments, unsuitable farming practices and increasing forest fires which has led to fire climax vegetation
- § Inadequate and out of date data necessary for decision making amongst all stakeholders
- § Inefficient data-sharing arrangements between government departments and agencies which hinders decision-making and duplicates efforts.
- § Inadequate sensitisation on environmental issues at the public and senior government levels.
- § Little involvement by communities in environmental management[8].

Another challenge to management of the watershed is that most of the lands are privately owned and reforestation and fire suppression programmes are restricted as a result. It was reported that private landowners have not yet begun to participate in a government financed reforestation program nor have they committed themselves to a long-term approach to keeping the land green. Because of the limitation of the current legislation, private landowners cannot be compelled to participate in the reforestation programme and moral suasion appears to be non-effective[9].



Figure 12: Map of the Courland Watershed

[1] Trinidad and Tobago Field Naturalists' Club, *The Field Naturalist Bulletin of the Trinidad and Tobago Field Naturalists' Club. Third Quarter of 1993*, (Trinidad and Tobago Field Naturalists' Club, 1993), <https://ttfnc.org/photojournals/1993-3.pdf>.

[2] Cunningham R.K et al, 1963, "Soils of Trinidad"

[3] J. S. Beard, *The Natural Vegetation of Trinidad* (Oxford: Clarendon Press, 1946)

[4] Water and Sewerage Authority of Trinidad and Tobago, "Navet Reservoir," WASA, last modified 2008, https://www.wasa.gov.tt/WASA_Education_water_Reservoir_Navet.html.

[5] Cocoa Development Company of TT Limited, 2019 – Driver of the TT Cocoa Industry

[6] Maracas Valley Action Committee (MVAC), *Issues of Sustainable Development in Maracas Valley, Trinidad & Tobago: Final Report* (Port of Spain 2010)

[7] Ibid

[8] IWCAM, "Guide for Policy Makers. Briefing Note #17. The GEF-IWCAM Trinidad & Tobago Demonstration Project: The Courland Watershed and Buccoo Reef," n.d.
https://www.iweco.org/sites/default/files/2019-03/IWCAM_PMBriefing_Part17_Demo_Trinidad_Tobago.pdf.

[9] Report on the State of Land Resources of Trinidad and Tobago. 2005

ANNEX F: Project Budget Table

Please attach a project budget table.

Budget has also been uploaded under "Documents" section as an .xls file

