



**Part I: Project Information**

**GEF ID**

10653

**Project Type**

MSP

**Type of Trust Fund**

GET

**CBIT/NGI**

CBIT No

NGI No

**Project Title**

Jamaica Mangroves Plus: Protection and Sustainable Management of Jamaica's Mangrove Ecosystems and Biodiversity

**Countries**

Jamaica

**Agency(ies)**

FAO

**Other Executing Partner(s)**

Forestry Department of Jamaica

**Executing Partner Type**

Government

**GEF Focal Area**

Biodiversity

**Sector**

**Taxonomy**

Mangroves, Biomes, Biodiversity, Focal Areas, Coastal and Marine Protected Areas, Protected Areas and Landscapes, Threatened Species, Species, Plant Genetic Resources, Payment for Ecosystem Services, Financial and Accounting, Forestry - Including HCVF and REDD+, Mainstreaming, Infrastructure, Restoration and Rehabilitation of Degraded Lands, Sustainable Land Management, Land Degradation, Ecosystem Approach, Ecosystem-based Adaptation, Climate Change Adaptation, Climate Change, Small Island Developing States, Agriculture, Forestry, and Other Land Use, Climate Change Mitigation, Convene multi-stakeholder alliances, Influencing models, Transform policy and regulatory environments, Demonstrate innovative approaches, Strengthen institutional capacity and decision-making, Beneficiaries, Stakeholders, Public Campaigns, Communications, Awareness Raising, Education, Individuals/Entrepreneurs, Private Sector, Non-Governmental Organization, Civil Society, Academia, Local Communities, Partnership, Type of Engagement, Information Dissemination, Consultation, Participation, Gender Mainstreaming, Gender Equality, Women groups, Sex-disaggregated indicators, Capacity Development, Gender results areas, Access to benefits and services, Knowledge Generation and Exchange, Landscape Restoration, Food Systems, Land Use and Restoration, Integrated Programs, Comprehensive Land Use Planning, Adaptive management, Learning, Capacity, Knowledge and Research, Indicators to measure change, Theory of change

**Rio Markers**

**Climate Change Mitigation**

Significant Objective 1

**Climate Change Adaptation**

No Contribution 0

**Biodiversity**

Principal Objective 2

**Land Degradation**

Significant Objective 1

**Submission Date**

8/20/2020

**Expected Implementation Start**

2/1/2023

**Expected Completion Date**

1/31/2027

**Duration**

48In Months

**Agency Fee(\$)**

156,620.00

**A. FOCAL/NON-FOCAL AREA ELEMENTS**

<b>Objectives/Programs</b>	<b>Focal Area Outcomes</b>	<b>Trust Fund</b>	<b>GEF Amount(\$)</b>	<b>Co-Fin Amount(\$)</b>
BD-1-1	Mainstream biodiversity across sectors as well as landscapes and seascapes through biodiversity mainstreaming in priority sectors	GET	419,652.00	1,960,878.00
BD-1-3	Mainstream biodiversity across sectors as well as landscapes and seascapes through natural capital assessment and accounting	GET	104,913.00	490,220.00
BD-2-7	Address direct drivers to protect habitats and species and Improve financial sustainability, effective management, and ecosystem coverage of the global protected area estate	GET	1,124,065.00	5,252,338.00
<b>Total Project Cost(\$)</b>			<b>1,648,630.00</b>	<b>7,703,436.00</b>

## B. Project description summary

### Project Objective

To support the implementation of the National Mangrove Management Plan for promoting a biodiversity-positive approach towards sustainable management of mangrove ecosystems

<b>Project Component</b>	<b>Financing Type</b>	<b>Expected Outcomes</b>	<b>Expected Outputs</b>	<b>Trust Fund</b>	<b>GEF Project Financing(\$)</b>	<b>Confirmed Co-Financing(\$)</b>
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Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
1. National mangrove policy strengthening to support implementation of National Mangrove Management Plan	Technical Assistance	<p>1.1 Strengthened policy enabling environment for successful implementation of the National Mangrove Management Plan</p> <p>1.2 Ecosystem-based mangrove management, with emphasis in resource users and livelihoods, mainstreamed into land use planning processes.</p> <p><b><u>GEF Core Indicator 4.1:</u></b> Area of landscapes under improved management to benefit biodiversity.</p> <p><b>Target:</b> 7,600 hectares of mangrove landscapes under improved management to benefit biodiversity</p>	<p><u>Output.1.1.1</u> Relevant provisional Parish Development Orders (DO) and Local Sustainable Development Plans (LSDP) revised and/or updated with appropriate zoning of forested wetlands, recommended uses and conservation status</p> <p><u>Output.1.1.2</u> Permitting requirements and processes related to wetland replanting, rehabilitation and/or restoration projects revised to minimise illegal entry into mangroves</p> <p><u>Output.1.1.3</u> Mangrove and Coastal Wetlands Protection Draft Policy and Regulation, 1997, reviewed, updated and</p>	GET	382,750.00	1,788,449.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
2. Mangrove ecosystem restoration for improved ecosystem services and protection of key biodiversity	Investment	<p>2.1 Restored health of priority mangrove habitats to improve associated biodiversity and mangrove ecosystem services, including support to marine ecosystems and fisheries.</p> <p><b><u>GEF Core Indicator 3.4:</u></b></p> <p>Area of wetlands (including estuaries, mangroves) restored</p> <p><b>Target:</b> 2,212 hectares of mangroves</p> <p>-</p> <p><b><u>GEF Core Indicator 6.1:</u></b></p> <p>Carbon sequestered or emissions avoided in the AFOLU sector</p> <p><b>Target:</b> 1,635,732 mt CO<sub>2</sub> -eq</p>	<p><u>Output 2.1.1</u> Forested wetlands in need of urgent conservation/restoration prioritised (from identified sites on FD working list)</p> <p><u>Output 2.1.2:</u> Restoration plans developed for prioritised "restorable" mangrove areas in Jamaica with the costs for effecting conservation and/or hydrological restoration</p> <p><u>Output 2.1.3:</u> Hydrological/hydrodynamic and vegetation features and natural resource values of FD working list of forest wetland sites, to be conserved/protected, analysed</p> <p><u>Output 2.1.4:</u> Restoration/rehabilitation of prioritised degraded mangrove areas</p>	GET	736,450.00	3,441,157.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
3. Knowledge management and project monitoring and evaluation		3.1 Improved management and dissemination and awareness of Jamaica mangrove habitat knowledge	<u>Output 3.1.1:</u> A standard and GOJ entity used/agreed repository or webpage with forested wetlands use, status and management data in Jamaica created	GET	379,830.00	1,774,805.00
		<b><u>GEF Core Indicator 11</u></b> Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment  <b>Target: 400 (50% Female)</b>	<u>Output 3.1.2:</u> Relevant agencies trained on the purpose and use of the Jamaica forested wetlands database and granted appropriate access			
		3.2 Effective project management and evaluation to inform adaptive management	<u>Output 3.1.3:</u> Existing GIS portal on Forestry Dept website modified to include revised forested wetland locations as a layer/feature.			
			<u>Output 3.1.4:</u> Land use and/or zoning maps created with an overlay to			

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
				<b>Sub Total (\$)</b>	<b>1,499,030.00</b>	<b>7,004,411.00</b>

**Project Management Cost (PMC)**

	GET		149,600.00		699,025.00	
			<b>Sub Total(\$)</b>		<b>699,025.00</b>	
			<b>Total Project Cost(\$)</b>		<b>7,703,436.00</b>	

Please provide justification



**C. Sources of Co-financing for the Project by name and by type**

<b>Sources of Co-financing</b>	<b>Name of Co-financier</b>	<b>Type of Co-financing</b>	<b>Investment Mobilized</b>	<b>Amount(\$)</b>
Recipient Country Government	Forestry Department	In-kind	Recurrent expenditures	6,903,436.00
Civil Society Organization	Caribbean Coastal Area Management (C-CAM) Foundation	Grant	Investment mobilized	50,000.00
Recipient Country Government	National Fisheries Authority (NFA)	In-kind	Recurrent expenditures	700,000.00
Civil Society Organization	The Nature Conservancy	In-kind	Recurrent expenditures	50,000.00
<b>Total Co-Financing(\$)</b>				<b>7,703,436.00</b>

**Describe how any "Investment Mobilized" was identified**

During the project period, The Caribbean Coastal Area Management Foundation (C-CAM) will be conducting work in one of the main project sites: the Portland Bight Protected Area (PBPA). This work considers the implementation of the following initiatives and activities related to this project: (i) The European Union funded project 2021-2023 - "Enhancing the capacity for management of dry forests in the Portland Bight Protected Area, Jamaica" including the following activities: assess management plans of the PBPA to protect some of the world's most endangered and threatened species including the Jamaican Iguana (*Cyclura collei*), the Portland Ridge Land Frog (*Eleutherodactylus cavernicola*) and the Jamaican Skink (*Spondylurus fulgidus*). (ii) the Critical Ecosystems Partnership Fund project 2022 - 2025 "Participatory preparation and implementation of the Portland Bight Protected Area Management Plan, Jamaica". Specific activities related to this project include the support from the Natural Conservation Authority (NRCA) for overall management of the PBPA including monitoring forest and mangrove areas.

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

<b>Agency</b>	<b>Trust Fund</b>	<b>Country</b>	<b>Focal Area</b>	<b>Programming of Funds</b>	<b>Amount(\$)</b>	<b>Fee(\$)</b>	<b>Total(\$)</b>
FAO	GET	Jamaica	Biodiversity	BD STAR Allocation	1,648,630	156,620	1,805,250.00
<b>Total Grant Resources(\$)</b>					<b>1,648,630.00</b>	<b>156,620.00</b>	<b>1,805,250.00</b>

**E. Non Grant Instrument**

NON-GRANT INSTRUMENT at CEO Endorsement

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Includes Non grant instruments? **No**

Includes reflow to GEF? **No**

**F. Project Preparation Grant (PPG)**

PPG Required **true**

**PPG Amount (\$)**

50,000

**PPG Agency Fee (\$)**

4,750

<b>Agency</b>	<b>Trust Fund</b>	<b>Country</b>	<b>Focal Area</b>	<b>Programming of Funds</b>	<b>Amount(\$)</b>	<b>Fee(\$)</b>	<b>Total(\$)</b>
FAO	GET	Jamaica	Biodiversity	BD STAR Allocation	50,000	4,750	<b>54,750.00</b>
<b>Total Project Costs(\$)</b>					<b>50,000.00</b>	<b>4,750.00</b>	<b>54,750.00</b>

## Core Indicators

### Indicator 1 Terrestrial protected areas created or under improved management

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
2,000.00	4,297.00	0.00	0.00

#### Indicator 1.1 Terrestrial Protected Areas Newly created

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)
2,000.00	4,297.00	0.00	0.00

Name of the Protected Area	WDP A ID	IUCN Category	Total Ha (Expected at PIF)	Total Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)
Jamaica Forest Wetlands		Habitat/Species Management Area	2,000.00	4,297.00		

#### Indicator 1.2 Terrestrial Protected Areas Under improved Management effectiveness

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

Name of the Protected Area	WDP ID	IUCN Category	Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)	METT score (Baseline at CEO Endorsement)	METT score (Achieved at MTR)	METT score (Achieved at TE)
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**Indicator 3 Area of land and ecosystems under restoration**

<b>Ha (Expected at PIF)</b>	<b>Ha (Expected at CEO Endorsement)</b>	<b>Ha (Achieved at MTR)</b>	<b>Ha (Achieved at TE)</b>
4027.27	2212.00	0.00	0.00

**Indicator 3.1 Area of degraded agricultural lands under restoration**

<b>Disaggregation Type</b>	<b>Ha (Expected at PIF)</b>	<b>Ha (Expected at CEO Endorsement)</b>	<b>Ha (Achieved at MTR)</b>	<b>Ha (Achieved at TE)</b>

**Indicator 3.2 Area of forest and forest land under restoration**

<b>Ha (Expected at PIF)</b>	<b>Ha (Expected at CEO Endorsement)</b>	<b>Ha (Achieved at MTR)</b>	<b>Ha (Achieved at TE)</b>

**Indicator 3.3 Area of natural grass and woodland under restoration**

<b>Disaggregation Type</b>	<b>Ha (Expected at PIF)</b>	<b>Ha (Expected at CEO Endorsement)</b>	<b>Ha (Achieved at MTR)</b>	<b>Ha (Achieved at TE)</b>

**Indicator 3.4 Area of wetlands (including estuaries, mangroves) under restoration**

<b>Ha (Expected at PIF)</b>	<b>Ha (Expected at CEO Endorsement)</b>	<b>Ha (Achieved at MTR)</b>	<b>Ha (Achieved at TE)</b>
4,027.27	2,212.00		

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

<b>Ha (Expected at PIF)</b>	<b>Ha (Expected at CEO Endorsement)</b>	<b>Ha (Achieved at MTR)</b>	<b>Ha (Achieved at TE)</b>
7600.00	7600.00	0.00	0.00

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

<b>Ha (Expected at PIF)</b>	<b>Ha (Expected at CEO Endorsement)</b>	<b>Ha (Achieved at MTR)</b>	<b>Ha (Achieved at TE)</b>

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
7,600.00	7,600.00		

Indicator 4.2 Area of landscapes under third-party certification incorporating biodiversity considerations

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)

Indicator 4.4 Area of High Conservation Value or other forest loss avoided

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

Indicator 4.5 Terrestrial OECMs supported

Name of the OECMs	WDPA-ID	Total Ha (Expected at PIF)	Total Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total 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 <sub>2</sub> e (direct)	1152654	1635732	0	0
Expected metric tons of CO <sub>2</sub> 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 <sub>2</sub> e (direct)	1,152,654	1,635,732		
Expected metric tons of CO <sub>2</sub> e (indirect)				
Anticipated start year of accounting				
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 <sub>2</sub> e (direct)				
Expected metric tons of CO <sub>2</sub> e (indirect)				
Anticipated start year of accounting				
Duration of accounting				

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 People benefiting from GEF-financed investments

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	200	200		
Male	200	200		
Total	400	400	0	0



Provide additional explanation on targets, other methodologies used, and other focal area specifics (i.e., Aichi targets in BD) including justification where core indicator targets are not provided

## Part II. Project Justification

### 1a. Project Description

1) Global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description)

#### Global environmental significance

1. Mangroves are one of only a few tropical plants that have adapted to survive in salty water along the shores, estuaries and coastal areas of tropical countries like Jamaica. Salt normally kills plants, but mangroves have created an elaborate root system that can filter out as much as 90% of the salt in the seawater. Meanwhile the leaves store freshwater and excrete excess salt. The mangrove breathes by growing many long thin roots that stick up out of the sea water like snorkels. These roots also help stabilise the mangrove tree. Furthermore, some species of mangrove have developed a unique way to reproduce itself by producing seed pods that germinate on the tree. When these seed pods fall, they are ready to take root immediately. There are four species of mangrove in Jamaica: red (*Rhizophora mangle*), black (*Avicennia germinans*), white (*Luguncularia racemosa*) mangrove and buttonwood (*Conocarpus erectus*).
2. Mangrove ecosystems are considered globally significant ecosystems because they provide multiple ecosystem services, including supporting the resource base of several economic and subsistence livelihood activities. Mangroves act as natural barriers to waves and storm surges and help mitigate flooding by reducing wave energy and slowing down storm surges. Mangroves provide an array of benefits to coastal communities, including wood and non-wood forest products and environmental services encompassing shoreline protection, erosion control, water filtration, nutrient cycling and biodiversity conservation, recreational and educational opportunities in addition to their role as nursery habitats for a variety of fish species. Mangroves are also recognized as valuable to climate change mitigation efforts due to the outsized amounts of carbon contained in above and below ground mangrove biomass and trapped within the soils between mangrove root systems.
3. Environmental services of mangroves may be grouped into regulating, supporting, provisioning, and cultural benefits (Webber et al. 2016[1]).
  - a. Regulating: 1. Climate regulation; 2. Shoreline stabilization; 3. Water filtration and pollution regulation. 4. Coastal Protection and Resilience.

- b. Supporting: 1. Habitat for various biota, including juvenile fish that are important both as essential components of coral reef and other ecosystems and are important commercial species; 2. Carbon sequestration; 3. Spawning ground for numerous marine species.
  - c. Provisioning: 1. Fisheries production 2. Aquaculture production 3. Pharmaceutical generation 4. Charcoal and lumber resources 5. Honey 6. Tannins 7. Salt.
  - d. Cultural benefits: 1. Recreation & tourism; 2. Educational opportunities 3. Aesthetic & cultural values.
4. It is generally agreed that mangrove forests and swamps are the most cost-effective method of shoreline defence. They are part of nature-based solutions for protecting shorelines from storms and floodplains from absorbing excess water runoff. These natural services performed by mangrove forests as part of the 'living shoreline' have an infrastructure-like function.
  5. Mangrove forests help reduce coastal flooding by acting as physical obstacles to the flow of water and waves. The dense roots and stems of a mangrove forest provide a drag resistance that is strongly related to wave reduction (Mendez and Losada, 2004[2]). Increasing the area of mangrove forests can lead to more drag on incoming waves and storm surges, thus reducing the flooding that these waves and surges will cause inland. In addition to their direct effects on water levels, healthy mangrove forests have the capacity to build land elevation and keep pace with sea-level rise (McIvor et al., 2013[3]). As ecosystem-based adaptation measures, healthy mangrove forests provide the unique advantage of self-maintenance in this respect, unlike traditional structures such as levees which will require costly upgrades to maintain current standards of protection (Hinkel et al., 2014[4]).
  6. The value of Jamaica's mangrove forests for flood risk reduction to the nation's built capital is estimated at more than \$2,500 [JMD 336,000] per hectare per annum. The loss of Jamaica's mangroves would further result in a 10% increase in the total number of people flooded every year. Mangrove benefits are most apparent for high intensity storms of 1 in 500-year return periods. During these storms, mangrove forests protect 770,000 people and nearly \$2.4 billion [JMD 322 billion] or 50% of the total affected population and built capital. This translates to economic benefits of more than \$186 million [JMD 25 billion] per hectare of mangroves. For instance, analysis of recently lost mangroves in Old Harbour Bay show that the loss of these mangroves has resulted in the loss of flood protection benefits of more than \$1 million [JMD 136 million] each year[5].
  7. The mangroves and sand dunes of the Palisadoes and Port Royal Protected Area are well documented to provide natural coastal protective services associated with the relatively calm waters of the Kingston Harbour. This vegetation flanking the southern harbour boundaries, and which keeps the tombolo intact from erosion, makes for calm weather conditions allowing regular ship docking and transshipment activities, which are essential to the Jamaican economy.
  8. In addition to coastal protection, which has not been valued rigorously so far, Jamaica's mangroves also provide other ecosystem services that are critical to local communities. These services include timber supplies for construction and daily-use and artisanal products, small-scale farming, and firewood.
  9. Because of their submerged root system, mangroves retard water movement and trap suspended materials and the remains of organisms associated with the mangroves. The accumulation of this organic material contributes to raise the soil level. Continued accumulation of soil, particularly by sea

fringing mangrove stands, builds the shoreline seaward. In the course of this process, the rich protected substrata provide a habitat for a large variety of organisms that serve as food for marine fauna, including oysters and crabs, which are a harvestable source of protein.

10. Jamaica is home to four types of mangroves that play important ecosystem and socio-economic roles. Moving inland from the sea, the four types of mangroves transcend from the red mangrove (*Rhizophora mangle*) (closest to the sea) to the black mangrove (*Avicennia germinans*) and then the white mangrove (*Laguncularia racemose*), and the button mangrove (*Conocarpus erectus*). These mangroves are typified by a low diversity of species with black mangrove dominating. The red mangrove is the second-most dominant species found in Jamaica.
11. *Rhizophora mangle* dominates the coastline as it is the most resistant to water movement generated by tides and occasional waves and has viviparous seedlings that are adapted to the lower intertidal areas and associated water movement. *Rhizophora* roots are also believed to play a successional role in trapping both *Rhizophora* species and other smaller seedlings of the other species. Mangrove forests normally show zonation with *Avicennia germinans* and *Laguncularia racemose* occurring further back from the deeper tidal zone as their propagules are smaller, less resistant to water movement and physical injuries, and are often washed further inland.
12. Jamaican records and literature suggest a fourth species of mangrove tree; the buttonwood or button mangrove, *Conocarpus erectus*. However, this species should be classified as a mangrove associate and not a true mangrove species, as it does not possess viviparous seedlings, the wind dispersed seeds cannot germinate in salty water and it lacks special root adaptations to deal with prolonged inundation.
13. Jamaican mangroves ecosystems provide habitat for many threatened species, including the West Indian manatee (*Trichechus manatus*) listed as Endangered on the IUCN Red List and the West Indian Whistling Duck (*Dendrocygna arborea*) and the American Crocodile (*Crocodylus acutus*) that are listed as Vulnerable on the IUCN Red List and listed in Appendix I of the Convention on International Trade in Endangered Species (CITES). The majority of American crocodile populations in Jamaica inhabit the mangrove swamps and marshes along the southern coast of the island, including the Black River Great Morass in St Elizabeth parish and Milk River in Manchester parish, with a few isolated populations on the north coast in the parishes of Hanover and Trelawny.
14. Mangrove habitats further support a large group of animals belonging to a range of taxonomic groups. Many of these animals live in association with the prop roots of the red mangrove or may be found on the benthos of the mangrove lagoon. Yet others live in the mangrove forest, occupying forest floor or canopy. More common mangrove species identified by studies conducted by the University of West Indies include a) *Cnidaria* (anemone and jellyfish), b) *Annelida* (ringed worms); c) *Crustaceans* (including such animals as lobster, crab, shrimp, oysters, barnacles, clams, conch, snails, urchins, sand dollars, sea stars and brittle stars, and sea cucumbers), and; d) and many types of vertebrata. Jamaican mangroves are also home to many stationary and migratory birds, including the green heron (*Butorides virescens*), great egret (*Ardea alba*), mangrove cuckoo (*Coccyzus minor*), brown pelican (*Pelecanus occidentalis*), and near threatened migratory birds such as the West Indian whistling duck (*Dendrocygna arborea*).
15. Jamaican mangrove habitats are known to host a vibrant community of other flora and fauna, including several additional halophytic plant species. Jamaica has 40 Key Biodiversity Areas (KBAs). The mean percent coverage of all KBAs by Protected Areas (PAs) or Other Effective Area-Based Conservation Measures (OECMs) in Jamaica is 22.1%. At least 13 of KBAs include areas of coastline all around

Jamaica that include wetland mangrove ecosystems or are directly adjacent and ecologically connected to wetland areas. The largest KBAs that include areas in the coastal zone are the Black River Great Morass, Portland Blight Protected Area and Negril.

16. Jamaica has a high level of endemism for many species of animals. One of the most important endemic species to Jamaica is the Jamaican iguana (*Cyclura collei*). The Jamaican iguana is known to live in low-lying dryland ecosystems and marshlands that are adjacent to and highly connected to mangrove ecosystem health. The Jamaican Iguana was once widely distributed across Jamaica, but now only a small population survives in the Hellshire Hills, located on the south-central part of the Jamaica and within the Portland Blight Protected Area. The Jamaican iguana is currently listed as critically endangered
17. Mangroves provide home and shelter for many fish species and the sustainability of Jamaica's artisanal, recreational, and commercial fisheries are directly dependent upon mangrove ecosystems. These include fish species that spend part of their lifecycle in wetlands during breeding and spawning. Mangroves also serve as a nursery for juvenile fish. Commercially important species of fish found in Jamaican mangrove ecosystems include parrotfish, snapper, grunt, snook, tarpon, and jack. The reef fish of economic importance in Jamaica include representatives from the families: *Mullidae* (goatfishes / red mullets), *Haemulidae* (grunt), *Serranidae* (sea basses and groupers), *Acanthuridae* (surgeonfishes and unicornfishes), *Lutjanidae* (snappers), *Carangidae* (jacks), *Holocentridae* (squirrelfish), *Holocanthus* (angelfishes), *Balistidae* (triggerfishes), and *Scaridae* (parrotfishes). Several popular finfish species also rely on mangrove habitats at early stages in their life history that later in life provide a valuable socio-economic service. For example, a marlin tournament in Portland Parish has been an extremely popular event for over 50 years. Mangroves are also important breeding grounds for several species of fresh and brack water.
18. The National Environment and Planning Authority (NEPA), in an effort to protect the country's wetlands, has declared four Ramsar sites. These are the Black River Lower Morass in 1997, Palisades/Port Royal Protected Area 2005, the Portland Bight Wetlands and Cays, 2006 and Mason River Protected Area, 2011.

[1] Webber, M., Calumpong, H., Ferreira, F., Granek, E., Green, S., Ruwa, R., & Soares, M., 2016. Mangroves. *The First Global Integrated Marine Assessment: World Ocean Assessment I*, 877-886.

[2] Mendez, F.J., Losada, I.J., 2004. An empirical model to estimate the propagation of random breaking and nonbreaking waves over vegetation fields. *Coast. Eng.* 51, 103-118.

[3] McIvor, A.L., Spencer, T., Miller, I., Spalding, M., 2013. The response of mangrove soil surface elevation to sea level rise. *Nat. Coast. Prot. Ser. Rep.* 3.

[4] Hinkel, J., Lincke, D., Vafeidis, A.T., Perrette, M., Nicholls, R.J., Tol, R.S.J., Marzeion, B., Fettweis, X., Ionescu, C., Levermann, A., 2014. Coastal flood damage and adaptation costs under 21st century sea-level rise. *Proc. Natl. Acad. Sci. U. S. A.* 111, 3292-7.

[5] Ortega, Saul Torres; Losada, Inigo J.; Espejo, Antonio; Abad, Sheila; Narayan, Siddharth; Beck, Michael W. 2019. *The Flood Protection Benefits and Restoration Costs for Mangroves in Jamaica*. Forces of Nature; World Bank, Washington, DC. World Bank.  
<https://openknowledge.worldbank.org/handle/10986/35166>

The global environmental problem

19. Coastal ecosystems including mangrove forests continue to be lost and degraded. Globally, mangrove forests have seen area losses of about 35% (Valiela et al., 2009[1]) since original global recordings in the early 1980s. Their annual loss rate is about 2.1% from natural forces such as hurricanes and associated winds, and anthropogenic forces such as coastal development and aquaculture (Valiela et al., 2009). The loss of mangroves and coral reefs will result in the loss of their ecosystem services, and specific to coastal flooding, will result in an increase in flood damages to communities that are otherwise protected by these ecosystems.
20. Jamaica – like much of the Caribbean region – is at high risk from coastal hazards due to its exposure to tropical storms, high levels of coastal development, and vulnerable coastal communities. Approximately 70% of Jamaica’s population lives in coastal areas, and over 50% of its economic assets such as airports, harbours and tourism infrastructure are located on the coast (Richards[2], 2008). Between 1988 and 2011, 11 major storms made landfall in Jamaica, causing significant damages to people and property. Such natural disasters remain a main risk to the country’s economy and economic outlook with significant challenges for disaster recovery and re-development. Meanwhile, human coastal development and economic activity continue to increase across the country.
21. In general, there is very limited data on the spatial extents of mangroves since mangroves in Jamaica are typically classified and counted together with fresh-water ‘swamp’ forests and only recently have mangrove extents been recorded separately (NEPA, 2014). Though data on individual wetlands exist, there is little documentation of long-term trends in the extent, status and health of Jamaica’s mangroves (Henry et al., 2018[3]). FAO (2005) indicates that in the 1970’s that mangroves might have extended across more than 15,000 hectares in Jamaica.
22. Estimates of mangrove extents since then vary a lot but it appears that the main coastal wetland areas of the country where mangroves are found amounted to approximately 11,674 ha in 2010. This increased to 16,735.40 hectares and then declined to about 9,800 hectares in 2013 due to human activity (Ortega et al., 2019 [4]).
23. It was thus assumed until recently that coastal mangroves in Jamaica covered an area of around 9,800 hectares as per the penultimate estimate from 2013, making up less than 3% of Jamaica’s total forest cover while 82% of the mangrove habitats were found on the country’s southern coastline (Forestry Department of Jamaica, 2017). This area under mangroves represents a linear coverage of 291 km or 30% of the 955 km of the coastline of Jamaica.
24. Between 2019 and 2021, the Jamaican Forestry Department conducted detailed assessments of Jamaica’s mangrove habitats with support from the European Union Budget Support Programme (EU-BSP) to underpin the National Mangrove Management Plan which is under development. The assessment reports revealed that there are 96 mangrove habitats in Jamaica today covering an area of 13,784 hectares. The most significant percentages of coastal mangroves are found in the southern sections of St. Thomas, St. Catherine, Clarendon, St. Elizabeth and Westmoreland parishes, primarily in sheltered bays, estuaries, and inlets. Wetland parcels were identified as mangroves and swamp forests by the spatial mapping software if these areas had over 1 ha mangrove forest species.
25. Although most mangrove forests across the island are showing a decrease in area, most of the decline is seen for areas where coastal developments have taken place particularly along the north coast. For instance, Jamaica’s northern parishes (main tourism belt) have seen a decline in nearly 300 hectares of mangroves between 2005 and 2010 (NEPA, 2010). These changes are however relatively recent and

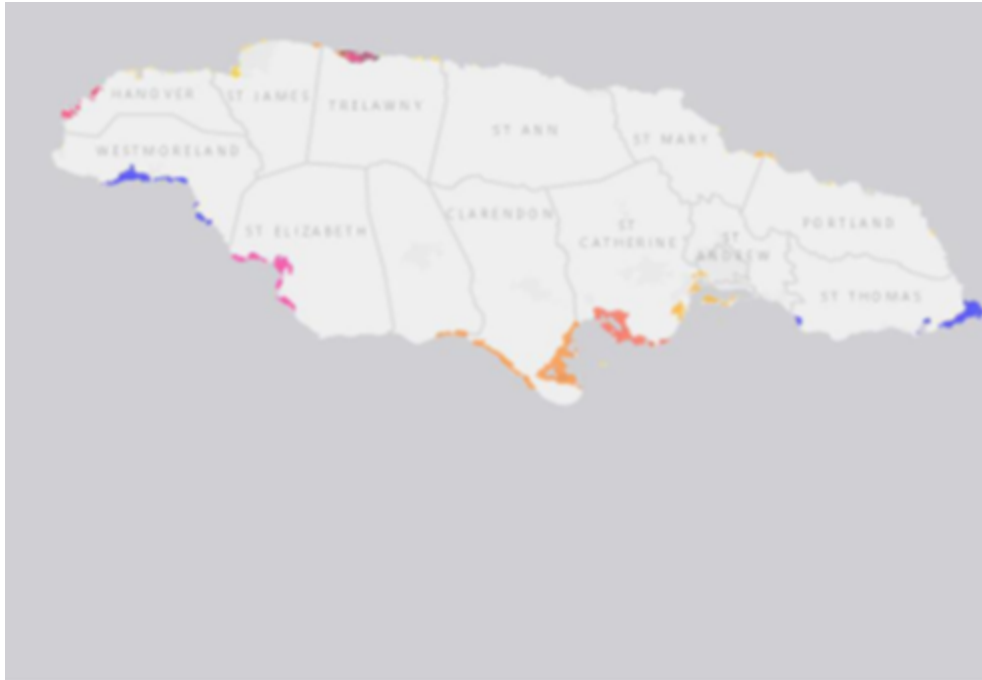
are built on a long history of mangrove loss and degradation. Prior to 1997, mangroves in Jamaica were cleared or converted for other land-uses, often in irreversible ways (McDonald et al., 2003[5]).

26. According to the Forestry Department's land use cover assessment of 2015, wetlands, comprising mangrove forest and swamp, experienced a loss of approximately 95% or 2,123 ha hectares between 1998 and 2013. However, this relates mainly to a loss of swamp forest, largely due to agricultural activity and infrastructure development including buildings and roadways.
27. Mangrove losses and gains across Jamaica are not spatially uniform, with some areas seeing significant losses and other coastlines witnessing gains (Figure 1). For example, Jamaica's southern coastline has seen some increases in mangrove cover in recent years, for example in the protected region of the Negril Great Morass. Mangrove extents however declined in two southern coastal parishes – St. Catherine and Clarendon – by over 40% (Mandal et al., 2019[6]).



**Figure 1** Change in Mangrove Extent in Jamaica from 2005 (baseline GOJ data) to 2013 (TNC Data).

28. Recently, Worthington and Spalding[7] (2019) assessed the global change in mangrove distribution with satellite derived data from surveys in 1996 and 2016 and used these to assess the potential for mangrove restoration in areas of loss. This report estimates that more than 770 hectares of mangroves were lost in Jamaica over the past two decades. While these analyses are conducted at a global scale, they nonetheless are very useful for showing the broad patterns of change across Jamaica (Figure 2). Not surprisingly, mangrove losses are highest in the southern parishes of St. Elizabeth, Clarendon and St. Catherine and in the parish of Trelawny in the north (Worthington and Spalding, 2019). Mangrove losses are lowest in the St. Thomas Morass in the east and in the mangrove forests of Westmoreland in the west.



**Figure 2 Change in Mangrove Extent in Jamaica from 1996 to 2016 from Worthington and Spalding (2019).**

29. The Situational Analysis[8] that was carried out as part of the development of the National Mangrove Management Plan presents verified accounts of mangrove losses and gains between 2017 and 2021. Over the past five years, 19.6 ha of mangrove appear to have been lost while 2.7 ha have been regained through restoration initiatives, resulting in a net loss of 16.9 ha. These figures do not capture all recent changes in mangrove forests in Jamaica, but only include losses that were documented or permitted (Wetland modification permits granted by NEPA). There were likely more losses from unplanned/unpermitted developments, or via developments which were not granted NEPA permits.
30. Jamaica's forests have experienced higher temperatures and decreased rainfall and this trend will continue. Sea levels are projected to rise from a mean of 0.24 to 0.30 metres according to the various RCP models (Mandal et al., 2019 [9]) resulting in raising water salinity in mangroves and other coastal forested wetlands, which may result in dieback of the mangroves.
31. Evidence thus strongly suggests there is an overall declining trend in Jamaica's mangroves. Losses and gains across the island are not spatially uniform and the main drivers of loss vary. Northern parish mangrove loss is more often associated with tourism and residential development, while port and industrial development have been a main driver in southern parishes. Of the seven south coast parishes, five showed an increase in wetland coverage between 2005 and 2011 suggesting renewed possibility for successful mangrove restoration. In a recent global assessment, an estimated 770 hectares of mangroves have been lost in Jamaica between 1996 and 2016, more than 70% of these mangroves could be potentially restorable. Between 2017 and 2021 another 19.6 ha was lost while 2.7 ha were regained through restoration initiatives.
32. In addition to loss of mangrove areas due to documented and permitted tourism and infrastructure developments, there have been undetected losses due to small-scale developments, such as single house



lots, where no NEPA Development Plan/Order is required, in which case permits are issued by the local authorities. NEPA Development Orders are neither required for:

- a. Works carried out by a Road Authority for the purpose of maintenance or improvement on land within the road boundaries,
  - b. The carrying out by any local authority or statutory body of works for the inspection, repairing or renewing of sewers, mains, pipes, cables or other apparatus or the breaking open of any street for that purpose.
  - c. The use of any land for the purpose of agriculture or forestry and the use of any building occupied with the land and used for this purpose.
33. Mangrove losses should be seen as any unnatural reduction in size of natural mangrove forest vegetation, including its soil and hydrology (excluding hurricanes etc). This would include direct reclamation (dumping) or mangrove 'die-back' associated with human induced changes in hydrology e.g. where a roadway lacks culverts and a section of mangroves dies in response to reduced water flows.
34. The net loss over the last five years of only 16,9 ha or 0.1% of the 13,784 ha of mangrove areas, as assessed by the recent Forestry Department reports, conceals the fact that the health status of many mangrove areas has been deteriorating. The Forestry Department's EU-BSP Year 3 Mangrove and Swamp Forest Verification Report reports on 35 mangrove habitats covering in all 7,614 ha. Of the 35 sites, nine had a fair health status and two a poor health status. Anthropogenic disturbance was observed on 74% of the sites and invasive species were found on 51% of the sites. Overall, 845 ha or 11% of the assessed area suffered anthropogenic disturbance.

[1] Valiela, I., Kinney, E., Culbertson, J., Peacock, E., Smith, S., 2009. Global Loss of Mangroves and Salt Marshes. In: Duarte, C.M. (Ed.), *Global Loss of Coastal Habitats Rates, Causes and Consequences*. Fundacion BBVA, pp. 107-142.

[2] Richards, A., 2008. Development trends in Jamaica's coastal areas and the implications for climate change. Plan. Inst. Jamaica.

[3] Henry, A., Webber, D., Webber, M., 2018. Rapid Assessment Methods Developed for the Mangrove Forests of the Great Morass, St. Thomas, Eastern Jamaica. In: Dorney, J., Savage, R., Tiner, R.W., Adamus, P. (Eds.), *Wetlands and Stream Rapid Assessments*. Academic Press, London, UK, pp. 529-538.

[4] Ortega, Saul Torres; Losada, Inigo J.; Espejo, Antonio; Abad, Sheila; Narayan, Siddharth; Beck, Michael W. 2019. *The Flood Protection Benefits and Restoration Costs for Mangroves in Jamaica. Forces of Nature*; World Bank, Washington, DC. ? World Bank.  
<https://openknowledge.worldbank.org/handle/10986/35166>

[5] McDonald, K.O., Webber, D.F., Webber, M.K., 2003. Mangrove forest structure under varying environmental conditions. *Bull. Mar. Sci.* 73, 491-505.

[6] Mandal A., Smith R.A.J, Edwards T, Kinlocke R, Mitchell S, Trench C, Webber M, Francis P, Spence A. *Local Scale Assessments on Mangrove Ecosystems Status and their Role in Coastal Resilience*. Technical Report. World Bank, 2019.

[7] Worthington, T., Spalding, M., 2019. *Mangrove Restoration Potential: A global map highlighting a critical opportunity*. Cambridge, UK.

[8] Trench, Camilo; Nembhard, Danielle A.; Ross, Demesha and Javel Noble. 2022. Development of a National Mangrove Management Plan ? Situational Analysis (April 2022)

[9] Mandal A., Smith R.A.J, Edwards T, Kinlocke R, Mitchell S, Trench C, Webber M, Francis P, Spence A. *Local Scale Assessments on Mangrove Ecosystems Status and their Role in Coastal Resilience*. Technical Report. World Bank, 2019.

#### Threats

35. Jamaica's mangrove ecosystems are currently experiencing several key direct and indirect threats. Collectively these threats have resulted in a significant decline in the area of mangrove and associated wetland ecosystem, resulting in a major decline in ecosystem services that have had an immediate impact on both local communities and a national economy that relies heavily on nature-based tourism.
36. Mangrove forests in Jamaica suffer two distinct environmental problems, namely habitat loss and/or a decline in biodiversity and health of mangrove ecosystems. The reasons for this loss and degradation of Jamaica's mangrove forests are multiple.

#### Infrastructure development

37. Direct threats to mangrove ecosystems in Jamaica resulting in habitat loss stem mainly from the direct clearing and reclamation of mangrove habitat for coastal development through cutting mangrove trees and dredging and filling the wetland areas to construct buildings, roads, and other types of infrastructure.
38. Coastal development has been the main driver of mangrove loss across Jamaica. In the north of the country clearing and reclamation of mangrove habitat has been particularly driven by residential and tourism development, especially where hotels and restaurants seek land as close to the coastline as possible driven by tourist preferences, whereas in the south, port and industrial development has contributed substantially to losses.
  - ? With the growth of Kingston on the south coast, and Montego Bay, Ocho Rios and Port Antonio on the north, much of Jamaica's original mangroves and coastal wetlands have been destroyed by coastal development and rapidly urbanizing tourist areas are threatening many of the remaining areas.
  - ? The greatest destruction has occurred in the larger estuaries now used for harbor facilities such as along Hunt's Bay and the Kingston waterfront as a result of an expansion of marine terminals and warehouses, freeport sites for industry, and residential subdivisions (particularly in estuarine locations - harbour facilities such as along Hunt's Bay and the Kingston waterfront)
  - ? In Port Royal and Palisadoes, on the south coast of Jamaica mangroves were destroyed to facilitate road, airport and marina construction.

- ? Shoreline hardening using artificial structures and developing coastlines with hard barriers has preventing landward mangrove migration, resulting in a process commonly known as ?coastal squeeze?.

39. As highlighted by the Forestry Departments EU-BSP Mangrove reports (2019-2021), most of the mangrove losses were related to tourism development. This data further validates the opinions reflected from the stakeholder engagement surveys, where tourism related developments were regarded by respondents, as the most detrimental industry to forested wetland conservation in Jamaica. A NEPA State of the Environment Report stated that tourism expansion alone in Trelawny parish was responsible for over 160 hectares of mangrove forest reclaimed between 2005 and 2010 (NEPA 2010).
40. The NMMP team?s review of recent mangrove losses revealed at least one case where mangrove losses were facilitated and/or implemented by GOJ Agencies: The Port Authority and Trelawny Municipal Corporation. The relocation of the Falmouth Market involved the reclamation of 6 ha of mangrove forest, and perhaps unwittingly facilitated further expansion of an adjacent informal settlement. The reclaimed market area was thereafter used as an access road for the adjacent community.
41. Overwhelming evidence points to the notion that tourism-related pressure in the last decade has been the main motivation for mangrove forest loss in Jamaica. Jamaica?s northern parishes (main tourism belt) have seen a decline in nearly 300 hectares of mangroves between 2005 and 2010. However, it must be stated that tourism related developments receive a natural ?bias? as they are often publicly documented and circulated in the mainstream media. The FD EU-BSP report and the NMMP consultant team unearthed a few cases where mangrove lands were degraded unwittingly through aquaculture or agricultural expansion, especially in Southern Clarendon. The expansion of fish farms in Old Harbour Bay, Milk River and Mitchell Town have removed mangrove ponds.
42. There is currently no requirement for wetland modification permits, and thus no reports submitted, when small-scale (e.g. single houses) development is permitted by municipal corporations

#### Resource over-exploitation / Unsustainable harvesting

43. Mangrove forests have played an important historical and traditional role in many Jamaican coastal communities with services such as wood supplies for construction, daily-use and artisanal products, small-scale farming, firewood (charcoal) and subsistence fishing in canals and rivers. As a result, these forests are threatened in some areas due to over-exploitation of resources.
44. Common human activities of mangrove forests in the region include grazing of cattle and other livestock, subsistence agriculture, charcoal production and construction from mangrove wood and timber, and subsistence fishing in the canals and rivers (Henry et al., 2018).
45. Extractive industries (removal of fish, shellfish, reptile skins, and honey at subsistence and artisanal levels) are less damaging, as they require the mangrove tree to replenish to give more of its product over time, while the trees continue to sequester carbon, produce oxygen and support biodiversity in most cases (Trench, 2021 [1]). Most extractive industries are more damaging to trees than to the hydrology of the forest.

#### Pollution (marine litter, trash via storm drains)

46. Mangroves are also increasingly facing threats from marine litter, especially in lagoon and riverine areas where trash is directly dumped or is flushed into coastal waters through storm drains. Mangrove

prop roots and soils can be covered in plastic and other litter, preventing uptake of important gasses and nutrients. Mangrove roots also trap and collect litter into localized areas, having a major impact on the mangrove ecosystem biodiversity.

47. Another indirect human impact is pollution from human activity, such as outfalls from waste-water treatment plant or waste from construction activities that can cause already stressed mangrove habitats to either degrade or be completely lost, and negatively impact their ability to recover after natural stressors such as a hurricane or drought (Mott McDonald, 2007 [2]).
48. The city of Kingston discharging its waste into an enclosed harbour has many consequences to the organisms inhabiting the area, including humans. Mansingh et al. (1995 [3]) documented that pesticide contamination (e.g., diazinon and aldrin) was evident in oysters and fish sampled within the Kingston Harbour and its mangroves.

#### Altered hydrological conditions

49. The most pronounced indirect threat to biodiversity and health of mangrove ecosystems in Jamaica is the numerous ways in which the hydrological conditions have been altered. Among the many ways this can occur include the alteration of river flows for irrigation for large-scale sugarcane and banana agriculture and more localized aquaculture, to impacts on surface and water table levels and salinity due to road and housing construction, unsustainable pumping, and illegal settlements and unchecked urban sprawl.
50. In many case studies of mangrove land-use changes, features to connect and maintain mangrove hydrology (e.g., culverts) are often omitted due to cost, lack of proper planning and monitoring or ignorance (Trench, 2021).
51. The most recent diagnosis by the University of the West Indies, Centre for Marine Sciences team for The Nature Conservancy revealed that 13.3 hectares of mangrove forests in Old Harbour Bay experienced die-back resulting from hypersalinity conditions which were created by anthropogenic actions. In this case study, shrimp farm operations in the 1980's redirected riverine waters from a small tributary which historically entered a mangrove area into their operations and then out into the area's main inlet canal. The operators diverted their effluent water into a solitary culvert, which lead into and sustained the mangrove area up to 2007. This culvert was unwittingly blocked by residents due to construction failure, preventing fresh water from entering the mangroves. This mangrove forest was converted to a salina over three decades

#### Water quality (discharge of pollutants)

52. While less impactful, mangroves ecosystems are also subject to water quality issues. Mangroves tend to trap and concentrate pollutants. The extent to which various types of pollutants, other than oil and sediments, contribute to mangrove destruction is uncertain. However, it is known that in mangrove-fringed estuaries, the concentration of pollutants, and/or temperature and salinity changes, tends to upset the delicate balance of microscopic life, drastically altering the entire coastal ecosystem.
53. Significant mangrove degradation may also be attributed to sugar cane farming

#### Invasive species

54. Mangroves are further indirectly threatened by the introduction of several invasive species, including several plant species like hydrilla (*Hydrilla verticillata*) and cattail (*Typha domingensis*) and numerous land and marine animals, including feral goats, green mussels, ship worms, and lionfish.

#### Climate change

55. A last recognized threat, especially to overwash and intertidal mangroves ecosystems, is the impacts of climate change. In general, adverse impacts to mangroves from climate change include increases in sea-level, frequency and/or intensity of storms and associated storm surges, temperature and aridity (Gilman et al., 2008 [5]; Jennerjahn et al., 2017 [6]). This is leading to increasing wave energy uprooting mangrove trees, accelerating shoreline erosion, and making natural repopulation and replanting efforts more unsuccessful.
56. While mangroves in the Caribbean appear to be keeping pace with current sea-level rise rates of 1 to 2.5 mm/year this may not remain the case with accelerated sea-level rise in the future (McKee et al., 2007 [7]).
57. Increases in the frequency of droughts and reduced rainfall, related to extreme El Nino events in the Caribbean, can further impact mangroves by limiting sediment supplies (Galeano et al., 2017 [8]).

[1] Trench, C. 2021. *Hydrological Restoration Approaches to Mangrove Forests in Jamaica*. PhD thesis. The University of the West Indies, Mona. Kgn 7

[2] Mott McDonald, 2007. *Falmouth Cruise Terminal Environmental Impact Assessment*. Surrey, UK.

[3] Mansingh, Ajai, and Arlene Wilson. 1995. Insecticide Contamination of Jamaican Environment III: Baseline Studies on the Status of Insecticidal Pollution of Kingston Harbour. *Marine Pollution Bulletin* 30, no. 10: 640-45. [https://doi.org/10.1016/0025-326X\(95\)00038-O](https://doi.org/10.1016/0025-326X(95)00038-O).

[4] Lewis III, Roy, Eric Milbrandt, Benjamin Brown, Ken Krauss, Andr? Rovai, James Beever, and Laura Flynn. 2016. Stress in Mangrove Forests: Early Detection and Preemptive Rehabilitation Are Essential for Future Successful Worldwide Mangrove Forest Management. *Marine Pollution Bulletin* 109, no. 2: 764?71. <https://doi.org/10.1016/J.MARPOLBUL.2016.03.006>.

[5] Gilman, E.L., Ellison, J., Duke, N.C., Field, C., 2008. Threats to mangroves from climate change and adaptation options: A review. *Aquat. Bot.* 89, 237?250.

[6] Jennerjahn, T.C., Gilman, E., Krauss, K.W., Lacerda, L.D., Nordhaus, I., Wolanski, E., 2017. Mangrove Ecosystems under Climate Change - In: Rivera-Monroy, V.H., Lee, S.Y., Kristensen, E., Twilley, R.R. (Eds.), *Mangrove Ecosystems: A Global Biogeographic Perspective: Structure, Function, and Services*. Springer International Publishing, Cham, pp. 211?244.

[7] McKee, K.L., Cahoon, D.R., Feller, I.C., 2007. Caribbean mangroves adjust to rising sea level through biotic controls on change in soil elevation. *Glob. Ecol. Biogeogr.* 16, 545?556.

[8] Galeano, A., Urrego, L.E., Botero, V., Bernal, G., 2017. Mangrove resilience to climate extreme events in a Colombian Caribbean Island. *Wetl. Ecol. Manag.* 25, 743?760.

#### Root causes

58. The future health of mangroves in Jamaica, in the absence of targeted action to conserve or restore these forests, depends to a large extent on how easily accessible the forest is to human use and activities. One example is the St. Thomas Great Morass in eastern Jamaica that covers around 1660 ha (Henry et al., 2018). This area of mangrove forests has remained relatively undisturbed due to its remoteness from urban regions. Yet, even in this region a variety of human uses potentially threaten the mangrove forests particularly if they are not well managed.
59. The private ownership of mangroves represents a further root cause, in the context of the inherent difficulties and challenges about incentivizing owners to prevent fragmentation, destruction and degradation and undertake implement positive management actions.
60. The 2016-2021 NBSAP identifies several important factors that contribute to the loss of biodiversity in Jamaica, including poverty, population growth, lack of public awareness about the importance of conserving biodiversity. The loss in habits is largely seen as a result of population growth, coupled with subsistence use, agricultural, industrial, and commercial expansion, which resulted in intense competition for land, leading to encroachment and fragmentation of natural habitat.

Specific root causes (source: Camilo Trench, personal communication)

61. Gaps and deficiencies in existing policy, legislative framework and enforcement of laws for the protection and conservation of forested wetlands
62. A need for improved integration of relevant biodiversity targets and approaches (RAMSAR, NBSAP) across sectoral development plans
63. Unsustainable livelihood practices are embedded as a part of Jamaican society, and are widespread and mostly unreported
64. Mangrove forest monitoring and enforcement has numerous gaps, as there is inadequate coordination and responsibility between relevant institutions
65. There is currently no requirement for wetland modification permits, and thus no reports submitted, when small-scale (e.g., single houses) development is permitted by municipal corporations
66. Minimal public education programs specific to wetland conservation
67. Lack of education and understanding of the communities with chronic wetland degradation on activities which impact wetland ecosystem health and function.
68. Insufficient wetland conservation steps and actions implemented by ?non-core? GOJ agencies [e.g., National Works Agency (NWA), Min of Local Govt./Municipal corporations, Jamaica National Heritage Trust (JNHT), National Land Agency (NLA)] that can approve development within wetland areas
69. Several protected and conservation areas where wetlands are found have multiple designations declared under different acts and therefore managed by multiple institutions. This can and has created confusion in their overall management. There does not exist a full list of protected and conservation areas which indicates under which legislation and organisation they are managed.

70. There is inadequate coordination between institutions which lead to policy incoherence, lack of common standards, policy gaps, lack of implementation of policy and lack of infusion of environmental issues into sectoral policies.
71. The Ministry of Local Government and Community Development (MLGCD) and Municipal Corporations lack staff complement to review building permits for Ecological compliance e.g., permit locations in mangrove forests that require reclamation and wetland modification
72. Mangrove restoration approaches undertaken by NGO's in Jamaica are 'biased' towards 'mangrove gardening' approaches, which gives the poorest results and wastes resources
73. Improper solid waste disposal is rampant and 'anti-litter' laws are not consistently enforced island wide
74. High level wetland modification is legal and feasible if the developer has the resources to acquire permits and pay associated fees (wetland modification, environmental permits, mitigation costs, fines)
75. Numerous permitted and unpermitted housing developments in forested wetlands, especially on GOJ lands
76. Numerous cases of incidental forested wetlands damage by utility companies, due to lack of guidelines and/or enforcement
77. Lack of political will or human resources to alleviate squatting and illegal encroachment, especially in Government owned lands
78. The use of buffer zones around protected and conservation areas and heritage and cultural sites is largely not done in Jamaica. It is only done for World Heritage Sites and Game Reserves.
79. System for monitoring wetland modifications etc. requires improvement - no culture of enforcement, roles and responsibilities not well defined, oftentimes resulting in agency conflict and overlap.

#### **Barriers**

80. **Barrier 1:** For Jamaica's mangrove ecosystems, the most significant barrier is formed by the numerous policy gaps that exist in current laws and regulations that continue to allow many of the above biodiversity threats to exist, often based on an incomplete knowledge of Jamaica's mangrove ecosystems. This has led to very limited incentives to protect mangrove ecosystems from many government agencies beyond the Forestry Department and NEPA, and especially on private lands.
81. **Barrier 2:** Further, the current policies are outdated, often lacking the latest scientific research, leading to weak disincentives. For example, private developers are increasingly opting to offset reclamation of primary mangrove areas with replanting mangrove seedlings, but with little regard for the long-term survival rate of the mangroves nor to restore lost ecosystem services from the original mangrove area. This 'no net loss' approach has become a relatively simple way for land developers to pay their way out of environmental issues but fails to consider an ecosystem-based approach.

82. **Barrier 3:** Further, the lack of economic valuation of mangroves and incorporation of the value into land use planning and other resource decision making processes, has incentivized short-term profits, largely from tourism, over long-term revenue generate by the multitude of ecosystem services provided by mangrove ecosystems, especially the protection of important biodiversity and coastal ecosystem health that underpins Jamaica's tourism sector as well as consideration of impacts to local livelihoods like fishing communities.
83. **Barrier 4:** The private ownership of mangroves also represents a major policy barrier. Private land ownership leads to inherent difficulties and challenges with regard to incentivizing owners to prevent fragmentation, destruction and degradation and undertake implement biodiversity-positive management actions.
84. Thus, the overall main project barriers include gaps in policy and incomplete mangrove ecosystem knowledge and awareness that are allowing resulting in multiple and site-specific drivers of mangrove ecosystem degradation.
85. Table 1 presents the threats to mangrove forests, and by extension the challenges to mangrove conservation across the Island. Some of these threats have linked socio-economic barriers that are also explored.

**Table 1 Mangrove Conservation Threats/Challenges with linked Social and Economic Barriers**  
(Source: Trench et al., 2022 [1])

Mangrove Threats/Conservation Challenges	Socio-economic Obstacles
<b>Coastal developments-Planned/Permitted (hotels and housing)</b>	<ul style="list-style-type: none"> <li>? New developments usually equate to employment and growth in businesses which helps to promote rural-urban migration and a proliferation of unplanned developments/informal communities.</li> <li>? Governmental pressure to fast-track developments.</li> <li>? Low regard for environmental conservation.</li> <li>? High unemployment rate.</li> </ul>
<b>Civic Projects (roads and bridges, etc.)</b>	<ul style="list-style-type: none"> <li>? Lack of civil infrastructure slows productivity.</li> <li>? Governmental pressure to fast-track developments.</li> <li>? Community support</li> </ul>
<b>Illegal logging; cutting for firewood and charcoal burning</b>	<ul style="list-style-type: none"> <li>? Only source of income for some households.</li> <li>? High percentage of community living in poverty.</li> <li>? Social norm</li> </ul>



<p><b>Natural Disaster (Hurricanes, Storms, floods, etc.)</b></p>	<ul style="list-style-type: none"> <li>? Low-income earners may occupy easily accessible lands, i.e., wetlands.</li> <li>? Relocation of informal unplanned communities from government lands (wetlands) is politically unpopular and unfeasible in many instances.</li> <li>? Critical infrastructure (e.g., airports, ports) and buildings in wetland areas at higher risk of damages</li> </ul>
<p><b>Disrupted hydrology</b></p>	<ul style="list-style-type: none"> <li>? Lack of proper planning involvement from government and civic planning agencies.</li> <li>? Unplanned or poorly planned developments and informal communities can severely disrupt mangrove forests.</li> </ul>
<p><b>Lack of knowledge about the system, how valuable it is (in monetary terms and otherwise).</b></p>	<ul style="list-style-type: none"> <li>? Minimal or no public education programs specific to wetland importance.</li> <li>? Insufficient public education budget for wetlands in government institutions.</li> </ul>
<p><b>Lack of long-term funding</b></p>	<ul style="list-style-type: none"> <li>? Grant funding opportunity is more accessible to established institutions, and individuals with higher educational levels.</li> <li>? Wetland conservation grants are normally available short-term (1 to 5 years).</li> </ul>
<p><b>Unplanned settlements; multiple squatter settlements</b></p>	<ul style="list-style-type: none"> <li>? High occurrence in wetland areas, makes these settlements difficult to remove/relocate economically or politically.</li> <li>? High occurrence in GOJ owned wetlands due to limited monitoring and management of these lands.</li> <li>? Lack of property rights.</li> <li>? Proximity to job opportunities and city centers.</li> <li>? Inflation and poverty- wetlands are easily developed compared to hilly areas.</li> </ul>

<b>Pollution; lack of garbage collection, improper disposal of solid waste and incidental marine litter</b>	<ul style="list-style-type: none"> <li>? Lack of garbage collection in volatile communities.</li> <li>? Insufficient enforcement of anti-litter laws.</li> <li>? Unplanned informal settlements sited close to storm drains/gullies.</li> <li>? Improper waste disposal normalized in Jamaican culture.</li> <li>? Population growth.</li> </ul>
<b>Siloed and uncoordinated legislative framework in place to legally protect wetlands</b>	<ul style="list-style-type: none"> <li>? Need for a comprehensive financial strategy for mangrove management and conservation.</li> </ul>
<b>Lack of enforcement activities and project implementing agency for mangrove areas</b>	<ul style="list-style-type: none"> <li>? Paucity of field enforcement officers.</li> <li>? Low political will.</li> <li>? Enforcement activities fall under multiple agencies? jurisdiction; no clear ownership.</li> </ul>
<b>Climate change impacts</b>	<ul style="list-style-type: none"> <li>? Original Infrastructure for the country is coastally based and designed prior to climate change realities/thoughts.</li> <li>? Small island developing states are significantly vulnerable to the impacts of climate change and are largely dependent on funding from development or multilateral agencies.</li> </ul>

[1] Trench, Camilo; Nembhard, Danielle A.; Ross, Demesha and Javel Noble. 2022. *Development of a National Mangrove Management Plan ? Situational Analysis* (April 2022)

2) Baseline scenario and any associated baseline projects

#### Overview areas in Jamaica

86. Jamaica, the third largest island in the Caribbean, is situated about 145 kilometres south of the island of Cuba, with a total landmass of 10,991 square kilometres and a population of approximately 2.7 million people. The country has several rugged mountain ranges, with the highest point, the Blue Mountain Peak, rising over 2,256 metres (7,402 feet). More than 120 rivers flow from the mountains to the coast.
87. Jamaica's Land Use Cover Assessment [1] of 2015 shows that 40% or 439,938 hectares of Jamaica's land is covered by forest. This compares with 30% in 1998, an increase in forest cover for the country over the intervening sixteen years and is attributed mainly to the increase of secondary forest cover and to the improvement in technology and higher resolution satellite images which has resulted in more accurate assessments. Of Jamaica's total forest cover, 59% is classified as broadleaf forest, which

comprised closed broadleaf (19%) and disturbed broadleaf (40%) forests. Secondary forest experiencing even greater disturbance accounts for 28% of forest cover. Open dry tall limestone forest makes up 8%, mangrove forests and swamp forests contribute 3% and plantation forest accounts for 2% of forest cover.

88. A recently published 2019 report by NEPA and the World Bank assessing mangrove ecosystem valuation in Jamaica concluded that: *“there is a serious need for preservation of Jamaica’s mangrove ecosystems considering that majority of the country’s economy and business is from these coastal areas.”* Despite an increasingly accepted view that mangrove ecosystems and the biodiversity contained within are important both to Jamaica’s tourism-based economic and the livelihoods of local communities, the conservation and restoration of mangrove ecosystems and associated biodiversity has largely been unsuccessful. The main barriers preventing addressing the largest threats to mangrove ecosystems are recognized to include a lack of coordination and science-based decision making in land-use planning and poorly supported by inconsistent policy and regulatory gaps
89. The summary report emanating from the Forestry Department’s EU-BSP mangrove assessments revealed that Jamaica has 13,784 hectares of forested wetlands. In the report the mangrove sites were examined for: location and size, land ownership, status and threats and vegetation characteristics. The report stated that the most significant percentages of coastal mangroves were found in the southern sections of St. Thomas, St. Catherine, Clarendon, St. Elizabeth and Westmoreland parishes, primarily in sheltered bays, estuaries, and inlets. Wetland parcels were identified as mangroves and swamp forests by the spatial mapping software if over 75% of these areas had over 1 ha mangrove trees or swamp forest species.
90. Despite the data collection gaps stated by the FD, the data collected by these surveys represent a significant milestone in the management of Jamaica’s mangrove forest, with a government agency having reviewed known and suspected mangrove forest by aerial image analysis, in addition to physically verifying the location and status of over 95% of Jamaica’s mangrove forest lands. While some impacts like pollution were quantified per parish, others like land reclamation in mangrove forests were only mentioned, as no specific metric was denoted.
91. The largest areas of mangroves are found in the Black River Lower Morass (approximately 6,000 ha) and the Negril Great Morass (approximately 2,300 ha). These wetlands together represent 70% of wetland cover in Jamaica and contain not only large areas of mangrove forest, but also swamp forests and marshlands.
92. The land ownership data extracted from the EU-BSP reports revealed that most forested wetlands (swamp forest or mangrove lands) in Jamaica are in the possession of the GOJ ministries and/or agencies and statutory bodies. These two categories totalled over 6,800 ha of the 10,600 ha investigated for those surveys. These data are presented below:

? Bauxite/Mining Companies: 27.9 ha

? Government entities: 5,277.29 ha

? Private/Individual Ownership: 3,705.38 ha

? Statutory Bodies (e.g., UDC): 1,610.39 ha

93. As will be discussed in detail later in the SWOT analysis section, the ownership figures for mangrove forests lands in Jamaica may be a positive factor for the Forestry Departments' Mangrove conservation plans and ambitions. This factor may afford government entities with greater accessibility to these parcels as privately owned parcels of land may be more subject to development pressure and more may be more difficult to designate with protected status. Conversely, stakeholder surveys and desktop review by the consultancy team revealed that several well-known and traditionally large parcels of unplanned development settlements occur on government owned lands island wide, with a high occurrence of these parcels cited close to major resort towns e.g., Falmouth, Savana-la-mar, Green Island and Orange Bay.
94. Mangrove habitats, along with coral reefs and other coastal habitats provide significant economic value to nations and coastal communities in Jamaica, the Caribbean, and globally in terms of coastal protection, carbon sequestration, tourism and fisheries benefits (Ortega et al., 2019). Jamaica's mangrove forests provide US \$32.6 million [JMD 4.38 billion] in flood risk reduction benefits every year. These are in addition to the billions of dollars in other ecosystem services such as tourism, carbon sequestration, fisheries, timber and firewood that are critical for enhancing the resilience of coastal communities (Edwards, 2019 [2]).
95. Table 2 presents an overview of the mangrove areas in Jamaica across parishes. It is shown that mangroves are mainly found in the parishes of St. Catherine, Clarendon, St. Elizabeth, Westmoreland, St. Thomas and Trelawny parishes. The parishes of St. Ann, Portland and St. Mary have the least area of mangroves.

[1] Forestry Department, Jamaica's Land Use Cover Assessment: A comparative assessment of Forest Change between 1998 & 2013 (Forest Resource Information Management Branch, GIS Unit, 2015).

[2] Edwards, P.T. 2019. *Valuation of Selected Ecosystem Service Co-Benefits Beyond Coastal Protection*. World Bank. Kingston, Jamaica.

**Table 2 Description of mangrove areas across parishes (Status of Jamaican Mangroves, 2014, NEPA ? number of sites and areas from Forestry Department's EU-BSP Mangrove and Swamp Forest Verification Reports)**

Parishes	Nr. of sites	Total area (ha)	Description of Mangrove Areas across Parishes
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Kingston & St. Andrew	14	480	Most wetlands are found within the Palisadoes-Port Royal Protected Area as well as sections of Hunt's Bay. The variety of wetland types are found in this area including cays, shoals, mangrove lagoons and islands
Clarendon and St. Catherine	15	5859	The Portland Bight Protected Area is found in both Clarendon and St. Catherine. The Protected Area is the largest on the island and includes approximately 187, 515 hectares of coastal lands and marine area to a depth contour of 200 metres. Of that amount, approximately 8,288 hectares is covered by wetlands which are distributed across the coastal areas of the wetland and offshore cays.
Manchester	5	286	The main wetlands are found within Canoe Valley and Alligator Hole, Guts River and Alligator Pond. Canoe Valley is a game reserve but is not yet a protected area. Guts River has tourism, fishing, coal production and recreational activities. Alligator Pond is designated as a conservation area on the existing development orders
St. Elizabeth	5	1728	Most mangroves are located within the Black River Lower Morass and is formed by the Black River and its tributaries making a large freshwater swamp, with a complex of shallow brackish lagoons, limestone islands, tidal marshes, mudflats and mangroves near the coast, and extensive freshwater marshes with peat formations. Font Hill represents the second largest area of wetland occurring within the parish.
Westmoreland	8	2201	A significant portion of the wetlands are found in the Negril Great Morass which straddles both Westmoreland and Hanover. It covers an area of approximately 2,289 hectares. The remaining portions of wetland are located within the Savanna-la-mar area and coastal sections of Little London.
Hanover	11	482	Like Westmorland, a large expanse of the Negril Great Morass is located along the southern boundary of Hanover. Smaller pockets of mangrove is located within coves along the mouths and along the banks or rivers and tributaries throughout the parish. Other mangrove areas in the parish include Green Island, Mosquito Cove, Industry Cove, Copperwood, Lucea and Point.
St. James	5	157	The largest continuous wetlands in St. James are located around the Bogue Lagoons, the Donald Sangster International Airport and Greenwood ? Long Bay. Mangroves are also located at the Half Moon Hotel and at the Wyndham Rose Hall sewage ponds. The mangroves within this area are disappearing at an alarming rate due to the development of hotels, shopping centres and housing.

Trelawny	14	797	Trelawny represents the north coast parish with the largest wetland distribution. The largest wetland area is in Falmouth with smaller areas located in Duncans, Coral Spring and Rio Bueno.
St. Ann	8	91	Wetland distribution in the parish is scattered in small clusters along the coastline. These include sections of the Rio Bueno River, Discovery Bay, Green Grotto, Pear Tree Bottom and Priory.
St. Mary	1	12	St. Mary has the lowest mangrove coverage of all north coast parishes. Mangroves are mainly found in small patches along the banks of rivers and tributaries throughout the parish. These include Annotto Bay, Salt Bay, Port Maria and Oraccabessa.
Portland	3	56	Portland does not have a vast expanse of mangroves; those areas where mangroves are found have been heavily impacted by development nonetheless a few areas exist with intact forest. mangrove areas include West Harbour, Salt Creek, Turtle Crawl and Manchioneal. The largest distribution with the most significant functionality is located at Turtle Crawl, with Manchioneal being the second largest.
St. Thomas	5	1565	The major wetlands are located with the Bowden and Great Morass with smaller areas distributed along the Yallahs Salt Ponds.
<b>Total</b>	94	13,714	

#### The National Mangrove Management Plan (NMMP)

96. There are several major baseline initiatives related to mangrove ecosystem conservation currently in Jamaica, of which the most important is the ongoing development of a National Mangrove Management Plan (NMMP), led by the Jamaica Forestry Department as part of the 11<sup>th</sup> European Development Fund Budget Support Program titled *Addressing Environmental and Climate Change Challenges through Improved Forest Management for Jamaica.* This four-year programme began in 2018 and is expected to be completed by the end of 2022.
97. When completed, the NMMP will be the main government document to guide mangrove management in Jamaica. Based on the National Forest Management and Conservation Plan (NFMCP - described in detail below), the NMMP functions as a technical guidance document that provides direction for a national comprehensive, consistent, and science-based approach for the management of mangrove habitats. The NMMP will not be a legal or policy document, nor will it include site specific management prescriptions. The main objective of this GEF project is to support the implementation of the NMMP to promote a biodiversity-positive approach towards sustainable management of mangrove ecosystems.

98. The development of the NMMP was informed by mangrove ecosystem field assessments led by the Forestry Department. These field assessments are the most comprehensive nation-wide assessment of mangrove ecosystems and associated biodiversity for Jamaica. The information collected from the field assessment serves as the baseline for future monitoring efforts incorporated into the NMMP. The NMMP is scheduled to be completed by the end of August 2022 and overlaps with the development of this GEF project, providing critical stakeholder engagement opportunities across both initiatives and informing this full project development.

99. The goal of the NMMP is formulated as follows: "To implement strategies that will achieve the conservation of a minimum of 60% (7600 ha) of Jamaica's government-owned forested wetlands and 20% of privately owned forested wetlands by 2062" (Trench et al., 2022).

100. The Strategic Objectives of the NMMP are:

- a. Reverse the loss and degradation of forested wetlands and to conserve those that remain through wise use and management, strengthening the legislative, policy and institutional framework and mainstreaming forested wetlands across government and society.
- b. Improve the technological, technical, staffing capacity, participatory planning and knowledge management within the Forestry Department, NEPA, its partners and communities to enhance implementation.
- c. Increase public awareness, information dissemination, and formal education levels about forested wetlands, to complement increased protection, conservation and restoration of these ecosystems
- d. Enhance the fair and equitable economic, social and environmental benefits to all from forested wetlands ecosystem services
- e. Identify the existing and potential sources and novel mechanisms to fund proposed forested wetland conservation and management, including innovation and non-financial resources (whether public or private)

101. In line with the five strategic objectives, seven Sub-Programmes are presented in the NMMP:

- i. Legal and Regulatory Framework
- ii. Monitoring, Reporting and Data/Information Management
- iii. Public Awareness and Education
- iv. Capacity Building
- v. Sustainable Livelihoods
- vi. Conservation and Restoration

vii. Research and Development

Policy, Legal and Regulatory Framework

102. The NMMP is being developed to align with the Government of Jamaica's (GOJ) Vision 2030: National Development Plan (Government of Jamaica, 2009): "to protect biodiversity and enhance adaptive capacity towards sustainable use of natural resources". The Vision 2030 Jamaica is the latest strategic plan to guide the country towards a set of development goals. One such goal is for Jamaica to achieve a healthy and natural environment. As a part of this goal, the issues related to coastal management are addressed through the Plan's aim of developing a sustainable management framework of the country's natural resources and by developing a comprehensive approach for hazard risk management and climate change. Other Plans and Policies which pre-date Vision 2030 Jamaica, however, are still relevant and must be considered when developing interventions and planning for Jamaica's forested wetlands.
103. Even with the existence of this legislative and policy framework, mangrove ecosystems, or more specifically, forested wetlands in Jamaica are experiencing tremendous anthropogenic pressures from the various productive sectors and unplanned developments, compounded by climate variability and climate change. This underscores the importance of the NMMP which will serve as the main science-based advisory document to guide the Government of Jamaica (GOJ) on mangrove ecosystem management, and build on the existing legislative, regulatory and policy framework.
104. The key legislative mechanisms, policies and plans are presented in Table 3 below, along with their relevance to the NMMP and this GEF project.

**Table 3 Legislative, Regulatory and Policy Framework for Mangrove Protection in Jamaica**

Name	Description	Relevance to NMMP
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**The Constitution of Jamaica**

The 1962 Constitution protects property rights and establishes principles on the ownership of property in Jamaica. The legal status of owned property applies to the ownership of flora and fauna in Jamaica. The proprietor owns all flora on his/her property and if he/she catches wildlife on his/her property to the Wild Life Protection Act) then he/she owns these wild animals, subject to the Wild Life Protection Act.

In 2011, the Constitution of Jamaica was amended to provide for a Charter of Fundamental Rights and Freedoms. Section 13(3) (1) of the Constitution now recognizes, inter alia, the right to enjoy a healthy and productive environment free from the threat of injury or damage from environmental abuse and degradation of the ecological heritage.

Many forested wetland areas are present on private lands, which may present challenges, as well as some opportunities for collaborative and sustainable protection, conservation or management.

**LEGISLATION**

**The Natural Resources Conservation Authority Act, 1991 and its Regulations**

This Act is the overarching legislation for environmental protection and management in Jamaica. Under the Act, the NRCA may take such steps as are necessary for the effective management of the physical environment of Jamaica so as to ensure the conservation, protection and proper use of its natural resources. The Authority may also promote public awareness of the ecological systems of Jamaica and their importance to the social and economic life of the Island; and advise the Minister on general policies relevant to the management, development, conservation and care of the environment.

The Act also gave power of enforcement of several environmental laws to the NRCA, namely the Beach Control Act, Watershed Act and the Wildlife Protection Act, as well as a number of regulations and orders including:

- ? The Natural Resources (Permit and Licences) Regulations 1996 and (Amendment) Regulations 2015;
- ? Natural Resources (National Parks) Regulations 1993 and (Amendment) Regulations 2003;
- ? The Natural Resources (Marine Parks) Regulations 1992, (Amendment) Regulations 2003, and (Amendment) Regulations, 2015;
- ? The Natural Resources (Prescribed Areas) (Prohibition of Categories of Enterprise, Construction and Development) Order 1996 and (Amendment)

The Natural Resources Conservation (Prescribed Areas) (Prohibition of Categories of Enterprise, Construction and Development) Order, 1996, prescribes the island of Jamaica and the territorial sea of Jamaica as the area in which specified activities- e.g. reclamation of wetlands - are prohibited without a permit. The Natural Resources Conservation (Permits and Licences) Regulations, 1996 set out the requirements for application for a permit or licence.

The NRCA embraces a no net loss approach towards mangrove habitat management, with a specific focus on tree species and not the broader biodiversity within mangrove ecosystems. This no net loss approach has translated into a system where developers clear cutting mangrove land often opt to pay for mangrove replanting efforts in areas that are not conducive to replanting and lead to high mangrove seeding mortality.

There are no regulations governing the use of mangroves/wetlands/forested wetlands under the NRCA Act, and thus no specific restrictions on the activities that may or may not take place in these areas.

<p><b>Wild Life Protection Act 1945 and Wild Life Protection (Amendment of Second and Third Schedules) Regulations 2016</b></p>	<p>The Wild Life Protection Act of 1945 is mainly concerned with the protection of specified faunal species and is the only statute in Jamaica specifically designated to this. This Act protects several rare and endangered faunal species and the Wild Life Protection (Amendment of Second and Third Schedules) Regulations 2016 provides substitutions for the Second and Third Schedules of the principal Act which lists these species.</p>	<p>Plants, such as mangrove trees, are not protected under the Act.</p> <p>The establishment of two types of protected areas, namely Game Sanctuaries and Game Reserves is authorized under this Act. A Game Sanctuary / Game Reserve is a parcel of land, body of water or area comprising both land and water within which, the hunting of animals (including birds) removal of eggs or the nest of any bird and the use or possession of any dog, gun, catapult or any other weapon which could be used to hunt any animals or birds is prohibited.</p> <p>In addition, all Forest Reserves are also designated as Game Reserves and form part of the Protected Areas System of Jamaica.</p> <p>For each Game Sanctuaries/Game Reserve, there is a 50-meter distance from the boundary; this is called a protective zone (National Environment and Planning Agency, 2017)</p>
<p><b>The Endangered Species (Protection, Conservation and Regulation of Trade) Act 2000 (Amended 2015)</b></p>	<p>The Endangered Species (Protection, Conservation and Regulation of Trade) Act was created in 2000 in order to ensure the codification of Jamaica's obligations under the Convention for the International Trade in Endangered Species of Wild Fauna and Flora. This Act governs international and domestic trade in endangered species in and from Jamaica. The regulations associated with this Act were amended in 2015 and include updated fees for the various permits and certificates granted through this legislation</p>	<p>Several recognized endangered species inhabit or can be found in forested wetland areas.</p>

<p><b>The Forest Act, 1966 and Forest Regulations, 2001</b></p>	<p>The Forest Act gives details for the declaration of Crown lands or Private lands (if the owner applies) to be listed as forest reserve or forest management units. Once declared, a forest management plan must be developed for each forest reserve and forest management area every five years. The Act also lists what is considered an offence within a forest reserve or forest management area and the fines for committing such offences.</p>	<p>It is an offence to destroy trees, cause damage, light fires, carry axes, or kill or injure wild birds or animals in a forest reserve or forest management area. This includes mangrove trees.</p> <p>The Act is limited to forest estates/crown lands and would only cover those forested wetlands found there.</p> <p>Order 42 in the Forest Regulations (2001) states explicitly that <i>?a person shall not cut, damage, disturb or cause to be disturbed the forest produce within any wetland, swamp or mangrove forest in a forest estate or protected area and an adjacent buffer zone.?</i></p>
<p><b>The Town and Country Planning Act, 1948 (amended in 1999)</b></p>	<p>The objective of this Act is to ensure the orderly development of land. Development Orders provide detailed, local land use policies and zoning covering most of Jamaica. The content of Development Orders (DOs) is prescribed in Section 10 (1) of the Act. At subsection (b) it is stated that a DO for any defined area shall <i>?contain such provisions as are necessary or expedient for prohibiting or regulating the development of land in the area to which the development order applies and generally for carrying out any of the objects for which the order is made.?</i> In areas covered by a Development Order, planning permission is required from the local authority or from the Town and Country Planning Authority if the area is <i>?called in?</i> or if the development does not conform to the zoning in the Development Order</p>	<p>The Act provides for the making of Tree Preservation Orders (Section 25) whereby a local authority may seek to preserve trees or woodlands in their area and prohibit willful damage or destruction of trees or require the replanting of trees. The Act provides for notification of, designation, and the right to submit objections to the declaration of such an Order including provisions for compensation. The Order may also secure the replanting of any Sector of the woodland area in which trees were felled during the forestry operations permitted under the order.</p>

<p><b>The Beach Control Act, 1956 (amended 2004)</b></p>	<p>The Beach Control Act regulates rights to the foreshore and the floor of the sea in Jamaican waters. Provisions contained in the Act govern commercial and recreational activities; the control and management of development on the beach through licensing provisions; and the protection of the marine ecosystem. Marine protected areas may be declared under the Act.</p> <p>The Act provides for the NRCA to apply to the Court for an order, if so warranted, for a person who has caused any damage to the foreshore or the floor of the sea, to rehabilitate the area or in the case of damage to a natural resource pay damages to the Authority</p>	<p>Mangrove forests or wetland areas may fall under the protection of the Act by virtue of their physical location.</p>
<p><b>The Fisheries Act, 2018</b></p>	<p>This Act repeals the Fishing Industry Act and provides for efficient and effective management and sustainable development of fisheries, aquaculture</p>	<p>Forested wetlands serve as important nursery grounds for commercial fisheries. The industry may have a vested interest in their protection to for viability. However, there are no provisions within the Act to protect/conservate mangrove forests.</p>
<p><b>NATIONAL POLICIES, PLANS AND STRATEGIES</b></p>		

**Vision 2030 Jamaica - National Development Plan, 2009**

Vision 2030 Jamaica is the Government of Jamaica's (GoJ's) National Development Plan (2009) and outlines the Government's stated policy intent for achieving a better future for the country.

The actions outlined in the Vision 2030 Jamaica document are informed by four mutually reinforcing and interlinked goals, which are detailed below:

- ? Goal 1: Jamaicans are empowered to achieve their fullest potential
- ? Goal 2: The Jamaican society is secure, cohesive and just
- ? Goal 3: Jamaica's economy is prosperous
- ? Goal 4: Jamaica has a healthy natural environment

Each goal has clearly articulated national outcomes, many of which hinge on the forest sector. Goal 4 which states that Jamaica has a Healthy Environment, is supported by the following national outcomes:

- ? 13-Sustainable Management and Use of Environmental and Natural Resources
- ? 14-Hazard Risk Reduction and Adaptation to Climate Change
- ? 15-Sustainable Urban and Rural Development.

Vision 2030 Jamaica gives focuses on increasing environmental awareness of the general population and their participation in the management of natural resources; providing an effective regulatory framework for the conservation of our natural resources; incorporating environmental considerations into decision-making processes; determining the economic value of our biodiversity and ecosystem services, as well as the long-term economic consequences of the continuing loss of biodiversity; and preserving and renewing ecological capital. The NMMP will align with this focus.

<p><b>Policy for Jamaica's System of Protected Areas, 1997</b></p>	<p>This policy represents Jamaica's commitment to protecting its environment and resources that are recognized nationally and internationally. It describes the types of protected areas in Jamaica, the roles and responsibilities of stakeholders and the planning for and establishing of protected areas.</p> <p>The goals of the Protected Areas Policy include economic development, environmental conservation, sustainable resource use, recreation, public education, public participation, local responsibility and financial sustainability. .</p>	<p>Two RAMSAR sites overlap with NRCA protected areas i.e. Portland Bight and Cays in the Portland Bight Protected Area (PBPA) and Palisadoes-Port Royal in the Palisadoes-Port Royal Protected Area (P-PRPA). However, there are no regulations governing the activities in these protected areas.</p>
<p><b>The Forest Policy for Jamaica, 2017</b></p>	<p>The revised Forest Policy for Jamaica, 2017 is aligned with the national sustainable development goals of Vision 2030 Jamaica. It also builds on the Strategic Forest Management Plan (SFMP) 2010-2015, which was developed as a framework for increasing the Forestry Department's capacity to manage state-owned forests by increasing the participation of the private sector, community-based organizations, and Nongovernmental Organizations (NGOs) in the sustainable management and conservation of Jamaica's forests?</p>	<p>As stated previously, several forested wetlands occur on private lands and hence with no comprehensive legislative framework to govern their protection. The new Forest Policy<sup>56</sup> identified that without deliberate action by the Government, the quantity and quality of forest cover on private lands will decline. It outlined those appropriate incentives need to be developed to encourage private landowners to retain standing forests; engage in reforestation practices; conduct habitat enhancement activities and prevent soil erosion.</p>

<p><b>Jamaica National Land Policy, 1996</b></p>	<p>The goals and objectives of this Policy are to ensure the sustainable, productive and equitable development, use and management of the country's natural resources. The Policy establishes the framework for the planning, management and development of Jamaica's resources. It takes into consideration that Jamaica, including the foreshore, territorial waters and exclusive economic zone, is a finite resource and a national asset</p>	<p>Wetlands, comprising mangrove forest and swamp, experienced a loss in forest cover of approximately 95% or 2,100 hectares. This was largely due to agricultural activity, herbaceous wetland and infrastructure including buildings and roadways.</p> <p>Land planning must consider the finite nature of forested wetlands, the current rate of loss and the important role they play in providing essential services such as flood control, recharging ground water and carbon sinks.</p>
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**Climate Change Policy Framework for Jamaica, 2015**

The general objective of the Policy Framework is to create a sustainable institutional mechanism to facilitate the development, coordination and implementation of policies, sectoral plans, programmes, strategies, and legislation to address the impacts of climate change. These sectors, which have so far been identified, are: water, energy, agriculture, fisheries, forestry, coastal and marine resources, health, mining, tourism, transportation, solid waste management, planning and disaster risk reduction and response management.

The Climate Change Policy Framework's five objectives are: (i) to mainstream climate change considerations into national policies and all types and levels of development planning, and to build the country's capacity to develop and implement climate change adaptation and mitigation activities; (ii) to support the institutions responsible for research, data collection, analysis and projections at the national level on climate change, its impacts, and appropriate adaptation and mitigation measures, to facilitate informed decision-making and strategic actions at all levels; (iii) to facilitate and coordinate the national response to the impacts of climate change and promote low carbon development; (iv) to improve communication at all levels on climate change impacts and also adaptation and mitigation related opportunities so that decision makers and the general public will be better informed; and (v) to mobilize climate financing for adaptation and mitigation initiatives.

These principles of the policy as well as the overall strategic framework outlined in the policy will guide the development of the NMMP.

In relation to Jamaica's forested wetlands, the Framework outlines the following strategies:

- ? Expand and strengthen coastal monitoring and data collection, to aid decision making;
- ? Promote and facilitate national assessment of coastal areas and of coastal and fisheries resources at risk;
- ? Identify measures to restore coastal wetlands as a defence to storm surges;
- ? Identify and delineate vulnerable areas (including marine areas) in the formulation of a National Spatial Strategy which will utilize hazard mapping;

<p><b>The Protected Area Systems Master Plan: Jamaica, 2013-2017</b></p>	<p>The plan is a requirement under the Convention for Biological Diversity's (CBD's) Programme of Work for Protected Areas (PoWPA). The Protected Areas Committee (PAC) has overall responsibility for guiding and monitoring the implementation of the PASMP. The plan is consistent with several national policies and plans, including the Policy for Jamaica's System of Protected Areas 1997, the National Strategy and Action Plan on Biological Diversity in Jamaica (2003) and Vision 2030 Jamaica: National Development Plan (2009).</p> <p>The aim of the PASMP is to develop a comprehensive and representative system of protected areas including landscape, seascape and natural and cultural heritage. The Plan is the primary national policy document for strengthening management and extending protected area coverage.</p>	<p>There are 10 existing protected area system categories in Jamaica that are legislated by various laws and several responsible agencies. In addition, a number of other government entities (such as the Forestry Department, Fisheries Division and Jamaica National Heritage Trust), local management entities, non-governmental entities, private sector and individuals are outlined as important role players as well. Forested wetlands can be found within various protected area categories including:</p> <ul style="list-style-type: none"> <li>? Protected Area, Forest Reserve (Forest Act, 1996 and Forest Regulations; Forestry Department)</li> <li>? Protected National Heritage (JNHT Act 1985; Jamaica National Heritage Trust, JNHT)</li> <li>? Environmental Protected Area (NRCA Act, 1996; NEPA)</li> </ul> <p>Additionally, the plan states that by 2020, 20% of the coastal and nearshore habitats to the 200m bathymetric contour will be effectively managed.</p>
<p><b>The Jamaica National Heritage Trust Act, 1985</b></p>	<p>This Act establishes the Jamaica National Heritage Trust as a statutory body to protect Jamaica's national heritage, including any place, animal or plant species or object/building.</p>	<p>Forested wetlands can come under legal protection should they fall within a heritage area e.g. Seville Heritage site in St Ann and Port Royal, Kingston</p>

<p><b>National Forest Management and Conservation Plan, 2016-2026</b></p>	<p>The National Forest Management and Conservation Plan (NFMCP) 2016-2026 was developed to ensure Jamaica's alignment with key national policies geared towards achieving national sustainable development objectives.</p>	<p>The NFMCP has incorporated in its actions plans to conduct research and manage mangrove habitats and restore mangrove forest cover.</p> <p>the NFMCP (2016-2026) also indicated that the "high vulnerability of mangrove and swamp forests may allow the Department to pursue the transfer of Government-owned mangrove and swamp forest parcels outside of the Forestry Department's management responsibility from the National Land Agency (NLA)".</p>
<p><b>Assessment and Economic Valuation of Coastal Protection Services Provided by Mangroves in Jamaica</b></p>	<p>A World Bank funded project designed to support the Government of Jamaica in promoting cost-effective coastal protection measures through mangrove ecosystems enhancement. The project has the following outcomes:</p> <ul style="list-style-type: none"> <li>? Mangrove Monitoring and Evaluation Manual ? Jamaica</li> <li>? Online tool for coastal management and risk reduction</li> <li>? Forces of Nature: Assessment and Economic Valuation of Coastal Protection Services Provided by Mangroves in Jamaica</li> </ul>	<p>The key findings on value of coastal protection provided by mangroves, the wind and wave energy reduction and the economic values of mangrove co-benefits provide scientific and economical evidence to support the conservation of mangroves.</p>

<p><b>Coastal Management and Beach Restoration Guidelines ? Jamaica, 2017</b></p>	<p>The focus of these Guidelines is to identify ways to ensure that coastal flood and erosion adaptation techniques, as well as wider land use developments, can be made resilient against climate change threats in a more cost-effective and socially acceptable way. It provides guidance to ensure that current and future Jamaican coastal management schemes (to include those for forested wetlands) are planned appropriately and are adaptive to predicted climatic change.</p>	<p>Provides important guidelines on mangrove restoration and rehabilitation interventions.</p>
<p><b>Guidelines for dealing with informal settlements (undated)</b></p>	<p>The fundamental aim of the squatter management guidelines is to provide guidance to the implementing agencies by way of recommended actions to avert future increase of unplanned/illegal developments and to assist in resolving shelter needs among the targeted population. A major objective of these guidelines is to: - prevent unplanned and unauthorized developments especially those that are detrimental to human health, the environment and the community.</p>	<p>There are several instances of informal settlements occurring in or adjacent to forested wetland areas. These settlements are at risk from natural hazards such as flooding and storm surge, while also causing damage to or removal of mangrove trees.</p>

[1] Forestry Department, Jamaica's Land Use Cover Assessment: A comparative assessment of Forest Change between 1998 & 2013 (Forest Resource Information Management Branch, GIS Unit, 2015).

[2] Edwards, P.T. 2019. *Valuation of Selected Ecosystem Service Co-Benefits Beyond Coastal Protection*. World Bank. Kingston, Jamaica.

#### Socio-economic baseline

105. A recent study conducted by (Bennett, 2021)[1]<sup>1</sup> showed that the economic situation of most mangrove users in the study was challenging, as most persons reportedly earned <J\$20,000 per month. Contextually, this is less the US\$150 monthly. Income levels such as this are mere hand-to-mouth existence, a feature that plagues many fishing communities. Most members of fishing communities close to mangrove sites fall within the lower- and middle-class socio-

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economic status in Jamaica. As such, they depend heavily on additional financial support through remittances, family, and the Programme of Advancement through Health and Education (PATH).

106. Several community members may identify fishing or other mangrove ecosystems as their main source of income. However, they tend to participate in other income-generating activities such as shipwright, infrastructure upgrades, and construction among other things, to take care of their family and sustain their livelihood
107. The main Socio-Economic Activities in Proposed Restoration and conservation Sites are described below:

Parish	Project Restoration Site	Socio-Economic Activities
<b>Kingston</b>	Port Royal (Refuge Cay, Gallows Point, Palisadoes), Port Royal (CMU)	? fishing ? fish nursery ? Heritage site ? recreation ? construction ? habitats; ? eco-tourism ? cruise ship pier ? educational institutions ? Defence (National security) ? housing; and ? grocery shops, bars, and restaurants.
<b>St. Catherine</b>	Old Harbour Bay, Hellshire (Including Half-moon Bay), Manatee Bay	? Fishing ? grocery shops; bars and restaurants ? waste treatment close to Hellshire
<b>St. Thomas</b>	Morant Point, Cow Bay (Albion), Grants Pen, Albion	? Fishing; ? grocery shops, bars, and restaurants

Parish	Project Conservation Site	Socio-economic Activities
<b>Trelawny</b>	Falmouth	? Eco-tourism ? Cultural activities, and ? fishing
<b>St. Catherine</b>	Manatee Bay, Goat Island - Little	? Fishing
<b>St. Thomas</b>	Dalvey & Pera	? Fishing ? Farming

Parish	Project Conservation Site	Socio-economic Activities
Westmoreland	Negril Great Morass	? Eco-tourism ? hotel development ? Cultural activities and, ? fishing
Hanover	Orange Bay	? Eco-tourism ? hotel development ? Cultural activities and fishing
St. Ann	Seville	? horseback riding ? Heritage site ? tourism

108. Proposed mangrove management strategies should consider the most vulnerable groups, communities, and ecosystems. The aim is to ensure that the needs of affected stakeholders are addressed effectively and equitably in the implementation of the NMMP and the GEF project. Specific stakeholder groups and ecosystems listed below include those that may be disproportionately impacted by climate change, disaster and the other drivers of change outlined previously. From the ecosystem perspective, consideration is given to those areas, that if managed, protected or restored, can bring significant benefits to the widest range of stakeholders. These groups and ecosystems include primarily, but are not limited to:

- ? Fisherfolk including capture fishers, oyster collectors, scalers, and vendors. This group of stakeholders is heavily reliant on ecosystem-based livelihoods.
- ? Extractive mangrove resource users including bee farmers, post harvesters, crab hunters and livestock owners.
- ? Communities located in flood prone areas.
- ? Women, youth, the elderly, and those living at or below the poverty line.

3) Proposed alternative scenario with a brief description of expected outcomes and components of the project and the project's Theory of Change

Project intervention strategy

109. The objective of the project is to promote a biodiversity-positive approach towards sustainable management of mangrove habitats by contributing to the implementation of the National Mangrove Management Plan (NMMP). The project will achieve this objective through three project components that collectively are designed to address the direct drivers of mangrove ecosystem degradation and threatening important biodiversity. The project's design follows a logical theory of change that aims to address the main identified threats to mangrove habitats and associated biodiversity, including an incomplete mangrove policy environment, immediate mangrove forest degradation and associated threats to biodiversity due to a larger decline in ecosystem health, and a lack of mangrove knowledge to inform sound local and national decision making.
110. The intervention strategy rests on three fundamental and interrelated axes, which are not currently being covered adequately by the baseline activities, with interventions at the institutional level and interventions at the field level, and that underlie the project's Theory of Change (see Figure).
111. A first axis comprises the strengthening of the legal and regulatory framework for the management of mangrove areas with an emphasis on a biodiversity-positive approach towards sustainable management of mangrove habitats, thereby addressing the policy gaps that are allowing development in mangrove and adjacent ecosystems to continue unmanaged.
112. The second axis concerns interventions in the field related to on-ground restoration of mangrove ecosystems for an improved flow of ecosystem services and protection of important biodiversity.
113. These two technical components are supported by a third project component targeting project knowledge management and project monitoring and evaluation.
114. The project is designed on a Theory of Change (see Figure ) that makes several key assumptions. To start, the proposed project design assumes the NMMP will be fully completed and adopted by the time the project begins to ensure the policy and field restoration activities are guided following national priorities. With only a small fraction of Jamaica's coastline home to mangroves ecosystems, the Forestry Department's analysis shows that the majority of mangrove ecosystems are located on government-owned land. The project will simultaneously focus on government owned and managed lands through declaration of new protected areas, as well as work at the national and local level to better integrate mangrove science into land-use decision making. One final key assumption of the project is the role mangrove data can serve to inform decision making. The project assumes that mangrove ecosystems and associated key biodiversity can be collected and synthesized in a timely manner so that it can inform local land use decision making as well as key project reports for broader sectoral and multi-sectoral knowledge dissemination.

#### **Project objectives, Outcomes and Outputs**

115. The objective of the project is to promote a biodiversity-positive approach towards sustainable management of mangrove habitats by contributing to the implementation of the National Mangrove Management Plan (NMMP). The goal of the NMMP itself is to implement strategies

that will achieve the conservation of a minimum of 60% (7600 ha) of Jamaica's government-owned forested wetlands and 20% of privately owned forested wetlands by 2062?.

116. The project has been organized into three components:

- i. National mangrove policy strengthening to support implementation of National Mangrove Management Plan;
- ii. Mangrove ecosystem restoration for improved ecosystem services and protection of key biodiversity; and
- iii. Knowledge management and project monitoring and evaluation.

117. The fundamental objective of the project is to promote conservation, sustainable use, and where necessary restoration (or rehabilitation), of mangrove ecosystems and their associated habitats to benefit all Jamaican people and their livelihoods fairly and equitably.

Component 1: National mangrove policy strengthening to support implementation of National Mangrove Management Plan

118. The mainstreaming of ecosystem-based management approaches and strategies is needed across all government agencies charged with economic development, land-use planning and natural resource management. Mangrove ecosystems provide important ecosystem services and their protection and sustainable use should be prioritised. However, there is a lack of integration of relevant biodiversity targets and approaches throughout policies, regulations, planning and economic development strategies across all levels of government and sectors of the economy.

119. Component 1 therefore considers three outcomes. The first outcome concerns a strengthened policy enabling environment for successful implementation of the NMMP. The second outcome supports mainstreaming mangrove ecosystem-based management, with emphasis on resource users and livelihoods, into existing land use planning processes. The third outcome is focused on establishing new mangrove protected areas.

Outcome 1.1: Strengthened policy enabling environment for successful implementation of the National Mangrove Management Plan

120. Jamaica has several key legislative mechanisms and agencies with the responsibility for the protection of the environment, including forested wetlands. However, the institutional, policy and legislative framework is marked by gaps and overlapping mandates as it related to wetland management which have, in several cases, facilitated uncoordinated and siloed efforts towards enforcement and effective use of available resources. There are numerous government agencies whose activities and responsibilities have direct and indirect impacts on the condition of forested wetlands. Activities related to coastal development, waste management, agricultural production, infrastructure improvement and tourism development along the coast have resulted in declines in the coverage and/or health of Jamaica's forested wetlands. Unplanned and/or informal development in forested wetlands was recognized as one such class of development that is poorly enforced or regulated, due to a lack of cross agency coordination. Therefore, there is an urgent need for better coordination between sectors, agencies and levels of government to ensure harmony among the various legislative instruments and



policies that dictate wetland conservation enforcement and regulations, and therefore impact the conservation and sustainable use of these important ecosystems.

### **Town and Country Planning & Development Orders**

121. A central component in the TCPA is the preparation, confirmation, and modification of Development Orders (DOs) to guide and regulate the types of development to be permitted within a specific boundary (mainly at the parish/municipal level). The confirmation of a DO was seen as an important prerequisite to guide Local Planning Authorities in the granting of planning permission and in supporting elaboration of local development plans (LDPs). Many of the DOs were prepared and promulgated in the 1960s (Jamaica State of the Environment Report, 2013).
122. Of the 24 DOs currently in place, 12 have been updated in the last 10 years and only three have since been promulgated. DOs (whether provisional or confirmed) are the Town and Country Planning Authority's principal regulatory instrument. However, permission can only be granted if a development application confirms with the NRCA Act (1991). There is an opportunity to integrate local, regional and international conservation and biodiversity targets for forested wetland ecosystems in the DOs to ensure local development guidelines and long-term planning objectives are aligned. DOs should be viewed collectively as one spatial mapping unit (or masterplan) to ensure biodiversity targets for forested wetland (and other ecosystems) protection are strategically comprehensively captured at macro and micro scales.
123. The removal of mangroves, seagrass beds, and coral reefs to facilitate the multi-purpose use of the coastal zone has increased Jamaica's vulnerability to hurricanes and storm surges and poses a major threat to coastal ecosystems and marine wildlife (Climate Change Policy Framework, 2015). It is anticipated that climate change impacts will increase the vulnerability of human settlements to floods, storm surges, sea level rise and hurricanes. DOs (and Local Sustainable Development Plans) should be updated to ensure core areas of forested wetland ecosystems are zoned appropriately to promote their conservation and/or sustainable use. DOs should also be reviewed to ensure current and future zoning addresses the main causes of wetland degradation and biodiversity (relative to each parish) that can be mitigated through strategic ecosystem-based planning.

Output 1.1.1: Relevant provisional Parish Development Orders and Local Sustainable Development Plans revised and/or updated with appropriate zoning of forest wetlands, recommended uses and conservation status

#### **Activities:**

124. Review Parish Development Orders to ensure current and future zoning addresses the main causes of wetland degradation and biodiversity (relative to each parish) that can be mitigated through strategic ecosystem-based planning.
125. Update Parish Development Orders to ensure core areas of forested wetland ecosystems are zoned appropriately to promote their conservation and/or sustainable use.
126. Update Local Sustainable Development Plans to ensure core areas of forested wetland ecosystems are zoned appropriately to promote their conservation and/or sustainable use.

Output 1.1.2: Permitting requirements and processes related to wetland replanting, rehabilitation and/or restoration projects revised to minimise illegal entry into mangroves

**Activities:**

127. Develop project brief & terms of reference for consultancy to revise permitting requirements and processes
128. Prepare guidance on protocols & conditions for replanting, rehabilitation, or restoration projects
129. Revise permitting process specific to replanting, rehabilitation, or restoration projects.

Output 1.1.3: Mangrove and Coastal Wetlands Protection Draft Policy and Regulation, 1997, reviewed, updated and finalised to compel and coordinate action to protect and sustainably use forested wetlands

**Activities:**

130. Review and update Mangrove and Coastal Wetlands Protection Draft Policy and Regulation, 1997, based on the updated situational context for forested wetlands in Jamaica based on the many assessments that have been completed since the first draft of the policy.
131. Draft revised Mangrove and Coastal Wetlands Protection Draft Policy and Regulation, 1997, ready for enactment

Output 1.1.4: Five policy briefs tailored to specific sectors (Port and Coastal Infrastructure, Tourism, Climate Change and Environment, Waste Management, Agriculture and Fisheries) that raise awareness on the value of mangrove ecosystems and biodiversity.

**Activities:**

132. Develop five policy briefs that are tailored to specific key sectors to raise awareness on the benefits of mangrove ecosystems. The five sectors are identified as government, non-government and private sector stakeholders with actions that directly or indirectly impact mangrove habitats, including: 1) port and coastal infrastructure; 2) tourism; 3) climate change and environment; 4) waste management; and 5) agriculture and fisheries.
133. Disseminate five policy briefs that are tailored to specific key sectors to raise awareness on the benefits of mangrove ecosystems.

Output 1.1.5 ? Potential for acquisition of privately owned forest wetlands by GOJ institutions investigated, with indicative costs for the acquisitions

**Activities:**

134. Conduct a feasibility study to investigate the potential for acquisition of privately owned FW lands by GOJ institutions

Outcome 1.2: Ecosystem-based mangrove management, with emphasis in resource users and livelihoods, mainstreamed into land use planning processes.

135. The results of the FD EU-BSP mangrove assessments revealed that close to 14,000 ha of forested wetlands were examined for: location and size, land ownership, status and threats and vegetation characteristics. The Situational Analysis and the National Mangroves Socio-economic Survey that were prepared as part of the development of the National Mangrove Management Plan provide socio-economic livelihood assessments. Aspects of the demographic, social and economic actions for livelihood, land tenure, land use, as well as community issues and communication media were covered in the Socio-economic Survey.

Output 1.2.1 ? A minimum of 7,600 ha of forested wetlands of high ecosystem value and/or special interest designated as protected areas/forest reserves, with boundaries for gazetting and corresponding regulations drafted

**Activities:**

136. Identify forested wetlands (FW) of high ecosystem function and value, and/or special interest, amounting to a minimum of 7,600 ha for designation as protected areas/forest reserves under the NRCA Act, 1991 and/or the Forest Act with corresponding regulations.
137. Generate the boundary descriptions for the (minimum) 7,600 ha of high ecosystem value or special interest FW identified, including recommended buffer zones and zoning for type of use (e.g., general use, habitat protection, preservation etc.)
138. Draft boundaries and regulations under the Forest Act (1996) and/or the Natural Resources Conservation Authority (NRCA) Act, 1991 for enactment for the 7,600 ha of FW (minimum) identified as being of high ecosystem value and/or special interest, that (i) specify activities that are allowed or prohibited in accordance with recommended zonation (ii) stipulate offences and performance bonds (iii) outline incentive mechanisms for private landowners to protect forested wetlands on their property (iv) strengthen the framework to protect and regulate forested wetlands.

Output 1.2.2 ? Gender and youth mainstreaming strategy and plan for ecosystem-based management of priority forested wetland areas developed and implemented

**Activities:**

139. Develop project brief & terms of reference for consultancy to develop a gender and youth mainstreaming strategy
140. Implement gender and youth mainstreaming strategy(ies)

Output 1.2.3: Feasibility of a payment for ecosystem services (PES) program in selected forest wetland areas and adjacent communities examined (pilot)

**Activities:**

141. Conduct a feasibility study to identify potential FW areas/ communities to pilot a payment for ecosystem services (PES) program

### Outcome 1.3: New mangrove protected areas established.

142. the NFMCP (2016-2026) indicates that the high vulnerability of mangrove and swamp forests may allow the Forestry Department to pursue the transfer of Government-owned mangrove and swamp forest parcels outside of the Forestry Department's management responsibility from the National Land Agency (NLA)?.

Output 1.3.1 GOJ forest wetlands in need of urgent conservation and to be transferred to FD prioritised (from identified sites on FD working list)

#### Activities:

143. Prioritise forested wetland areas located on GOJ and/or crown lands for transfer to FD for improved protection, management, and sustainable use (from identified sites on FD working list) - see below

144. In close consultation with experts of UWI-CMS and NEPA, the Forestry Department identified a working list of potential sites identified. The site selection is based on the following: -

- i. The interventions sites must be government (and its subsidiaries) owned. There is the option of working with privately owned mangroves areas
- ii. The activities implemented on the recommended site should be achievable within 3.5 years at the most. There should also be the possibility for continuity beyond the life project
- iii. Sites should have some interventions initiated/already in place that are worth scaling up, expanding and hence funding
- iv. Size of the sites should be significant as a total area of 2000 ha is being aimed for. The intervention may be limited to a smaller acreage, but the impact should be scalable over a wide/larger area.
- v. There must be some social intervention for communities women and youth (even if it is just knowledge and capacity building).

Parish	Site	Size (ha)	Owner
Trelawny	Burwood	1.6	Private ? Royalton Resort
St. Andrew	Soapberry - Riverton South	36.82	Ministry of Housing / Sewage treatment plant

<b>St. Andrew</b>	Six-Miles- Hunts Bay's - Ferry River Marsh lands	281.27	Kingston & St. Andrew Municipal Corporation / Ministry of Housing / UDC
<b>St. Catherine</b>	Old Harbour - Manatee Bay	1248.44	NLA / Ministry of Housing / UDC
<b>St. Catherine</b>	Goat Islands	126.55	UDC
<b>St. Thomas</b>	Dalvey	320.12	SCJ Holdings Limited (GOJ)
<b>Westmoreland</b>	Negril	2251.26	NLA / UDC / Ministry of Housing
<b>Hanover</b>	Rhodes Hall	31.22	Private Hotel Development
<b>TOTAL</b>		4297.27	

Output 1.3.2 ? GOJ lands, including crown lands transferred to the Forestry Department by the Commissioner of Lands, as well as Ministries, Departments and Agencies (MDAs), for the management of forested wetlands

**Activities:**

- 145. Develop a mechanism permitting Forestry Department's management of mangrove forest and swamp on crown lands and have the mechanism signed
- 146. Transfer of lands by the Commissioner of Lands, as well as Ministries, Departments and Agencies (MDAs), forested wetlands that are GOJ lands, including crown lands

**Component 2: Mangrove ecosystem restoration for improved ecosystem services and protection of key biodiversity**

- 147. With an improved policy enabling environment under project component one, the second project component is focused on site-based mangrove ecosystem restoration to improve ecosystem services and protection of key biodiversity in priority mangrove habitats.
- 148. Habitat restoration is not necessarily simple, but of all marine ecosystems, mangroves are the most restorable. Mangroves are opportunistic and given the right settings, they can thrive. What is critical is to ensure that the location is restored in terms of elevation and water flows and that the social and political framework is secure against those impacts that caused their original loss, with clear ownership and regulations for the restoration locations.

149. Mangrove restoration costs less than \$50,000 per hectare [JMD 6.7 Million] across the Caribbean region though data on costs are limited. In Jamaica two such projects report costs of \$32,000 per hectare [JMD 4.3 Million], and over 70% of these costs are attributable to fencing needed to protect the restoration site. Restoration costs across the wider Caribbean are generally comparable and vary from around \$23,000 per hectare [JMD 3.1 Million] in countries like Guyana to around \$14,000 [JMD 1.88 Million] in Grenada.
150. In general, the factors influencing the costs of mangrove restoration projects are four-fold: i) the costs of land and permitting; ii) the costs of obtaining and transporting the material; iii) the costs of designing and constructing the project, and; iv) the costs of monitoring and maintaining the project post-construction. Another factor that influences costs is the restoration technique. Restoration by planting mangrove saplings manually can be cheap if these projects make use of local, voluntary labor. Projects involving hydrological restoration can be more expensive due to the need for specialized equipment, labor and the purchase and transportation of sediment. Maintenance and monitoring are also an important cost component, though often not reported in restoration projects.

**Outcome 2.1: Restored health of priority mangrove habitats to improve associated biodiversity and mangrove ecosystem services, including support to marine ecosystems and fisheries.**

151. The site-specific restoration activities shall follow an ecosystem-based approach, especially considering both threats and drivers to the entire land and marine components of mangrove ecosystems as well as information on the importance of site-specific mangrove ecosystems for provisioning of ecosystem services and supporting local livelihoods, such as fishing communities. Costs associated with an ecosystem-based restoration approach may vary considerably and an estimated US\$450-500 per hectare will be available given the funding amount for the component.
152. Consultation with experts of UWI-CMS and NEPA and review of existing mangrove restoration plans suggests the following potential restoration activities
- ? Water quality analysis of source and impact site
  - ? Assessment of hydrology (water level loggers, flow measurement)
  - ? Topographic survey to determine drainage plan
  - ? Hydrological restoration
  - ? Digging of drainage canals to drain the mangrove area
  - ? Install physical barriers to prevent squatting
  - ? Removal of debris, fill materials
  - ? Solid waste management (removal of solid waste and establishing solid waste barriers)
  - ? Collect and distribute wild mangrove seedlings from local parent trees

- ? Planting of mangrove seedlings / wildlings

Output 2.1.1 ? Forest wetlands in need of urgent conservation/ restoration prioritised (from identified sites on FD working list)

**Activities:**

153. Prioritise forested wetland areas in need of urgent conservation/ restoration (from identified sites on FD working list) - see below:

154. In close consultation with experts of UWI-CMS and NEPA, the Forestry Department identified a working list of eleven potential sites. The site selection is based on the following: -

- i. The interventions sites must be government (and its subsidiaries) owned. There is the option of working with privately owned mangroves areas
- ii. The activities implemented on the recommended site should be achievable within 3.5 years at the most. There should also be the possibility for continuity beyond the life project
- iii. Sites should have some interventions initiated/already in place that are worth scaling up, expanding and hence funding
- iv. Size of the sites should be significant as a total area of 2000 ha is being aimed for. The intervention may be limited to a smaller acreage, but the impact should be scalable over a wide/larger area.
- v. There must be some social intervention for communities ? women and youth (even if it is just knowledge and capacity building).

**Table 6 Mangrove Sites Identified for Restoration**

<b>Trelawny</b>	Falmouth	147.49	NLA / Ministry of Housing
<b>Trelawny</b>	Rock (Falmouth)	177.39	NLA / Ministry of Housing
<b>Trelawny</b>	Little River-Lilliput (Greenwood)	16.68	Ministry of Housing
<b>Trelawny</b>	Scarlett Hall/ Salt Marsh	21.48	Private
<b>St. Andrew</b>	Port Royal	56.38	NLA
<b>St. Andrew</b>	Soapberry Expansion Site	108.68	Ministry of Housing / Sewage treatment plant

<b>St. Catherine</b>	Hellshire (Including Halfmoon Bay)	324.49	UDC
<b>St. Mary</b>	Dover	50.55	NLA
<b>Portland</b>	Hart Hill	31.86	NLA
<b>Clarendon</b>	Portland Cottage	560.56	NLA
<b>Clarendon</b>	Jacksons Bay	50.84	Sugar Co. Jamaica Holdings (UWI SODECO SFS mangrove restoration programme)
<b>Clarendon</b>	Rocky Point	26.43	Sugar Co. Jamaica Holdings (UWI SODECO SFS mangrove restoration programme)
<b>Clarendon</b>	Milk River	387.57	Sugar Co. Jamaica Holdings (UWI SODECO SFS mangrove restoration programme)
<b>St. Elizabeth</b>	Parrotee Pond - Treasure Beach stretch	252.07	NLA
<b>TOTAL</b>		2212.47	

Output 2.1.2 ? Restoration plans developed for prioritised "restorable" mangrove areas in Jamaica with the costs for effecting conservation and/or hydrological restoration

**Activities:**

155. Develop and approve project brief and terms of reference for consultancy to develop restoration plans and budgets
156. Consultancy to develop restoration plans and budgets

Output 2.1.3 ? Hydrological/ hydrodynamic and vegetation features and a natural resource valuation investigated of FD working list of forest wetland sites to be conserved/ protected

**Activities:**

157. Conduct detailed investigations into the hydrological/ hydrodynamic, vegetation features and a natural resource valuation of FD working list with forest wetland sites to be conserved/ protected

Output 2.1.4 ? Restoration/ rehabilitation of prioritised degraded mangrove areas in Jamaica accomplished

**Activities:**

158. Effect restoration plans in selected priority sites



Output 2.1.5 ? Mangrove ecosystem education ?Mangrove Matters? billboards designed and erected alongside restored mangrove areas

**Activities:**

159. Install ?Mangrove matters? billboards alongside restored mangrove areas

Component 3: Knowledge management and project monitoring and evaluation

160. The two technical project components are supported by a third project component aimed at knowledge management and project monitoring and evaluation. The first outcome (Outcome 3.1) of this component aims to improve management and dissemination and awareness of Jamaica mangrove ecosystems and biodiversity knowledge. This will be achieved

**Outcome 3.1:** Improved management and dissemination and awareness of Jamaica mangrove habitat knowledge

Output 3.1.1 ? A standard and GOJ entity used/agreed repository or webpage with forested wetlands use, status and management data in Jamaica created

**Activities:**

161. Develop a project brief & terms of reference for consultancy to develop a database with forested wetlands use, status and management data in Jamaica

162. Consultancy to create a database of FW areas in Jamaica that has data on protection/conservation status or zoning, planned/current rehabilitation exercises, current management arrangement, location of permanent sampling/monitoring plots, ownership status and other relevant data

Output 3.1.2 ? Relevant agencies trained on the purpose and use of the Jamaica forest wetlands database and granted appropriate access

**Activities:**

163. Select staff members of relevant agencies for training in and valid access to Jamaica forest wetlands database

164. Train selected staff members of relevant agencies on the purpose and use of the forested wetlands database and grant appropriate access

Output 3.1.3 ? Existing GIS portal on Forestry Dept website modified to include revised forested wetland locations as a layer/feature.

**Activities:**

165. Develop a project brief & terms of reference for consultancy to modify existing GIS portal on Forestry Dept website to include revised forested wetland locations as a layer/feature

166. Modify existing GIS portal on Forestry Dept website to include revised forested wetland locations as a layer/feature

167. Ensure outputs from interactive map are used by NEPA, FD, Min of Local Government, JNHT for any development approval.

Output 3.1.4 ? Land use and/or zoning maps created with an overlay to illustrate forested wetland locations and physical boundaries using data collected and verified by FD

**Activities:**

168. Develop a project brief & terms of reference for consultancy to update current and projected land use and/or zoning maps with an overlay to illustrate forested wetland locations and physical boundaries using data collected and verified by FD
169. Update current and projected land use and/or zoning maps with an overlay to illustrate forested wetland locations and physical boundaries using data collected and verified by FD
170. Ensure land use and/or zoning map showing FW locations and boundaries, are freely accessible to FW stakeholders and the public
171. A second project outcome (Outcome 3.2) will support the overall project with effective project management and evaluation to inform adaptive management.

Outcome 3.2: Effective project management and evaluation to inform adaptive management

Output 3.2.1 Monitoring and Evaluation Strategy developed with relevant stakeholders, clearly defining expected results, the expected time periods for their completion, and their confirmation through objectively verifiable indicators and means of verification.

**Activities:**

172. Assessment of area restored and protected area creation reported to national UNCCD and CBD focal points
173. Sharing of lessons learned through production of project knowledge material on best practices, policy briefs, etc. for dissemination through digital platforms, public campaigns, etc.

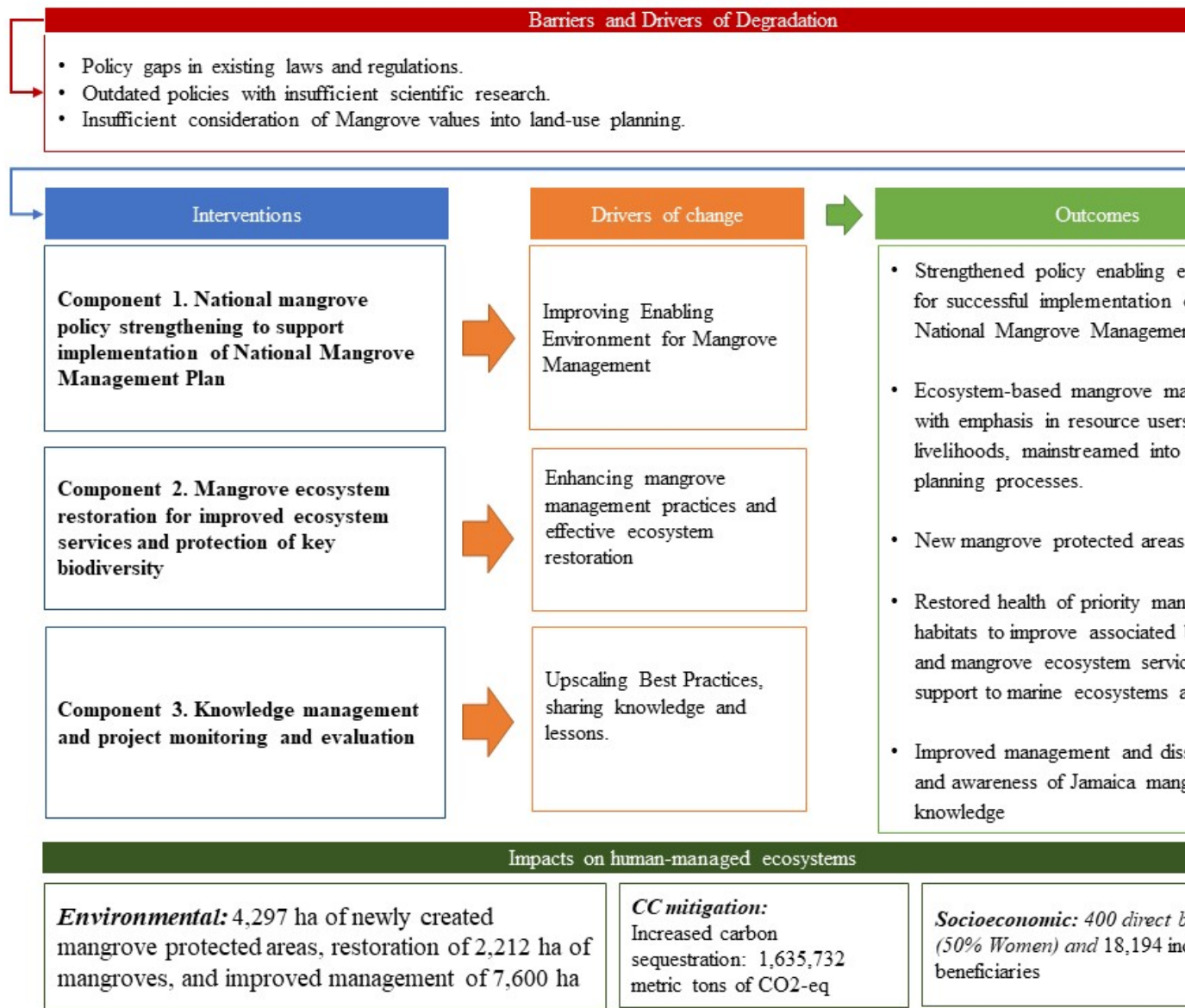
Output 3.2.2 ? Mid-term review and final evaluation conducted in order to constructively inform and guide project implementation, sustainability considerations, and the application of adaptive measures when necessary

**Activities:**

174. Project mid-term evaluation with a section reporting on the implementation of the Gender Action Plan (GAP) of the project.
175. Assessment of GEBs and co-benefits disaggregated by gender for reporting to the GEF and for the mid-term and final evaluations
176. Project final evaluation with a section reporting on contribution to national LDN and biodiversity commitments.

177. Final project report with recommendations developed to ensure sustainability and replication of best practices.

Theory of Change (Figure 3)



4) Alignment with GEF focal area and/or Impact Program strategies

178. GEF funding for this project is coming from Jamaica's Biodiversity STAR. The project is directly aligned to support the Government of Jamaica with meeting key priorities aligned with the Convention on Biological Diversity (CBD) through the GEF-7 Biodiversity Focal Area.
179. More specifically, the project is aligned with three GEF-7 BD focal area objectives. Project Component 1 supporting the policy enabling environment for implementation of the NMMP is linked with BD 1-1: Mainstream biodiversity across sectors as well as landscapes and seascapes through biodiversity mainstreaming in priority sectors and BD 1-3: Mainstream biodiversity across sectors as well as landscapes and seascapes through Natural Capital Assessment and Accounting. Project Component 2, with a focus on restoration of targeted mangrove areas is aligned with BD 2.7: Address direct drivers to protect habitats and species and Improve financial sustainability, effective management, and ecosystem coverage of the global protected area estate.
180. Collectively the project will yield results that support at least four GEF Core Indicators, including approximately 4,297 ha of newly created terrestrial protected areas that included mangroves (GEF Core Indicator 1), 2,212 hectares of mangroves restored in identified project sites (GEF Core Indicator 3), and 7,600 ha of mangrove landscape under improved management that benefits biodiversity (GEF Core Indicator 4), for an estimated total of 1,635,732 tCO<sub>2</sub>-eq of avoid emissions (GEF Core Indicator 6). The project will also support gender equality through activities that will yield co-benefits to approximately 200 men and 200 women (GEF Core Indicator 11).

5) Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing

181. Mangrove habitats are among the most important ecosystems in Jamaica but currently receive the least amount of protection as the coastal ecosystem often falls under multiple and varying local and national management regimes. With an economy heavily reliant on healthy coastal ecosystems to support a booming tourism industry, the decline in mangrove habits is not just a threat to important terrestrial and marine biodiversity, but also a major threat to Jamaica's national economy. Mangrove ecosystems are also an important source of economic livelihoods for local communities, especially fishing communities.
182. The current baseline scenario for mangrove ecosystem management in Jamaica is one of siloed and uncoordinated efforts by multiple government and non-government actors. These efforts are significantly undermined by outdated national policies that contain gaps and legal loopholes.

The implementation of the NMMP by the Forestry Department presents an important window of opportunity for leverage with GEF-7 Biodiversity Focal Area funding. Under a business as usual scenario, the NMMP will lack sufficient support for the implementation of a cohesive plan on the ground. The NMMP will be further hampered by continued poor awareness of mangrove knowledge and the important roles of mangrove ecosystems for local Jamaican communities. Mangrove ecosystems will continue to be managed by their siloed components, with many biodiversity and local community issues falling through the policy gaps altogether. And perhaps most concerning, windows of opportunity to advance ecosystem-based management approaches are lost, which for an ecosystem that spans terrestrial and marine ecosystems and impacted by climate change, will only become increasingly complex. This GEF project takes advantage of this unique window to leverage the completion of the NMMP to promote a biodiversity-positive approach towards sustainable and integrated ecosystem-based management of mangrove ecosystems, and the local communities that directly and indirectly rely on them.

183. The proposed alternative scenario with GEF support follows a logical theory of change that directly addresses the main identified barriers and threats to mangrove habitats and associated biodiversity, including gaps in policy, site-specific drivers of mangrove ecosystem degradation, and low levels of mangrove ecosystem knowledge and awareness. More specifically, the incomplete mangrove policy environment is addressed through targeted interventions under project Component 1 that include strengthening the enabling environment for successful implementation of the NMMP. This includes updating and revising current development plans, policies and regulations (Outcome 1.1), improving the management of mangrove ecosystems (Outcome 1.2) and establishing new protected areas (Outcome 1.3).
  184. Immediate drivers of mangrove ecosystem degradation and associated threats to biodiversity and decline in ecosystem services are addressed through site-specific mangrove restoration efforts in project Component 2 that demonstrate ecosystem-based approaches that replace current and largely unsuccessful replanting efforts. Finally, the inconsistent and outdated mangrove knowledge to inform local and national decision making will be strengthened with targeted knowledge management efforts under Component 3 that aim to both improve current mangrove awareness and capture important knowledge generated by the project.
  185. These three project components have been carefully designed to ensure an ecosystem-based approach is taken toward mangrove ecosystem management through implementation of the NMMP. In doing so, local community perspectives will be prioritized, amplified, and captured with data to inform local land use planning and national management, thereby advancing vertical and horizontal integrated management approaches of mangrove ecosystems with unique management challenges that place value on terrestrial and marine ecosystem
  186. The three project components will further serve as examples of integrated ecosystem-based management approaches by bringing together key government agencies for a coordinated and integrated implementation of the NMMP. In doing so, the project will have added benefits from the improvement of local community livelihoods and promotion of marginalized groups including women and children, as well as key stakeholders such as fisherfolk and other mangrove ecosystem resource users.
- 6) Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF)

187. Mangrove forests in Jamaica are known to be important habitat for nationally and globally important terrestrial and marine biodiversity, including commercially important species that support Jamaica's food and economic security. The project has been designed to meet not only national priorities of Jamaica, but also to yield global environmental benefits aligned with the GEF Secretariat and the Convention on Biological Diversity. The project is specifically aligned with GEF-7 Biodiversity Focal Area objectives that promote specific global environmental benefits. The project will more specifically support a) conservation of globally significant biodiversity, and; b) sustainable use of the components of globally significant biodiversity.

188. This includes protection of mangrove habitats and associated ecosystems that host important species, including the Jamaican Iguana, Whistling Duck, American Crocodile, and several species of sea turtles. As documented in Table F, the project anticipates supporting the restoration of 2,212 hectares of mangrove habitat (GEF core indicator 3), the establishment of at least 4,297 hectares of newly created terrestrial protected area (GEF core indicator 1), and an additional 7,600 hectares under improved management (GEF core indicator 4). As a direct benefit of this support, the project estimates to avoid emission of 1,635,732 tCO<sub>2</sub>-eq (GEF core indicator 6). The project also anticipates that at least 400 direct beneficiaries will be receiving co-benefits of the GEF investment, including at least 200 women and 200 men (GEF Core Indicator 11). Women are mostly involved in the processing and commercialization of crabs, fishes and other small crustaceans collected by men in the mangroves. The conservation and restoration of mangrove ecosystems will also anticipate yielding multiple additional benefits in other GEF focal areas, including carbon sequestration, and strengthened management of marine ecosystems following an integrated ecosystem-based approach.

7) Innovativeness, sustainability, potential for scaling up and capacity development<sup>[2]</sup><sup>2</sup>

189. The project has been designed to ensure a sustained and long-term impact can be achieved, including the potential for an impact to be scaled after the project is completed. Further, the project has embraced innovative approaches that take advantage of the best available science, technology, and knowledge on mangrove habitat management.

190. **Innovation:** The project is taking advantage of several innovative approaches that build on the latest knowledge for mangrove habitat management. This specifically includes drawing from over a decade of lessons learned with mangrove restoration efforts in Jamaica. The project is embracing an ecosystem-based restoration approach, with a focus on restoring the baseline hydrological conditions necessary for mangrove ecosystem recovery. Restoration efforts will also make use of local communities, especially incorporating and prioritizing knowledge generated from the socio-economic and ecosystem services assessments and knowledge captured under Component 3. The inclusion of these socio-economic and environmental factors leads towards an innovative approach that differs from traditional mangrove seedling replanting efforts that persist in Jamaica and are notorious for low survival rates and poor restoration results. The project also aims to find innovative policy solutions to mangrove management,

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including the particularly difficult task of identifying incentives for strengthened management of mangrove habitats on private land. Opportunities to expand on additional innovative approaches will be taken advantage where possible. This is made possible by the close working relationship the Government of Jamaica, including Forestry Department and NEPA have with world class research faculty, resources, and data at UWI Mona as well as technological support from FAO, such as inclusion of the Collect Earth tool to improve geospatial analysis.

191. **Sustainability:** The project has been designed to ensure its results can persist, and potentially grow, after the project concludes. Most critical to this approach is Jamaica's strong commitment to scientific research, both within government agencies like the Forestry Department as well as academic partners like the University of West Indies Mona and local NGOs. In addition to the project's specific knowledge deliverables, and other project knowledge that will be housed in the newly established mangrove knowledge repository (Component 3), the country continues to be a leader in mangrove scientific research. After the project ends, science-based mangrove knowledge in Jamaica will continue to grow to inform mangrove ecosystem management not just in Jamaica. This science-based knowledge has also informed the project's design to ensure longer-term survival rates of mangroves species (as compared to traditional replanting efforts) by taking a more holistic ecosystem-based approach towards restoration of mangrove habitats. For example, the project's focus on the hydrology of mangrove habitats will promote improved ecosystem health, not just improving the likelihood of mangrove forests to thrive and repopulate degraded areas, but also promote important biodiversity. This holistic approach, when done correctly and well-managed, will lead to a much more resilient ecosystem.
192. Further, the restored areas will also build on existing joint-management approaches with local NGOs that already work closely within their communities to educate and protect mangrove areas, thus serving as an important node for additional knowledge dissemination at the most local of levels. Moreover, the lessons and experiences from the project restoration efforts will inform future mangrove restoration efforts led by the Forestry Department under the new NMMP.
193. The project will lastly ensure sustainability of project results through the important focus on filling national mangrove policy gaps that have emerged over time from indirect support to mangroves. Through Component 1 filling critical policy gaps, the policy enabling environment for the NMMP will improve its implementation success, leading to first ever dedicated management of Jamaica's mangroves ecosystems. And because the NMMP is an extension of the NFMCP and the many years of past experience with it's ongoing implementation, the NMMP is poised to have immediate and long-term impacts for the sustainable management of Jamaica's mangroves.
194. **Potential for Scaling Up:** The project is focusing on leveraging immediate opportunities for Forestry Department to implement the NMMP, which provides an initial focus on improved mangrove habitat management on Crown lands identified under the Forest Act.
195. With successful project results in strengthen mangrove policies and promoting science-based integrated land management practices, there will be many additional opportunities for the project to scale up these results to non-Crown lands after the project is over. This is especially true of



improved management of mangrove habitats on private lands as a result of specific incentives identified under the activities of Output 1.1.2.

Further, the improved knowledge base and associated awareness raising of mangrove habitat uses and mangrove habitat biodiversity will result in increased government and general public understanding of the importance of mangroves or not just environmental goals, but also social and economic development goals. Ideally this can include more educated decision making of private coastal developer meeting the strong demand for Jamaica's beach and ocean-based tourism.

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[1] Bennett, NG (2021). National Mangrove Socio-Economic Survey Report

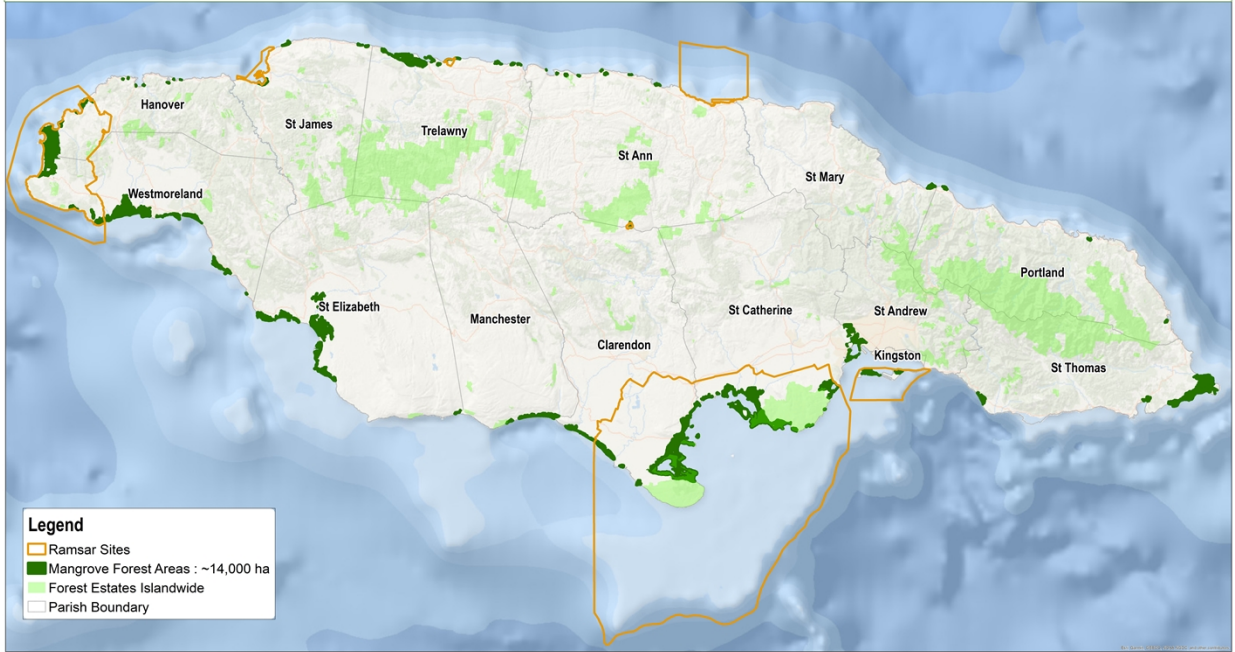
[2] System-wide capacity development (CD) is essential to achieve more sustainable, country-driven and transformational results at scale as deepening country ownership, commitment and mutually accountability. Incorporating system-wide CD means empowering people, strengthening organizations and institutions as well as enhancing the enabling policy environment interdependently and based on inclusive assessment of country needs and priorities.

- Country ownership, commitment and mutual accountability: Explain how the policy environment and the capacities of organizations, institutions and individuals involved will contribute to an enabling environment to achieve sustainable change
- Based on a participatory capacity assessment across people, organizations, institutions and the enabling policy environment, describe what system-wide capacities are likely to exist (within project, project partners and project context) to implement the project and contribute to effective management for results and mitigation of risks.
- Describe the project's exit / sustainability strategy and related handover mechanism as appropriate.

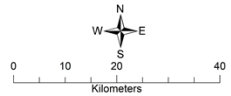
#### **1b. Project Map and Coordinates**

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

## Jamaica Mangrove and Swamp Forest Areas



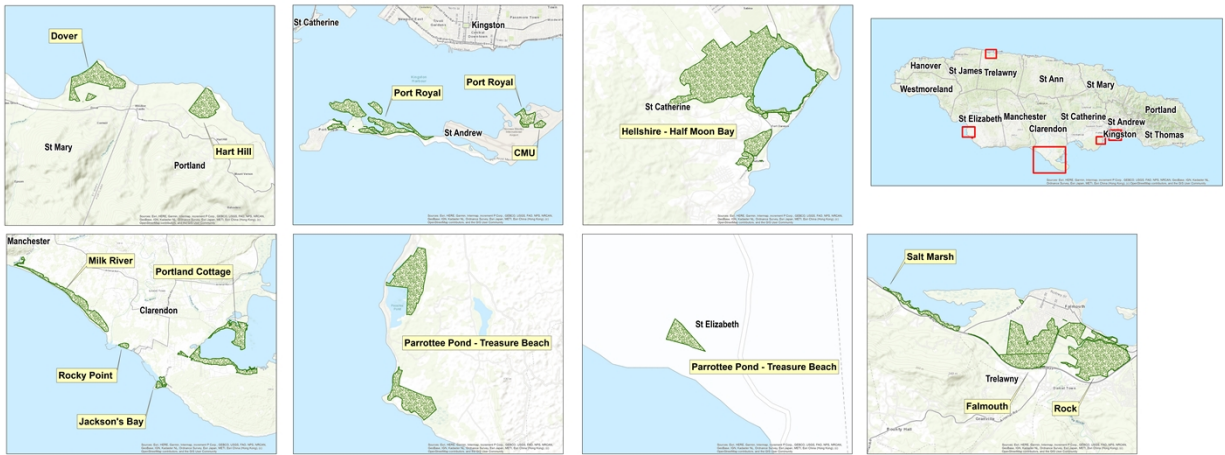
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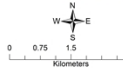
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 Datum: D Jamaica 2001  
 Prime Meridian: Greenwich  
 Angular Unit: Degree  
 1 centimeter = 2,800 meters



## Jamaica Mangrove Forest Areas - Proposed Restoration Sites



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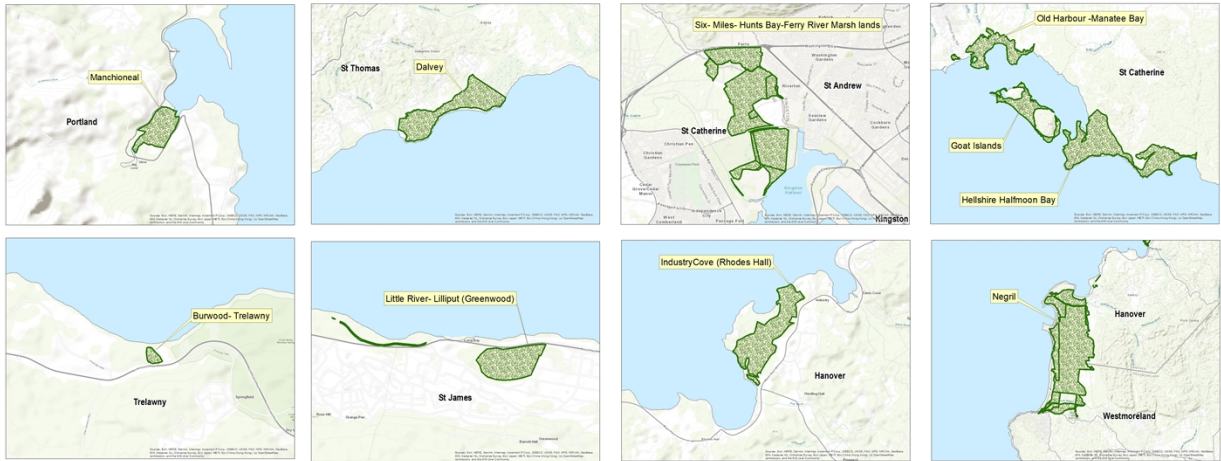


Projected Coordinate System: JAD 2001  
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 Angular Unit: Degree  
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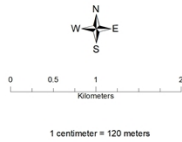
**Legend**  
 Proposed Restoration Sites  
 Parish Boundary

Jamaica Mangrove Forest Areas- Proposed Conservation Areas



Projected Coordinate System: JAD 2001  
 Geographic Coordinate System: JAD 2001  
 Datum: D Jamaica 2001  
 Prime Meridian: Greenwich  
 Angular Unit: Degree

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**Legend**  
 Proposed Conservation Sites  
 Parish Boundary



Site Name	X Coordinates	Y Coordinates
Parrottee Pond - Treasure Beach	-77.83025254	17.96785483
Six Miles - Hunts Bay - Ferry	-76.86127521	18.01556446
Hellshire - Half Moon Bay	-76.90012971	17.91688717
Portland Cottage	-77.19122673	17.77584246
Six Miles-Hunts Bay-Ferry River	-76.85944664	18.0034187
Old Harbour-Manatee Bay	-77.03142821	17.87122543
Negril	-78.32404645	18.32428437
Little River - Lilliput (Greenwood)	-77.74561172	18.51022338
Rock	-77.64557014	18.48055538
Falmoth	-77.6636873	18.48209837
Hart Hill	-76.68401342	18.26172507

Dover	-76.70932731	18.26718898
Dalvey	-76.2526694	17.89192188
Port Royal - includes the Cays and CMU	-76.81618999	17.94256171
Milk River	-77.31581847	17.8127543
Rocky Point	-77.27599472	17.77811641
Jacksons Bay	-77.2455032	17.74845326
Scarlett Hall - Salt Marsh 1	-77.69281141	18.49123011
Burwood_Royalton	-77.60512473	18.48276285
Manchioneal	-76.28017348	18.02990441
Goat Island	-77.06093701	17.87771562
Industry Cove (Rhodes Hall)	-78.2648487	18.40671999

**1c. Child Project?**

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

**2. Stakeholders**

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

**Civil Society Organizations** Yes

**Indigenous Peoples and Local Communities** Yes

**Private Sector Entities** Yes

**If none of the above, please explain why:**

**Please provide the Stakeholder Engagement Plan or equivalent assessment.**

Stakeholder Name	Stakeholder Type	Stakeholder profile	Consultation Methodology	Consultation Findings	Date	Comments

Stakeholder Name	Stakeholder Type	Stakeholder profile	Consultation Methodology	Consultation Findings	Date	Comments
Forestry Department	<b>Direct beneficiary</b>	<i>National Government Institution body</i>	<i>Meetings Interviews</i>	<p><i>Settled on mangrove sites for conversation and restoration.</i></p> <p><i>From the PIF the following outputs were completed:</i></p> <p><i>1.1.2 ?Assessment of land ownership for mangrove management. Note that the incentives and policy recommendations is yet to be done.</i></p> <p><i>1.2.2: Mangrove socio-economic livelihood assessment conducted to inform local land use decision making.</i></p>	<p><i>June 20, 2022</i></p> <p><i>June 24, 2022</i></p> <p><i>August 11, 2022</i></p>	<p><i>FD is the direct beneficiaries. Several bilateral with specific officers where held but three major team meetings were convened.</i></p> <p><i>Most of the</i></p>
Dr. Camilo Trench	<i>Other</i>	<i>Other</i>	<i>Interview (face to face)</i>	<p><i>Leading Consultant in Mangrove restoration. Had a deep insight and analysis of the mangroves in Jamaica, both private and publicly owned.</i></p> <p><i>UWI Centre for Marine Sciences</i></p>	<i>June 22, 2022</i>	<i>Consultant on the National Mangrove Management Plan (NMMP) development.</i>

Stakeholder Name	Stakeholder Type	Stakeholder profile	Consultation Methodology	Consultation Findings	Date	Comments
The Nature Conservancy (TNC)	<i>Indirect Beneficiary</i>	<i>Non-Governmental Organization</i>	<i>Consultation Meeting with multiple stakeholders.</i>		<i>June 22, 2022</i>	<i>This was the National Mangrove Management Validation Workshop where most environment stakeholders were already present.</i>
Jamaica Environment Trust	<i>Other</i>	<i>Non-Governmental Organization</i>	<i>Consultation Meeting with multiple stakeholders</i>		<i>June 22, 2022</i>	<i>This was the National Mangrove Management Validation Workshop where most environment stakeholders were already present.</i>
Sandals Hotel	<i>Other</i>	<i>Non-Governmental Organization</i>	<i>Consultation Meeting with multiple stakeholders</i>		<i>June 22, 2022</i>	<i>This was the National Mangrove Management Validation Workshop where most environment stakeholders were already present.</i>
Jamaica Institute of Environmental Professionals (JIEP)	<i>Other</i>	<i>Non-Governmental Organization</i>	<i>Consultation Meeting with multiple stakeholders</i>		<i>June 22, 2022</i>	<i>This was the National Mangrove Management Validation Workshop where most environment stakeholders were already present.</i>

Stakeholder Name	Stakeholder Type	Stakeholder profile	Consultation Methodology	Consultation Findings	Date	Comments
University of the West Indies (UWI)	<i>Indirect Beneficiary</i>	<i>Non-Governmental Organization</i>	<i>Consultation Meeting with multiple stakeholders</i>		<i>June 22, 2022</i>	<i>This was the National Mangrove Management Validation Workshop where most environment stakeholders were already present.</i>
University of Technology (UTECH)	<i>Indirect Beneficiary</i>	<i>Non-Governmental Organization</i>	<i>Consultation Meeting with multiple stakeholders</i>		<i>June 22, 2022</i>	<i>This was the National Mangrove Management Validation Workshop where most environment stakeholders were already present.</i>
National Water Commission (NWC)	<i>Indirect Beneficiary</i>	<i>National Government Institution body</i>	<i>Consultation Meeting with multiple stakeholders</i>		<i>June 22, 2022</i>	<i>This was the National Mangrove Management Validation Workshop where most environment stakeholders were already present.</i>
Water Resources Authority (WRA)	<i>Indirect Beneficiary</i>	<i>National Government Institution body</i>	<i>Consultation Meeting with multiple stakeholders</i>		<i>June 22, 2022</i>	<i>This was the National Mangrove Management Validation Workshop where most environment stakeholders were already present.</i>

Stakeholder Name	Stakeholder Type	Stakeholder profile	Consultation Methodology	Consultation Findings	Date	Comments
National Land Agency (NLA)	<i>Indirect Beneficiary</i>	<i>National Government Institution body</i>	<i>Consultation Meeting with multiple stakeholders</i>		<i>June 22, 2022</i>	<i>This was the National Mangrove Management Validation Workshop where most environment stakeholders were already present.</i>
Planning Institute of Jamaica (PIOJ)	<i>Indirect Beneficiary</i>	<i>National Government Institution body</i>	<i>Consultation Meeting with multiple stakeholders</i>		<i>June 22, 2022</i>	<i>This was the National Mangrove Management Validation Workshop where most environment stakeholders were already present.</i>
Ministry of Tourism (MOT)	<i>Indirect Beneficiary</i>	<i>National Government Institution body</i>	<i>Consultation Meeting with multiple stakeholders</i>		<i>June 22, 2022</i>	<i>This was the National Mangrove Management Validation Workshop where most environment stakeholders were already present.</i>
UWI (Port Royal Marine Lab)	<i>Indirect Beneficiary</i>	<i>Non-Governmental Organization</i>	<i>Consultation Meeting with multiple stakeholders</i>		<i>June 22, 2022</i>	<i>This was the National Mangrove Management Validation Workshop where most environment stakeholders were already present.</i>



Stakeholder Name	Stakeholder Type	Stakeholder profile	Consultation Methodology	Consultation Findings	Date	Comments
Centre for Marine Science (CMS), University of the West Indies (UWI)	<i>Indirect Beneficiary</i>	<i>Non-Governmental Organization</i>	<i>Interview (face to face)</i>	<p><i>Experience is research and working mangrove restoration for decades.</i></p> <p><i>CMS was able to recommend sites for restoration and conversation. Also they gave an insight into the types of studies that existed and what should be included in specific sites.</i></p>	<i>June 23, 2022</i>	

Stakeholder Name	Stakeholder Type	Stakeholder profile	Consultation Methodology	Consultation Findings	Date	Comments
National Environment and Planning Agency (NEPA)	<i>Indirect Beneficiary</i>	<i>National Government Institution body</i>	<i>Teams Meeting</i>	<p><i>Supportive, NEPA already have a project restoring mangrove in Trelawny and Westmoreland.</i></p> <p><i>NEPA was able to share several reports to support this project and have general oversight of all the works being undertaken in Mangrove sites across the island either by government, private sector or civil society.</i></p> <p><i>Some mangrove sites are RAMSAR sites and are protected under the Development Orders prepared by NEPA.</i></p>	<i>June 28, 2022</i>	
Urban Development Cooperation (UDC)	<i>Indirect Beneficiary</i>	<i>National Government Institution body</i>	<i>Teams Meeting</i>	<i>Owner of majority of mangroves to be included in the project from Portmore, particularly Hellshire.</i>	<i>July 12, 2022</i>	

Stakeholder Name	Stakeholder Type	Stakeholder profile	Consultation Methodology	Consultation Findings	Date	Comments
Caribbean Coastal Area Management Foundation (C-CAM)	<i>Indirect Beneficiary</i>	<i>Civil Society Organization</i>	<i>Interview</i>	<i>C-CAM manages the as oppose to implementing projects in the Portland Bight Protected Area, this area has the largest protected area in Jamaica, (51,975 ha).</i>	<i>July 27, 2022</i>	<i>They have an MOU with NEPA and the Fisheries Department in the Ministry of Agriculture and Fisheries to manage the Fish Sanctuary.</i>
SODECO	<i>Indirect Beneficiary</i>	<i>International Government Institution/body</i>		<i>SODECO operates the longest project being implemented in the Portland Bight Protected Area.</i>		<i>SODECO?s focus is on project implementation and research.</i>

Stakeholder Name	Stakeholder Type	Stakeholder profile	Consultation Methodology	Consultation Findings	Date	Comments
Half Moon Bay Fishermen Cooperative	<i>Indirect Beneficiary</i>	<i>Non-Governmental Organization</i>	<i>Interview</i>	<p><i>Crab hunting, fire coal burning and docking of small vessels during hurricane season in the mangroves in Half Moon Bay.</i></p> <p><i>Cooperative has over 150 members, approximately 80 females and 70 males. Females are fish vender, except for 6 fisherwomen and all the males are fishermen</i></p> <p><i>Mangroves being killed by dredging in the Kingston Harbours; influx of Sargassum seaweed and contaminants from the sewage pond in Greater Portmore.</i></p>	<i>August 2, 2022</i>	<p><i>Major fishing village with members of local community.</i></p> <p><i>Investors on the beach are also impacted but not members of the cooperative.</i></p>

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 Name	Stakeholder Type	Stakeholder profile	Consultation Methodology	Expected timing	Comments
	<b>Direct beneficiary</b>	<i>Select a stakeholder profile</i>			
NEPA	<i>Indirect Beneficiary</i>	<i>National Government Institution body</i>	<i>Meetings</i>	<i>Ongoing</i>	<i>All environmental permits and timing of various application will be needed.</i>

Stakeholder Name	Stakeholder Type	Stakeholder profile	Consultation Methodology	Expected timing	Comments
Jamaica Environment Trust	<i>Other</i>	<i>Civil Society Organization</i>	<i>Meeting and Interview</i>	<i>Prior to launch of project and prior to major restoration activities</i>	<i>Environment watchdog</i>
Ministry of Housing	<i>Indirect Beneficiary</i>	<i>National Government Institution body</i>	<i>Meeting</i>	<i>ongoing</i>	<i>Owns six (6) sites being proposed.</i>
Alligator Head Foundation	<i>Other</i>	<i>Non-Governmental Organization</i>	<i>Interview</i>	<i>Project planning</i>	<i>Works closest to the St. Mary and Portland site and may have an interest.</i>
Kingston & St. Andrew Municipal Corporation	<i>Other</i>	<i>Local Government Institution/body</i>	<i>Meetings</i>	<i>Planning through execution</i>	<i>Owns a site in Kingston and St. Andrew. Also any planned development for the area they will be able to give some insight as to what may or may not impact the project.</i>
Urban Development Cooperation (UDC)	<i>Indirect Beneficiary</i>	<i>National Government Institution body</i>	<i>Meetings/MOUs etc.</i>	<i>Ongoing</i>	<i>UDC Owns much of the land in St. Catherine/Hellshire and consideration should be had around transfer of ownership to Forestry Department.</i>
Various Fishermen Cooperatives	<i>Indirect Beneficiary</i>	<i>Non-Governmental Organization</i>	<i>Meetings</i>	<i>Through the project</i>	<i>Livelihood may be impacted by Project activities</i>
Male and female community members	<i>Indirect Beneficiary</i>	<i>Local community</i>	<i>Formal and informal meetings and information brochures</i>	<i>Throughout the project</i>	<i>To maintain buy-in and interest.</i>

Stakeholder Name	Stakeholder Type	Stakeholder profile	Consultation Methodology	Expected timing	Comments
National Land Agency (NLA)	<i>Other</i>	<i>National Government Institution body</i>	<i>Meetings/MOUs etc.</i>	<i>Ongoing</i>	<i>Consultation should be ongoing since NLA owns some eight (8) of the mangrove sites.</i>
Sugar Company of Jamaica Holdings (SCJ)	<i>Other</i>	<i>National Government Institution body</i>	<i>Meetings/MOUs etc.</i>	<i>Project planning</i>	<i>Owner of a site in St. Thomas</i>
Central Wastewater Treatment Company Limited	<i>Other</i>	<i>Civil Society Organization</i>	<i>Meetings/MOUs etc.</i>	<i>Project planning</i>	<i>Part owner of Sewage Treatment plant - SoapBerry</i>

Select what role civil society will play in the project:

**Consulted only;**

**Member of Advisory Body; Contractor;**

**Co-financier;**

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

**Executor or co-executor;**

**Other (Please explain)**

### 3. Gender Equality and Women's Empowerment

**Provide the gender analysis or equivalent socio-economic assesment.**

## Gender Analysis

1. Jamaica is susceptible to several natural hazards, particularly hurricanes, floods, droughts, and earthquakes. Between 2001 and 2012, for example, the country experienced 11 storms (including five major hurricanes) that resulted in loss and damage of approximately US\$1.2 billion, including damage and loss of biodiversity resources. Households, particularly those that are female-headed, are generally larger; consist of more adult females and children; and are poorer as compared to male-headed homes. As a result, in post-disaster situations, they are unduly burdened because of their responsibilities to provide basic amenities, including potable water and food for their loved ones, and their lack of skills related to disaster recovery activities.
2. In occupations that depend on natural resources, such as environmental management and leadership, women are in the majority as opposed to other countries in the region. However, for an occupation that depends on natural resources in the coastal areas of Jamaica, men far outnumber women in access to and ownership of economic resources. For example, women are less than 6% of registered fisher folks in the country. Further, while there are no legal barriers to more women accessing a fishing license, there are pervasive socio-cultural and inheritance rights that give preference to men, because they are generally considered as primary breadwinners.
3. The Forestry Department has been a leader among Jamaican government institutions in empowering women in the workplace. Since 2001, Forestry Department has made specific efforts to establish a more gender-sensitive organization that is fully equipped to incorporate gender issues into its operations, including promoting the recruitment of women into professional and technical levels. As of 2017, the Forestry Department employed 45% of women, including 40% of the technical and professional positions held by women. Women are increasingly playing key decision-making roles within the Forestry Department, including a majority of women at the most senior management levels. These gender mainstreaming efforts with the Forestry Department have largely been guided mostly by the National Forest Management and Conservation Plan (NFMCP).
4. Irrespective of this data being a bit aged, the reality is similar with significantly more men involved in fishing than women. However, there are more women involved in fish vending than men. Economic hardships continue to plague many Jamaicans and affect women adversely. According to STATIN (2021), the unemployment rate in Jamaica was at approximately 9.18 percent, a slight decrease from previous years. However, the female unemployed labour force was 62,700 or 10.4 percent compared to the male unemployed labour force at 53,800 or 7.6 percent.<sup>[1]</sup> Notably, more than half of the island's population lives in urban areas and cities already, and the numbers are rising with rural-urban migration. Most of the mangrove sites around the island are based in urban and suburban areas and are closest to fishing villages where males and female fisher folks ply their trade.
5. ?Despite the downward trend in unemployment and the increased employment of female workers, there are still 778,000 people listed outside the labour force, with females accounting for the vast majority of 462,500.<sup>[2]</sup>
6. Women have continued to be significantly underrepresented in the highest circles of leadership and governance constituting 17.5% of the elected House of Representatives and 24% of

Senators.[3]<sup>3</sup> This is despite being more educated (67.1% have achieved at least a secondary level of education)[4]<sup>4</sup> and being in one of 70 countries that have ever a female head of government/state[5]<sup>5</sup>. Ironically, women constitute the majority of party membership and perform many tasks ?on the ground? as field and election workers and campaigners. However, these responsibilities hardly materialize into more access to leadership within their parties and consequently, the nation. When it comes to local-level leadership and community-based leadership, more men are at the helm and more women are in supportive roles.

7. These situations have deep implications for what the project is seeking to do regarding addressing gender in biodiversity restoration and conservation. This is so because of the pervasive nature of the barriers that drive and sustain gender inequality and the privileging of men over women in so many aspects of life. Addressing these barriers will rest among other things, on examining how men and women access and control resources, including biodiversity resources, power in the home and society, and how partnerships can be nurtured among women and men in pursuit of sustainable development.

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[1] Unemployment falls below 10 percent in 2021. <https://statinja.gov.jm/LabourForce/NewLFS.aspx>

[2] Unemployment falls below 10% percent in 2021-STATIN:  
<https://statinja.gov.jm/LabourForce/NewLFS.aspx>

[3] Gender Strategy and Action Plan, p.9

[4] Human Development Indices and Indicators: 2018 Statistical Update:  
[http://hdr.undp.org/sites/all/themes/hdr\\_theme/country-notes/JAM.pdf](http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/JAM.pdf)

[5] The number of women leaders around the world has grown, but they're still a small group:  
<http://www.pewresearch.org/fact-tank/2017/03/08/women-leaders-around-the-world/>

**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?**

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Yes

#### **4. Private sector engagement**

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

1. Private sector actors are recognized to play an important role in long-term sustainable mangrove ecosystem management in Jamaica. The private sector can have a direct impact on mangrove degradation, such as coastal development. Well-informed private sector actors can be the largest advocates for mangrove protection. To this end, the project has been designed with a combination of direct and indirect stakeholder engagement pathways.

2. The project will directly engage with key private sector actors through multiple outputs. First, the project will develop recommendations to address policy gaps with respect to incentives and disincentives of mangrove management on private lands (Output 1.1.4), including, as relevant, informing engagement with private landowners adjacent to project restoration activities under Component 2. The Output 1.1.5 includes assessing essential baseline land ownership (including both individuals and business) to inform the best pathways to incentivize improved private sector management. The project will also directly target five key private sectors (Port and Coastal Infrastructure, Tourism, Climate Change and Environment, Waste Management, Agriculture and Fisheries) through policy briefs and direct dissemination of this information (Output 3.1.2).

3. Indirectly, the project is also committed to disseminating mangrove knowledge to private sector project partners through the knowledge repository and with partner government agencies more directly responsible for engaging with private sector partners. This includes the Urban Development Corporation (UDC) and the Tourism Product Development Company (TPDCo). The UDC's remit is to hold, manage and develop real estate on behalf of the Government of Jamaica, with the overarching objective of spurring growth and improving the quality of life of Jamaicans. UDC's mandate includes transforming Jamaica's most viable urban centres and strategic rural towns, whilst preserving the natural environment, traditions and customs and spurring economic development. The UDC, through its development programmes, has significantly improved the coverage and quality of public infrastructure, in addition to introducing alternative patterns of urban settlement, including creative shelter solutions and the development of new townships. The Tourism Product Development Company Ltd. (TPDCo) is the central agency mandated by the Government of Jamaica to facilitate the maintenance, development and enhancement of the tourism product. TPDCo has been in operation since 1996 and is registered as a private company under the jurisdiction of the Ministry of Tourism. Members of TPDCo's Board are drawn from both the public and private sectors and include representatives of the Jamaica Hotel & Tourist Association (JHTA), the Jamaica Association of Villas and Apartments (JAVA) and each resort area.

4. Additionally, during project implementation, the project will work with the following private sector stakeholders as part of the projects stakeholder engagement plan:

**Private Stakeholder Analysis and Engagement**

	<b>Stakeholder</b>	<b>Influence Rating (L,M,H)</b>	<b>Interest Rating (L,M,H)</b>	<b>Levels of engagement/Role in Project</b>	<b>Participation/ Needs</b>
	Local communities in and around project sites	Medium	Medium	Consult, Involve, Collaborate	<p>Awareness ? messages to inform stakeholders on activities.</p> <p>Collaborative guide to mitigate responses to negative impacts or on beneficial activities.</p> <p>Consultation and involvement guide to community development activities.</p>
	<b>Academic/Research Institutions</b>	<b>Influence Rating (L,M,H)</b>	<b>Interest Rating (L,M,H)</b>	<b>Levels of engagement/Role in Project</b>	<b>Participation/Needs</b>
	The University of the West Indies, including:  The Centre for Marine Sciences  Port Royal Marine Laboratory  Discovery Bay Marine Laboratory  SODECO	Low	Medium	Consult, involve, inform, collaborate	Project should consider using evidence based research from these institutions for decision making.

<b>Non-Government Organizations</b>		<b>Influence Rating (L,M,H)</b>	<b>Interest Rating (L,M,H)</b>	<b>Levels of engagement/Role in Project</b>	<b>Participation/Needs</b>	
	The Nature Conservancy	Low	Medium	Consult, involve, collaborate	Awareness - messages to inform stakeholder on activities  Monitor stakeholders? views.	
	Jamaica Environment Trust	Medium	High	Consult, involve, collaborate, inform	Standing stakeholder advisory forums. On-line feedback and discussion and newsletter and milestone reports where possible.	
	Jamaica Institute of Environmental Professionals	Low	Low	Consult, involve, collaborate  Technical Working Group		
	Negril Environment Protected Areas Trust (NEPT)	Medium	Medium	Consult, involve, collaborate		
	Caribbean Coastal Area Management Foundation	Medium	High	Consult, involve, collaborate, empower		
	Half Moon Bay fisherman's cooperatives	Low	Medium	Inform, consult		
<b>Other Private actors</b>		<b>Influence Rating (L,M,H)</b>	<b>Interest Rating (L,M,H)</b>	<b>Levels of engagement/Role in Project</b>		<b>Participation/Needs</b>
	Sandals	Low	Medium	Consult, involve, collaborate		Work directly with stakeholders to ensure that their

	Royalton	Low	Medium	Consult, involve, collaborate	concerns are fully understood and considered in decision making.
	Jamaica Swamp Safari	Low	Medium	Consult, involve, collaborate	

### 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):**

Description of risk	Impact	Mitigation actions	Responsible party
Low engagement in project activities from government agencies	L	<p>The Project has been designed in close alignment with the ongoing national priorities and the NMMP to minimise this risk taking into account extensive consultations with all the relevant stakeholder..</p> <p>The careful consideration of the stakeholder engagement plan (See section 2, above) will act to mitigate this risk, as it provides a detailed methodology to engage the relevant agencies on the project activities.</p> <p>The project will leverage existing government coordination mechanisms where possible, such as the Protected Areas Committee.</p>	FD, and PMU

<p>Impacts of climate change significantly impact project restoration efforts</p>	<p>M</p>	<p>Mangroves play an important part in protecting the coastline from erosion and protecting the hinterland from the devastating effects of hurricanes. Their protective value is often not understood or not regarded as important. Informing stakeholder and planning agencies about the importance of mangrove will increase the capacity of the landscape to adopt to climate change.</p> <p>This risk is categorized as Moderate given the vulnerability of mangrove ecosystems to climate change hazards including sea level rise, hurricanes and extensive flooding. Also, non-climate drivers such as unreported or non-authorized settlements or exploitations in mangrove areas exacerbates the risks and confirm need for mitigation actions.</p> <p>The project will mitigate climate impacts through the implementation of existing sector climate resilience plans and taking advantage of latest scientific information on mangrove restoration. Resilience will be promoted by adopting holistic restoration approaches that prioritize overall mangrove ecosystem health, such as addressing underlying hydrologic conditions that encourage natural mangrove regeneration.</p>	<p>FD, PMU</p>
<p>Lack of interest from private landowners and other private sector actors in mangrove management and restoration</p>	<p>M</p>	<p>This risk will be mitigated by Increasing awareness of the importance of mangroves while engaging with private actors. The dissemination of the policy briefs proposed under Output 1.1.4 will be essential for this aim.</p> <p>For private sector actors, the project provides a science-based approach to local land-use planning (Output 1.1.1), including making socio-economic positions (output 1.2.2).</p>	<p>FD, PMU</p>

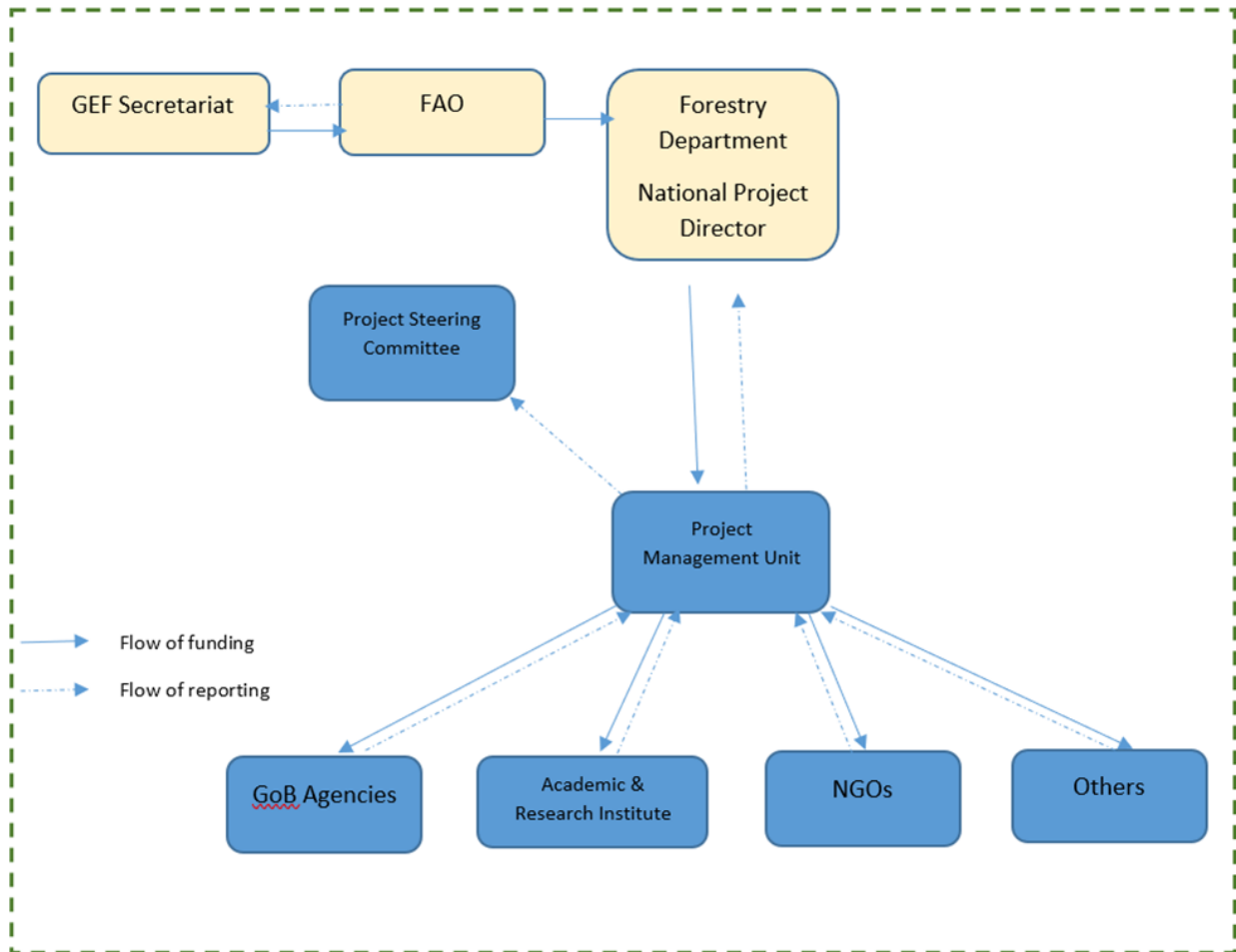
COVID-19	L	Travel restrictions and prohibitions on face-to-face meetings and consultations are no longer in place, but it is not inconceivable that new variants may appear which may lead to a rebound of infections and concomitant restrictions	FD, PMU
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**6. 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.**

6.a Institutional arrangements for project implementation.

1. The Forestry Department of Jamaica will have the overall responsibility for the project, with FAO providing oversight as GEF Agency as described below.
2. Letters of Agreement (LoAs) will be signed between FAO and the Forestry Department, to serve as the Project's Executing Partner for the implementation of the Project's activities and ensure timely and effective implementation of all Project Components, and their component Outcomes, Outputs and Activities. Details of the LoA and the Executing Partner commitments will be included in the Terms of References for the LoA prepared by FAO, in consultation with the Project's Executing Agency, This LoA will be supervised by FAO's Lead Technical Officer (LTO). The funds received by the service provider will be used to carry out proposed project activities ensuring alignment and conforming to the rules and procedures of FAO.
3. The project organization structure is as follows:



4. The Government of Jamaica's will designate a National Project Director (NPD). The NPD will liaise directly with FAO as needed on Project related matters. The NPD will chair the Project Steering Committee (PSC) which will be the main governing body of the project. The PSC will meet bi-annually, approve annual work plans and annual budgets on a yearly basis, and will provide strategic guidance to the Project Management Unit (PMU) and to all executing partners.

5. The PSC will be comprised of representatives from Jamaica's Forestry Department, the Center for Marine Science (UWI), NEPA, the Ministry of Local Government and Community Development, the National Land Agency, the Urban Development Cooperation and FAO.

6. The members of the PSC will each assure the role of a Focal Point for the project in their respective agencies. Hence, the project will have a Focal Point in each concerned institution. As Focal Points in their agency, the concerned PSC 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 the provision of co-financing to the project. Members of steering committee has right to invite other entity to speak and contribute information to the PSC.

7. The Project Coordinator (within the Forestry Department) will be the Secretary to the PSC. 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 governmental partners work under this project; vi) Approval of the six-monthly Project Progress and Financial Reports, the Annual Work Plan and Budget; vii) Making by consensus, management decisions when guidance is required by the National Project Coordinator of the PMU.

8. A Project Management Unit (PMU) will be co-funded by the GEF grant and established within Jamaica's Forestry Department. The main functions of the PMU, following the guidance of the Project Steering Committee, 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). The PMU will be composed of a Project Coordinator who will work full-time for the project lifetime. In addition, the PMU will include an Administrative Assistant, and will be supported by a Monitoring & Evaluation Specialist, a Knowledge Management Specialist and a Communication Specialist.

9. The Project Coordinator (PC) will oversee daily implementation, management, administration, and technical supervision of the project, on behalf of the Operational partner and within the framework delineated by the PSC. S/he will be responsible, among others, for:

- i) Coordination with relevant initiatives:
- ii) Ensuring a high level of collaboration among participating institutions and organizations at the national and local levels.
- iii) Coordination and close monitoring of the implementation of project activities.
- iv) Tracking the project's progress and ensuring timely delivery of inputs and outputs.
- v) 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,
- vi) Monitoring financial resources and accounting to ensure accuracy and reliability of financial reports.
- vii) Ensuring timely preparation and submission of requests for funds, financial and progress reports to FAO.
- viii) Maintaining documentation and evidence that describes the proper and prudent use of project resources, including making available this supporting documentation to FAO and designated auditors when requested.
- ix) Implementing and managing the project's monitoring and communications plans.
- x) Organizing project workshops and meetings to monitor progress and preparing the Annual Budget and Work Plan.
- xi) Submitting the six-monthly Project Progress Reports (PPRs) with the AWP/B to the PSC and FAO.
- xii) Preparing the first draft of the Project Implementation Review (PIR).



- xiii) Supporting the organization of the mid-term and final evaluations in close coordination with the FAO Budget Holder and the FAO Independent Office of Evaluation (OED).
- xiv) Informing the PSC and FAO of any delays and difficulties as they arise during the implementation to ensure timely corrective measure and support.

10. The Food and Agriculture Organization (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 utilize the GEF fees to deploy three different actors within the organization to support the project:

- ? The Budget Holder (BH), 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 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.

11. FAO responsibilities, as GEF agency, will include:

- ? Administrate funds from GEF in accordance with the rules and procedures of FAO.
- ? Oversee project implementation in accordance with the project document, work plans, budgets, agreements with co-financiers, Operational Partners Agreement(s) and other rules and procedures of FAO.
- ? Provide technical guidance to ensure that appropriate technical quality is applied to all activities concerned.
- ? Conduct at least one supervision mission per year; and
- ? Reporting to the GEF Secretariat and Evaluation Office, through the annual Project Implementation Review, the Mid Term Review, the Terminal Evaluation, and the Project Closure Report on project progress.
- ? Financial reporting to the GEF Trustee.

#### 6.b Coordination with other relevant GEF-financed projects and other initiatives.

1. There are currently two important land management GEF projects in Jamaica.

i) GEF-IADB (GEF ID 4454) Integrated Management of the Yallahs River and Hope River Watersheds. The project is complete a terminal evaluation in 2020. Main project objective was to improve the ecosystem service of two important watershed management units through improved sustainable land management, improved land husbandry practices and improved biodiversity. The project has made strides in the sensitization of persons on the objectives of the project through the implementation of its

communication strategy and has trained over 500 farmers in good agricultural practices. The project experienced significant delays in completing other activities related to identification of sites for watershed interventions and in the reforestation of the upper watershed catchment areas. The lead executing entity for the project is NEPA.

ii) GEF UNDP (GEF ID 9862) Conserving Biodiversity and Reducing Land Degradation Using an Integrated Landscape Approach. The project under development and will anticipated to begin implementation in 2020. The main project objective is to enhance conservation of biodiversity and ecosystem services through mainstreaming of biodiversity into planning policies and practices into Jamaica's productive landscapes and key sectors. The lead executing entity for the project is also NEPA.

2. As the NEPA is the lead government partner for the two ongoing GEF projects in Jamaica, coordination efforts between this mangrove project and other existing GEF projects will be channelled through existing relationships between Forestry Department and NEPA. Both government organizations coordinate already through important formal mechanisms, such as the Protected Areas Committee for the National Protected Area Systems, as well as the Technical Advisory Committee for the NFMCP.

3. GEF CAF FAO (GEF ID 10211) BE-CLME+: Promoting National Blue Economy Priorities Through Marine Spatial Planning in the Caribbean Large Marine Ecosystem Plus. This project is co-implemented by FAO, which together with CAF, is focused on adoption of national blue economy priorities, including promoting marine spatial planning (MSP) to inform ecosystem-based fisheries including informing establishing and expanding marine protected areas (MPAs) and promotion of sustainable seafood value chains. The project will strongly complement Jamaica's commitments for mangrove ecosystem conservation and restoration by addressing the important linkages with commercial and artisanal fisheries. Coordination among the two projects will be ensured by both FAO and national-level government agency collaboration, including NEPA.

## **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.

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

1. The project is consistent with the following national priorities that include broader sustainable development objectives and specific alignment with national commitments for the Convention on Biological Diversity, most notably Jamaica's National Biodiversity Strategy and Action Plan (NBSAP) and Protected Areas System Master Plan (PASMP).

## **Vision 2030 Jamaica ? National Development Plan.**

2. Jamaica's Vision 2030 - National Development Plan is the country's roadmap to sustainable development. The Plan is aimed at positioning Jamaica to achieve developed country status by 2030. It acknowledges that protecting and managing Jamaica's natural resources will contribute to enhancing the quality of life for all Jamaicans. Vision 2030 specifically mandates best management practices for all forests, as well as recognizing the role it plays in ensuring adaptation to climate change, while leading reforestation efforts. This includes specific references to a healthy natural environment (Goal 4), and the sustainable management and conservation plan 2016 ? 2026 for use of environmental and natural resources (Outcome 13), and hazard risk reduction and adaptation to climate change (Outcome 14).

### **2016-2021 National Biodiversity Strategy and Action Plan**

3. The updated 2016-2021 National Biodiversity Strategy and Action Plan (NBSAP) presents several activities to achieve the Aichi Targets which have been prioritized based on consultations with the main national stakeholders. The understanding of biodiversity as a critical asset for the Jamaican people and ensuring long term and sustainable economic activities are key to promoting the importance of biodiversity conservation across all economic sectors through public, private and civil sectors. The updated NBSAP seeks to provide activities which not only target the awareness and sensitization among groups but also foster engagement and buy-in to the strategic goals. It also has recognized the increasing challenge posed by climate change to biodiversity conservation and the need for the recovery of degraded ecosystems for environmental health and to building climate change resilience. The current NBSAP has multiple strategic goals that project is actively supporting. These include the following Strategic Goals:

- a. Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society
- b. Reduce direct pressures on biodiversity loss and promote sustainable use
- c. Improve the status of ecosystems by safeguarding ecosystems, species and genetic diversity
- d. Enhance the benefits to all from biodiversity and ecosystem services
- e. Enhance the implementation through participatory planning, knowledge management and capacity building

More specifically, the project supports the following point of the NBSAP on mainstreaming biodiversity into the Forestry, Fisheries and Tourism sectors: Industry Standards, Codes of Conduct, Guidelines and Good Practices guidance. By strengthening the enabling environment and implementing the National Mangrove Management Plan, the project will mainstream mangrove-related biodiversity into National

Development Plans (Outcomes 1.1 and 1.2), improve management and raise the awareness of mangrove habitats (Outcome 3.1), and effectively restore degraded mangrove habitats (Outcome 2.1)

## **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.**

1. Knowledge management is specifically supported in Component 3 of the project by Outcome 3.1: Improved management and dissemination and awareness of Jamaica mangrove habitat knowledge. The project will establish a central mangrove repository with forested wetlands use, status and management data in Jamaica. The project also aims to capture and disseminate mangrove knowledge across Jamaica through a series of targeted publications and trainings (Outputs 3.1.2 and 3.1.3).
2. In addition, the project will generate at least five policy briefs to raise awareness about mangroves to key sectors including tourism, environment and climate change, waste management, and agriculture and fisheries (Output 1.1.4).
3. The project will also be generating knowledge in other project components that will be captured and disseminated through the mangrove repository. These additional knowledge products include the Gender and youth mainstreaming strategy and plan for ecosystem-based management of priority forested wetland areas (Output 1.2.2), Feasibility of a payment for ecosystem services (PES) program in selected forest wetland (Output 1.2.3), and national mangrove policy improvements under Outcome 1.1.
4. Collectively, these knowledge management actions will complement the targeted project interventions to create an overall increased understanding of the roles mangrove habitats and key biodiversity, including commercially important species, have in Jamaica communities and local and national development plans.

## **9. Monitoring and Evaluation**

**Describe the budgeted M and E plan**

1. The project results, as outlined in the project results framework (Annex A1), will be monitored regularly, reported annually and assessed during project implementation to ensure the project effectively achieves these results. Monitoring and evaluation activities will follow FAO's and GEF's policies and guidelines for monitoring and evaluation. The M&E system will also facilitate learning, replication of the project's results and lessons which will feed the project's knowledge management strategy.

### **Monitoring Arrangements**

2. Project oversight and supervision will be carried out by the Budget Holder with the support of the PTF, LTO and FLO and relevant technical units in FAO headquarters. Oversight will ensure that: (i) project outputs are produced in accordance with the project results framework and leading to the achievement of project outcomes; (ii) project outcomes are leading to the achievement of the project objective; (iii) risks are continuously identified and monitored and appropriate mitigation strategies are applied; and (iv) agreed project global environmental benefits are being delivered.

3. The FAO-GEF Coordination Unit and HQ Technical units will provide oversight of GEF financed activities, outputs and outcomes largely through the annual Project Implementation Reports (PIRs), periodic backstopping and supervision missions.
4. Day-to-day project monitoring will be carried out by the Project Management Unit. Project performance will be monitored using the project results matrix, including indicators (baseline and targets) and annual work plans and budgets. At inception phase, the results matrix will be reviewed to finalize the identification of i) outputs ii) indicators iii) targets and iv) any missing baseline information
5. A detailed M&E System, which builds on the results matrix and defines specific requirements for each indicator (data collection methods, frequency, responsibilities for data collection and analysis, etc) will also be developed during project inception by the PMU M&E Specialist.

<b>M&amp;E Activity</b>	<b>Responsible Parties</b>	<b>Timeframe</b>	<b>GEF Budget (USD)</b>
Inception Workshop	Project Management Unit (PMU)	Within two months of project document signature	USD 9,150
Mid Term Workshop	PMU	In the 1 <sup>st</sup> quarter of the 3 <sup>rd</sup> year of the project	USD 5,000
Final Workshop	PMU	At the end of project implementation	USD 8,330
Project Inception Report	PMU	Within two weeks of inception workshop	No extra costs
Annual PSC meetings and bi-annual TF meetings	PMU	Annually	Covered by co-financing
Project Progress Reports (PPRs)	PMU	Annually	M&E Specialist (USD 62,400)
Project Implementation Review report (PIR)	PMU	Annually in July	Covered by above
Co-financing Reports	PMU	Annually	No extra costs

<b>M&amp;E Activity</b>	<b>Responsible Parties</b>	<b>Timeframe</b>	<b>GEF Budget (USD)</b>
Mid-term review (MTR)  (Decentralized evaluation under BH responsibility)	BH, External Consultant, in consultation with the PMU, including the GEF Coordination Unit and other stakeholders, and with possible support from FAO Independent Evaluation Unit OED	In the 3 <sup>rd</sup> quarter of the 2 <sup>nd</sup> year of the project	30,000
Terminal Evaluation  (Decentralized evaluation, under Regional Office responsibility)	The BH will be responsible to contact the Regional Evaluation Specialist (RES) within six months prior to the actual completion date (NTE date). The RES will manage the decentralized independent terminal evaluation of this project under the guidance and support of OED.	To be launched 6 months prior to terminal review meeting	40,000
Terminal Report	BH	At the end of project implementation	10,000
<b>Total Budget</b>			<b>USD 164,880</b>

### **Monitoring and Reporting**

6. In compliance with FAO and GEF M&E policies and requirements, the PMU, in consultation with the PSC and PTF will prepare the following i) Project inception report; (ii) Annual Work Plan and Budget (AWP/B); (iii) Project Progress Reports (PPRs); (iv) annual Project Implementation Review (PIR); (v) Technical Reports; (vi) co-financing reports; and (vii) Terminal Report. In addition, the Core Indicators will be used to monitor Global Environmental benefits / adaptation benefits (specify as appropriate) and updated regularly by the PMU.

7. Project Inception Report. A project inception workshop will be held within two months of project start date and signature of relevant agreements with partners. During this workshop the following will be reviewed and agreed:

- the proposed implementation arrangement, the roles and responsibilities of each stakeholder and project partners;
- an update of any changed external conditions that may affect project implementation;
- the results framework, the SMART indicators and targets, the means of verification, and monitoring plan;
- the responsibilities for monitoring the various project plans and strategies, including the risk matrix, the Environmental and Social Risk Management Plan, the gender strategy, the knowledge management strategy, and other relevant strategies;
- finalize the preparation of the first year AWP/B, the financial reporting and audit procedures;
- schedule the PSC meetings;
- prepare a detailed first year AWP/B,

8. The PMU will draft the inception report based on the agreement reached during the workshop and circulate among PSC members, BH, LTO and FLO for review within one month. The final report will be cleared by the FAO BH, LTO and the FAO GEF Coordination Unit and uploaded in FAO's Field Program Management Information System (FPMIS) by the BH.

9. Results-based Annual Work Plan and Budget (AWP/B). The draft of the first AWP/B will be prepared by the PMU in consultation with the FAO Project Task Force and reviewed at the project Inception Workshop. The Inception Workshop inputs will be incorporated and subsequently, the PMU will submit a final draft AWP/B to the BH within two weeks after the workshop. For subsequent AWP/B, the PMU will organize a project progress review and planning meeting for its progress review and adaptive management. Once PSC comments have been incorporated, the PMU will submit the AWP/B to the BH for non-objection, LTO and the FAO GEF Coordination Unit for comments and for clearance by BH and LTO prior to uploading in FPMIS by the BH. The AWP/B must be linked to the project's Results Framework indicators to ensure that the project's work and activities are contributing to the achievement of the indicators. The AWP/B should include detailed activities to be implemented to achieve the project outputs and output targets and divided into monthly timeframes and targets and milestone dates for output indicators to be achieved during the year. A detailed project budget for the activities to be implemented during the year should also be included together with all monitoring and supervision activities required during the year. The AWP/B should be approved by the Project Steering Committee, LTO, BH and the FAO GEF Coordination Unit, and uploaded on the FPMIS by the BH.

10. Project Progress Reports (PPR): The PPRs are used to identify constraints, problems or bottlenecks that impede timely implementation and to take appropriate remedial action. PPRs will be prepared based on the systematic monitoring of output and outcome indicators identified in the Project Results Framework indicate annex number, AWP/B and M&E Plan. Each semester the Project Manager will prepare a draft PPR, will collect and consolidate any comments from the FAO PTF. The PC / PM will submit the final PPRs to the FAO Representation in indicate country every six months, prior to 31 July (covering the period between January and June) and before 31 December (covering the period between July and December). The July-December report should be accompanied by the updated AWP/B for the following Project Year

(PY) for review and no-objection by the FAO PTF. The Budget Holder has the responsibility to coordinate the preparation and finalization of the PPR, in consultation with the PMU, LTO and the FLO. After LTO, BH and FLO clearance, the FLO will ensure that project progress reports are uploaded in FPMIS in a timely manner.

11. Annual Project Implementation Report (PIR): The PIR is a key self-assessment tool used by GEF Agencies for reporting every year on project implementation status. It helps to assess progress toward achieving the project objective and implementation progress and challenges, risks and actions that need to be taken. Under the lead of the BH, the Project Manager will prepare a consolidated annual PIR report covering the period July (the previous year) through June (current year) for each year of implementation, in collaboration with national project partners (including the GEF OFP), the Lead Technical Officer, and the FLO. The PC/PM will ensure that the indicators included in the project results framework are monitored annually in advance of the PIR submission and report these results in the draft PIR.

12. BH will be responsible for consolidating and submitting the PIR report to the FAO-GEF Coordination Unit for review by the date specified each year after each co-implementing agency's review for each respective output under their responsibilities (to be included for joint implementation only). FAO - GEF Funding Liaison Officer review PIRs and discuss the progress reported with BHs and LTOs as required. The BH will submit the final version of the PIR to the FAO-GEF Coordination Unit for final approval. The FAO-GEF Coordination Unit will then submit the PIR(s) to the GEF Secretariat as part of the Annual Monitoring Review of the FAO-GEF portfolio

13. Technical Reports: Technical reports will be prepared as part of project outputs and to document and share project outcomes and lessons learned. The LTO will be responsible for ensuring appropriate technical review and quality assurance of technical reports. Copies of the technical reports will be distributed to project partners and the Project Steering Committee as appropriate.

14. Co-financing Reports: The PMU will be responsible for tracking co-financing materialized against the confirmed amounts at project approval and reporting. The co-financing report, which covers the GEF fiscal year 1 July through 30 June, is to be submitted on or before 31 July and will be incorporated into the annual PIR. The co-financing report needs to include the activities that were financed by the contribution of the partners.

15. Tracking and reporting on results across the GEF 7 core indicators and sub-indicators: As of July 1, 2018, the GEF Secretariat requires FAO as a GEF Agency, in collaboration with recipient country governments, executing partners and other stakeholders to provide indicative, expected results across applicable core indicators and sub-indicators for all new GEF projects submitted for Approval. During the approval process of the (insert short project title) expected results against the relevant indicators and sub-indicators have been provided to the GEF Secretariat. Throughout the implementation period of the



project, the PMU, is required to track the project's progress in achieving these results across applicable core indicators and sub-indicators. At project mid-term and project completion stage, the project team in consultation with the PTF and the FAO-GEF CU are required to report achieved results against the core indicators and sub-indicators used at CEO Endorsement/ Approval. Methodologies, responsibilities and timelines for measuring core-indicators will be outlined in the M&E Plan prepared at inception.

16. Terminal Report: Within two months before the end date of the project, and one month before the Final Evaluation, the PMU will submit to FAO (to specify the unit in charge in HQ) a draft Terminal Report. The main purpose of the Terminal Report is to give guidance at ministerial or senior government level on the policy decisions required for the follow-up of the project, and to provide the donor with information on how the funds were utilized. The Terminal Report is accordingly a concise account of the main products, results, conclusions and recommendations of the project. The target readership consists of persons who are not necessarily technical specialists but who need to understand the policy implications of technical findings and needs for insuring sustainability of project results.

## **MTR and Evaluation provisions**

### **Mid-Term Review**

17. As outlined in the GEF Evaluation Policy, Mid-Term Reviews (MTRs) or mid-term evaluations (MTEs) are mandatory for all GEF-financed full-sized projects (FSPs), including Enabling Activities processed as full-sized projects. It is also strongly encouraged for medium-sized projects (MSPs). The Mid-Term review will (i) assess the progress made towards achievement of planned results (ii) identify problems and make recommendations to redress the project (iii) highlight good practices, lessons learned and areas with the potential for upscaling.

18. The Budget Holder is responsible for the conduct of the Mid-Term Review (MTR) of the project in consultation with the FAO-GEF Coordination Unit halfway through implementation. He/she will contact the FAO-GEF Coordination Unit about 3 months before the project half-point (within 3 years of project CEO Endorsement) to initiate the MTR exercise.

19. To support the planning and conduct of the MTR, the FAO GEF CU has developed a guidance document 'The Guide for planning and conducting Mid-Term Reviews of FAO-GEF projects and programmes'. The FAO-GEF CU will appoint a MTR focal point who will provide guidance on GEF specific requirements, quality assurance on the review process and overall backstopping support for the effective management of the exercise and for timely the submission of the MTR report to the GEF Secretariat.

20. After the completion of the Mid-Term Review, the BH will be responsible for the distribution of the MTR report at country level (including to the GEF OFP) and for the preparation of the Management Response within 4 weeks and share it with national partners, GEF OFP and the FAO-GEF CU. The BH will also send the updated core indicators used during the MTR to the FAO-GEF CU for their submission to the GEF Secretariat.

## **Terminal Evaluation**

21. The GEF evaluation policy foresees that all Medium and Full sized projects require a separate terminal evaluation. Such evaluation provides: i) accountability on results, processes, and performance ii) recommendations to improve the sustainability of the results achieved and iii) lessons learned as an evidence-base for decision-making to be shared with all stakeholders (government, execution agency, other national partners, the GEF and FAO) to improve the performance of future projects.

22. The Budget Holder will be responsible to contact the Regional Evaluation Specialist (RES) within six months prior to the actual completion date (NTE date). The RES will manage the decentralized independent terminal evaluation of this project under the guidance and support of OED and will be responsible for quality assurance. Independent external evaluators will conduct the terminal evaluation of the project taking into account the 'GEF Guidelines for GEF Agencies in Conducting Terminal Evaluation for Full-sized Projects'. FAO Office of Evaluation (OED) will provide technical assistance throughout the evaluation process, via the OED Decentralized Evaluation Support team ? in particular, it will also give quality assurance feedback on: selection of the external evaluators, Terms of Reference of the evaluation, draft and final report. OED will be responsible for the quality assessment of the terminal evaluation report, including the GEF ratings.

23. After the completion of the terminal evaluation, the BH will be responsible to prepare the management response to the evaluation within 4 weeks and share it with national partners, GEF OFP, OED and the FAO-GEF CU. The BH will also send the updated core indicators used during the TE to the FAO-GEF CU for their submission to the GEF Secretariat.

## **Disclosure**

24. 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 learned made available.

## **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 (LDCE/SCCF)?**

1. The contributions of mangrove ecosystems to human well-being are interrelated to their direct ecological benefits. Mangroves are of great importance for their role as a wildlife habitat and nursery area for birds, shrimp, crabs, and fish as well as the support they provide to coastal communities' for the supply

of seafood for local consumption or as part of a business[1]. Additionally, mangroves provide shoreline protection, habitat for crocodiles, recreation, charcoal production, timber, and fence posts. Mangroves also provide a haven for boat and equipment shelter for fishers during hurricanes and other weather events.

2. Mangroves form a part of the physical shoreline protection and ecological defense of many countries and are particularly essential for island nations. The Caribbean as a whole, and certainly Jamaica, has special relationships with mangroves. Many coastal communities owe their survival to the resilience of mangroves. It has been reported that mangroves provide perhaps hundreds of uses but as a defense against the vagaries of tropical hurricanes for that reason alone mangroves are to be celebrated. The buffer location, at the edge of the land and the sea, makes for a dynamic mix of benefits that society requires for biodiversity and sustenance.

3. Under this context, the present project aims to increase and maintain the provision of these ecosystem services by providing direct support to the conservation of 7,600 ha of mangroves (GEF Core Indicator 4.1), the restoration of 2,212 ha (GEF Core Indicator 3.4) and the designation of 4,297 ha as protected areas (GEF Core Indicator 1.1). These actions will provide direct benefits to 400 people (50% women) and indirect benefits to a total of a least 18,194 registered fisher folks in Jamaica.

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[1] <https://documents1.worldbank.org/curated/en/357921613108097096/pdf/Forces-of-Nature-Assessment-and-Economic-Valuation-of-Coastal-Protection-Services-Provided-by-Mangroves-in-Jamaica.pdf>

## 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/Approva l	MTR	TE
Medium/Moderate	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.

<b>Safeguard Triggered</b>	<b>Risk Identified</b>	<b>Answer</b>	<b>Risk Classification</b>	<b>Potential (negative) impacts</b>	<b>Mitigation measures</b>
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<p>2 (Biodiversity, ecosystems and natural habitats)</p>	<p>2.1 Would this project be implemented within a legally designated protected area or its buffer zone?</p>	<p>Yes</p>	<p><b>Moderate</b></p>	<p>Not foreseen. The project will enforce protection and sustainable management of mangrove ecosystems</p>	<p>The project supports strengthening management of Crown Lands already overseen by the Forestry Department, including Forest Reserves and Forest Management Areas plus moving 7,600 additional hectares under these two management regimes. This focus on strengthening existing management mechanisms of protected areas and government-owned land by government agencies with existing mandates ensures cooperation from local stakeholders, compliance with national policies, and mitigation of any potential negative impacts. Further, the project will maintain frequent monitoring and evaluation mechanism of results and impacts to ensures continuous feedback during the project and adaptive management responses as necessary.</p> <p>The Jamaica Forestry Department, as lead project executing partner, will work closely with FAO during project execution for compliance with FAO ESS Guidelines.</p>
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7. Decent work	7.2 Would this project operate in sectors or value chains that are dominated by subsistence producers and other vulnerable informal agricultural workers, and more generally characterized by high levels ?working poverty??	Yes	<b>Moderate</b>	Not foreseen.	<p>The project and its partners should share opportunities for youths in coastal communities and assist in preparing both males and females to access these opportunities. Some of these opportunities include youth representation at various regional and international conferences; South-South Cooperation with youths within Latin America and the Caribbean; and also conducting a needs assessment for skills and partnering with HEART Trust/NSTA to enroll them.</p>
					<p>The project makes it a priority to support the governance structures of these communities, e.g. Benevolent Societies and Cooperative. Without representation in Jamaica, it is almost impossible to receive financial and social support for micro-enterprises.</p>
					<p>After the governance framework is established, a partnership should be forged with the Small Business Association to provide capacity building or a roadmap on how stakeholders whose livelihood depends solely on the</p>

**Supporting Documents**

Upload available ESS supporting documents.

Title	Module	Submitted
<b>RiskClassification</b>	<b>Project PIF ESS</b>	
<b>ES Screening Checklist Jamaica Mangroves</b>	<b>Project PIF ESS</b>	

**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
<p><b>Objective:</b> To support the implementation of the National Mangrove Management Plan for promoting a biodiversity-positive approach towards sustainable management of mangrove ecosystems</p>							
<p><b>Component 1: National mangrove policy strengthening to support implementation of National Mangrove Management Plan</b></p>							
<p><b>Outcome 1.1:</b> Strengthened policy enabling environment for successful implementation of the National Mangrove Management Plan</p>							



Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<p>Output.1.1</p> <p><u>.1</u></p> <p>Relevant provisional Parish Development Orders (DO) and Local Sustainable Development Plans (LSDP) revised and/or updated with appropriate zoning of forested wetlands, recommended uses and conservation status</p>	<p><u>Project Indicator #1:</u></p> <p>- Number of relevant provisional DOs revised and/or updated</p> <p>- Number of relevant LSDPs revised and/or updated</p>	<p>No provisional Parish Development Orders or Local Sustainable Development Plans revised and/or updated</p>	<p>50% of relevant provisional Parish Development Orders and Local Sustainable Development Plans revised and/or updated</p>	<p>100% of relevant provisional Parish Development Orders and Local Sustainable Development Plans revised and/or updated</p>	<p>- NEPA reports on implementation of activities</p> <p>- Revised and/or updated Parish Development Orders</p> <p>- Revised and/or updated Local Sustainable Development Plans</p>	<p>- Legal protection of forested wetlands through Parish Development Orders and Local Sustainable Development Plans achieved before ongoing or planned development threatens ecological integrity</p> <p>- Timeframe for decision-making sufficient to prevent continued development or modification of identified areas</p> <p>- Adequate cross-agency collaboration</p>	<p>MLGCD , NEPA/TPA, FD, MEGJC, and PDCs</p>

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<p>Output.1.1.2</p> <p>Permitting requirements and processes related to wetland replanting, rehabilitation and/or restoration projects revised to minimise illegal entry into mangroves</p>	<p><u>Project Indicator #2:</u></p> <p>- Project brief &amp; terms of reference for consultancy to revise permitting requirements and processes</p> <p><u>Project Indicator #3:</u></p> <p>- Completion and dissemination of guidance document on protocols &amp; conditions for replanting, rehabilitation, or restoration projects</p> <p><u>Project Indicator #4:</u></p> <p>- Updating, approval and promulgation of permitting requirements and schedule</p>	<p>Wetland modification permitting requirements inadequate</p>	<p>- Project brief &amp; terms of reference for consultancy to revise permitting requirements and processes completed</p> <p>- 1 Consultancy to revise permitting requirements and processes completed</p>	<p>- 1 Guidance document on protocols &amp; conditions for replanting, rehabilitation, or restoration projects disseminated</p> <p>- Permitting requirements and schedule updated, approved and promulgated</p>	<p>- Guidance document on protocols &amp; conditions for replanting, rehabilitation, or restoration projects.</p> <p>- Orders drafted and promulgated</p> <p>- Processes/guidelines adopted</p> <p>- Updated permitting requirements and schedule</p>	<p>- Clear and unrestricted political will to revise permitting requirements</p> <p>- Timeframe for decision-making sufficient for continued development of modification of identified areas</p>	<p>NEPA/CPA, FD, MEGJC</p>

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output.1.1.3 Mangrove and Coastal Wetlands Protection Draft Policy and Regulation, 1997, reviewed, updated and finalised to compel and coordinate action to protect and sustainably use forested wetlands	<u>Project Indicator #5:</u> - The amended Mangrove and Coastal Wetlands Protection Draft Policy and Regulation, 1997, is revised to include present situational context, approved and promulgated	The Mangrove and Coastal Wetlands Protection Draft Policy and Regulation of 1997 contains Key Principles and Policy strategies . However , regulations still remain to be formulated and policy strategies need to be revised to include present situational context		- Mangrove and Coastal Wetlands Protection Draft Policy revised and Regulations approved and promulgated	- Amended Mangrove and Coastal Wetlands Protection Draft Policy and Regulations promulgated  - NEPA progress report on activities	- Updating the draft policy and regulations is a priority policy direction for MEGJC - Timeframe for decision-making sufficient for continued development of modification of identified areas	MEGJC, NEPA, FD, PIOJ

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<p>Output.1.1.4 Five policy briefs tailored to specific sectors (Port and Coastal Infrastructure, Tourism, Climate Change and Environment, Waste Management, Agriculture and Fisheries) that raise awareness on the value of mangrove ecosystems and biodiversity.</p>	<p><u>Project Indicator #6:</u> - Number of policy briefs finalized.</p> <p><u>Project Indicator #7:</u> - Number of sectors addressed.</p>	<p>- Limited awareness on the benefits and value of mangrove ecosystems and cost to the economy of losing mangroves due to the respective economic activities among key economic sectors</p>	<p>- 5 Policy briefs drafted that raise awareness on the value of mangrove ecosystems and biodiversity among key economic sectors</p>	<p>- 5 Policy briefs disseminated to raise awareness on the value of mangrove ecosystems and biodiversity among key economic sectors</p>	<p>- Five policy briefs</p>	<p>- Clear and unrestricted political will to develop policy briefs to raise awareness - Key economic sectors receptive to policy briefs and willingness to adapt policies to recognize benefits and value of mangrove ecosystems</p>	<p>MEGJC, NEPA, FD, TPDCo., Ministry of Tourism, NSWM A, MHURE CC, National Fisheries Authority, JNHT, Ministry of Industry, Commerce, Agriculture and Fisheries</p>

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output.1.1.5 Potential for acquisition of privately owned forested wetlands by GOJ institutions investigated, with indicative costs for the acquisitions	<u>Project Indicator #8:</u> - Identification of area of privately owned lands that can be acquired by FD for ownership and management,  - Identification of Indicative costs for the acquisition of privately owned forested wetlands	- Limited knowledge on potential for acquisition of privately owned forested wetlands by GOJ institutions	- area (amount of hectares) of privately owned lands that can be acquired by FD is determined.	- costs for the acquisition of privately owned forested wetlands are determined.  - Proposals submitted to MEGJC for the acquisition of privately owned forested wetlands	- FD/NEPA progress reports detailing privately owned lands that could be acquired by FD for ownership and management, and indicative costs for the acquisitions	The Research division of the FD has the capacity (financial and/or staffing) to conduct these studies	FD, NLA, MDAs
<b>Outcome 1.2:</b> Ecosystem-based mangrove management, with emphasis in resource users and livelihoods, mainstreamed into land use planning processes.	<b>GEF Core Indicator 4.1:</b> Area of landscapes under improved management to benefit biodiversity.  7,600 hectares of mangrove landscapes under improved management to benefit biodiversity	0 ha	20% of 7,600	7,600 ha	- FD and NEPA reports and communications on implementation of activities  - Protected area orders drafted to be gazetted in the Jamaica Gazette	- FD and NEPA have a working list of potential FW areas identified  - Legal protection of forested wetlands can be achieved before ongoing or planned development threatens ecological integrity	FD, NEPA

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<p><u>Output 1.2.1</u></p> <p>A minimum of 7,600 ha of forested wetlands of high ecosystem value and/or special interest designated as protected areas/forest reserves, with boundaries for gazetting and corresponding regulations drafted</p>	<p><u>Project Indicator #9:</u></p> <p>- % of minimum total 7,600 ha of FW identified for protection;</p> <p><u>Project Indicator #10:</u></p> <p>- % boundary description ready to be gazetted with amended regulations of minimum total 7,600 ha of FW for protection</p>	<p>FD/NEPA Working list of forested wetlands to be conserved/restored available</p>	<p>- 50% of 7,600 ha of FW identified for protection</p> <p>- 50% boundary description ready to be gazetted</p>	<p>- 100% of 7,600 ha of FW identified for protection</p> <p>- 100% of boundary descriptions ready to be gazetted</p>	<p>- FD and NEPA reports and communications on implementation of activities</p> <p>- Protected area orders drafted to be gazetted in the Jamaica Gazette</p>	<p>- FD and NEPA have a working list of potential FW areas identified</p> <p>- Stakeholder engagement will be employed to review and finalise list of FW areas</p> <p>- Legal protection of forested wetlands can be achieved before ongoing or planned development threatens ecological integrity</p>	<p>FD, NEPA</p>

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<p><u>Output 1.2.2</u> Gender and youth mainstreaming strategy and plan for ecosystem-based management of priority forested wetland areas developed and implemented</p>	<p><u>Project Indicator #11:</u> - Gender and youth strategy and action plan implemented</p>	<p>- There is a need to better integrate gender and youth considerations into forested wetland management and conservation actions, to improve education, alleviate poverty, empower women and girls and achieve sustainable ecosystem use.</p>	<p>- Approved project brief &amp; terms of reference for consultancy to develop a gender and youth mainstreaming strategy completed</p> <p>- 50% of consultancy to develop a gender and youth mainstreaming strategy completed</p>	<p>- Gender and youth mainstreaming strategy implemented</p>	<p>- Gender and youth strategy and action plan</p> <p>- Stakeholder consultation report(s)</p> <p>- Interview with community members</p>	<p>Funding and resources are not restricted</p>	<p>FD, NEPA, MLGCD, PIOJ, Bureau of Gender Affairs</p>

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<p>Output 1.2.3</p> <p>Feasibility of a payment for ecosystem services (PES) program in selected forest wetland areas and adjacent communities examined (pilot)</p>	<p><u>Project Indicator #12:</u> - Feasibility study completed on potential FW sites for PES pilot program</p> <p><u>Project Indicator #13:</u> - Number of FW areas identified for PES pilot program</p>	<p>- There is a need to incorporate into legislation alternative regulatory instruments, such as economic incentives to promote sustainable use of forested wetlands. Payment for ecosystem services (PES) can be used to create economic incentives for mangrove conservation</p>	<p>- Approved project brief &amp; terms of reference for consultancy to carry out a feasibility study on PES pilot program</p> <p>- FW areas identified for PES pilot program</p>	<p>- Feasibility study on selected FW areas and communities for a payment for ecosystem services (PES) pilot program completed</p>	<p>- Feasibility study on selected FW areas and communities for a payment for ecosystem services (PES) pilot program</p>	<p>- Successful engagement with the PES concept across the stakeholders</p>	<p><u>FD, NEPA</u></p>



Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<p><b>Outcome 1.3:</b> New mangrove protected areas established</p>	<p><b>GEF Core Indicator 1.1:</b> Terrestrial protected areas newly created 4,297 hectares of mangroves</p>	0 ha	20% of 4,297	4,297 hectares of mangroves	- FD and NEPA reports and communications on implementation of activities	<p>- FD/NEPA have a working list of potential sites identified</p> <p>- Stakeholder engagement will be employed to review and finalise list of FW areas</p> <p>- Timeframe for decision-making sufficient for continued development of modification of identified areas</p> <p>- Adequate cross-agency collaboration</p>	<p>FD, NLA</p> <p>Collaborators: Ministries, Departments and Agencies (MDAs)</p>
<p><b>Output 1.3.1:</b> GOJ forested wetlands in need of urgent conservation and to be transferred to FD prioritised (from identified sites on FD working list)</p>	<p><b>Project Indicator #14:</b> - Total ha of FW prioritised for transfer by Commissioner of Lands/MDAs</p>	- FD/NEPA have a working list of potential sites	- 100% of GOJ forested wetlands in need of urgent conservation and to be transferred to FD prioritised	- 100% of GOJ forested wetlands in need of urgent conservation and to be transferred to FD prioritised	<p>- FD and NEPA reports and communications on implementation of activities</p> <p>- Total ha of FW identified for transfer by Commissioner of Lands/MDAs</p>	<p>- FD/NEPA have a working list of potential sites identified</p> <p>- Stakeholder engagement will be employed to review and finalise list of FW areas</p> <p>- Timeframe for decision-making sufficient for continued development of modification of identified areas</p> <p>- Adequate cross-agency collaboration</p>	<p>FD, NLA</p> <p>Collaborators: Ministries, Departments and Agencies (MDAs)</p>

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output 1.3.2: GOJ lands, including crown lands transferred to the Forestry Department by the Commissioner of Lands, as well as Ministries, Departments and Agencies (MDAs), for the management of forested wetlands	<p><u>Project Indicator #15:</u> - Existence of mechanism officiating FD mandate over identified and prioritised forested wetlands on GOJ lands including crown lands;</p> <p><u>Project Indicator #16:</u> - Total ha of FW transferred to the Forestry Department by Commissioner of Lands/MDAs - - -</p>	- No existing mechanism officiating FD mandate over forested wetlands on GOJ lands including crown lands	<p>- Mechanism officiating FD mandate over forested wetlands on GOJ lands including crown lands in place</p> <p>- 20% of identified and prioritised forested wetlands on GOJ lands including crown lands transferred to the FD by Commissioner of Lands/MDAs</p>	- 100% of identified and prioritised forested wetlands on GOJ lands including crown lands transferred to the FD by Commissioner of Lands/MDAs	<p>- Signed documentation/mechanism between FD and relevant parties</p> <p>- Progress report</p>	<p>- Timeframe for decision-making sufficient for continued development of modification of identified areas</p> <p>- Most MDAs agree with transfer of FW despite having development plans for these lands</p>	NLA, FD  Collaborators: MDAs

**Component 2: Mangrove ecosystem restoration for improved ecosystem services and protection of key biodiversity**

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<p><b>Outcome 2.1:</b> Restored health of priority mangrove habitats to improve associated biodiversity and mangrove ecosystem services, including support to marine ecosystems and fisheries.</p>	<p><b>GEF Core Indicator 3.4:</b> Area of wetlands (including estuaries, mangroves) restored</p> <p><b>GEF Core Indicator 6.1:</b> Carbon sequestered or emissions avoided in the AFOLU sector</p>	<p>0 ha</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>1,635,732 mt CO2eq</p>	<p>20% of 2,212 hectares of mangroves</p>	<p>2,212 hectares of mangroves</p> <p>-</p> <p>-</p> <p>-</p> <p>1,635,732 mt CO2eq</p>	<p>- Discrete restoration plans on "restorable" FW in Jamaica with the costs for effecting (hydrological) restoration</p> <p>- Restoration activities</p> <p>- Progress reports on restoration activities</p> <p>-FAO Ex-Act Tool</p>	<p>- Sites are ?restorable? based on physical or political factors</p>	<p>FD, NEPA, MDAs, NGO's, Academia, Consultants</p>
<p><b>Output 2.1.1</b> Forested wetlands in need of urgent conservation/ restoration prioritised (from identified sites on FD working list)</p>	<p><b>Project Indicator #17:</b> - Total ha of FW identified for restoration</p>	<p>-</p> <p>FD/NEPA have a working list of potential sites for restoration</p>	<p>- 100% forested wetlands on working list of potential sites for restoration prioritised</p>	<p>- 100% forested wetlands on working list of potential sites for restoration prioritised</p>	<p>- FD report on "restorable" FW in Jamaica (from identified sites on FD working list)</p>	<p>- The NMSFMP Situational Analysis and Forestry Departments EU BSP surveys can provide data prioritised sites (from identified sites on FD working list)</p> <p>- Sites are ?restorable? based on physical or political factors</p>	<p>FD, NEPA, MDAs, NGO's, Academia, Consultants</p>

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<p><u>Output 2.1.2:</u> Restoration plans developed for prioritised "restorable" mangrove areas in Jamaica with the costs for effecting conservation and/or hydrological restoration</p>	<p><u>Project Indicator #18:</u> - Number of restoration plans produced</p>	<p>- No restoration plans for potential sites for restoration on FD/NEPA working list</p>	<p>- Restoration plans produced for 100% of prioritised "restorable" mangrove areas</p>	<p>- Restoration plans produced for 100% of prioritised "restorable" mangrove areas</p>	<p>- Discrete restoration plans on "restorable" FW in Jamaica with the costs for effecting (hydrological) restoration</p>	<p>- The NMSFMP Situational Analysis and Forestry Departments EU BSP surveys can provide data prioritised sites (from identified sites on FD working list)</p> <p>- Sites are ?restorable? based on physical or political factors</p>	<p>FD, NEPA, MDAs, NGO's, Academia, Consultants</p>
<p><u>Output 2.1.3:</u> Hydrological/hydrodynamic and vegetation features and natural resource values of FD working list of forest wetland sites, to be conserved/protected, analysed</p>	<p><u>Project Indicator #19:</u> - Report on the hydrological/hydrodynamic, vegetation features and a natural resource valuation of all current GOJ-owned forested wetlands</p>	<p>- Insufficient knowledge of hydrological changes and reduced water flows on forest wetland sites on FD working list</p>	<p>- Ecohydrology reports for prioritised forest wetland sites on FD working list of produced</p>	<p>- Ecohydrology reports for all forest wetland sites on FD working list of produced</p>	<p>- Ecohydrology reports for "restorable" mangrove areas</p>	<p>- Discrete restoration plans on "restorable" FW in Jamaica with the costs for effecting (hydrological) restoration</p>	<p>FD, NEPA, Consultants</p>

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output 2.1.4: Restoration/rehabilitation of prioritised degraded mangrove areas completed	<p><u>Project Indicator #20:</u></p> <ul style="list-style-type: none"> <li>- Total hectares of FW rehabilitated or restored</li> <li>- Number of agencies partnering to effect restoration of degraded FW in Jamaica</li> </ul>	- No prioritised degraded mangrove areas restored or rehabilitated yet	<ul style="list-style-type: none"> <li>- 50% effected of restoration of prioritised "restorable" mangrove areas with restoration plans</li> <li>- 50% of earmarked agencies partnering to effect restoration of degraded FW in Jamaica</li> </ul>	<ul style="list-style-type: none"> <li>- 100% effected of restoration of prioritised "restorable" mangrove areas with restoration plans</li> <li>- 100% of earmarked agencies partnering to effect restoration of degraded FW in Jamaica</li> </ul>	<ul style="list-style-type: none"> <li>- Restoration activities</li> <li>- Progress reports on restoration activities</li> </ul>	<ul style="list-style-type: none"> <li>- Jamaican consultants, academia and Govt. agencies have the technical expertise to plan and implement successful mangrove restorations</li> <li>- Several other funding options are potentially available to restore and conserve some ?Red List? sites other Blue Carbon funding options, Mitigation monies from permitted Wetland modifications e.g. hotels</li> <li>- Restoration budgets are precise and there are no costs over-runs</li> <li>- Securing partnership with private entities possible despite permitting requirements and fees for restoration/rehabilitation works</li> </ul>	FD, NEPA, MDAs, NGO's, Academia, Consultants

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output 2.1.5: Mangrove ecosystem education ?Mangrove Matters? billboards designed and erected alongside restored mangrove areas	<u>Project Indicator #21:</u> - The installation of ?Mangrove Matters? highway billboards alongside restored mangrove areas	- No mangrove ecosystem education ?Mangrove Matters? billboards erected alongside mangrove areas	- 50% of ?Mangrove Matters? highway billboards alongside restored mangrove areas installed	- 100% of ?Mangrove Matters? highway billboards alongside restored mangrove areas installed	Mangrove ecosystem education ?Mangrove Matters? billboards alongside restored mangrove areas	- Ample information exists to create content for billboards  - The Parish municipal corporations agree to waiving fees for GOJ funded educational billboards	FD, NEPA, MOE, Ministry w/ responsibility for Environment, MOT, Municipal corporations
<b>Component 3: Knowledge management and project monitoring and evaluation</b>							
<u>Outcome 3.1:</u> Improved management and dissemination and awareness of Jamaica mangrove habitat knowledge	<u>GEF Core Indicator 11</u> Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment			400 direct beneficiaries (50% women)	- Training registration sheets  - HR records  - Interviews with staff members	- Adequate uptake and participation in the use of the database	NSDMD, FD, NEPA,  Collaborators: NGO's, Academia, Consultants

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<p><u>Output 3.1.1:</u> A standard and GOJ entity used/agreed repository or webpage with forested wetlands use, status and management data in Jamaica created</p>	<p><u>Project Indicator #22:</u> - Database of FW areas exists (yes/no)</p>	<p>- No repository or webpage with forested wetlands use, status and management data in Jamaica exists</p>	<p>- Approved project brief &amp; terms of reference for consultancy to develop a database of Jamaica's FW areas</p> <p>- Database with forested wetlands use, status and management data in Jamaica created</p>	<p>- Database with forested wetlands use, status and management data in Jamaica operational</p>	<p>- Database of Jamaica's FW areas</p> <p>- FD report and communication repository or webpage with forested wetlands use, status and management data in Jamaica</p>	<p>- Various GOJ agencies currently possess the data, which needs to be collated and presented in a standard and a user-friendly format</p> <p>- GOJ agencies agree on the presentation format or platform to share this information to stakeholders</p>	<p>NSDMD, FD, NEPA,</p> <p>Collaborators: NGO's, Academia, Consultants</p>
<p><u>Output 3.1.2:</u> Relevant agencies trained on the purpose and use of the Jamaica forested wetlands database and granted appropriate access</p>	<p><u>Project Indicator #23:</u> - Number of staff members of relevant agencies trained</p> <p><u>Project Indicator #24:</u> - Number of staff members of relevant agencies with valid access to Jamaica forested wetlands database</p>	<p>- No staff members trained on the purpose and use of the Jamaica forested wetlands database</p>		<p>- 50 Selected staff members of relevant agencies trained on the purpose and use of the forested wetlands database and granted appropriate access</p>	<p>- Training registration sheets</p> <p>- HR records</p> <p>- Interviews with staff members</p>	<p>- Adequate uptake and participation in the use of the database</p>	<p>NSDMD, FD, NEPA,</p> <p>Collaborators: NGO's, Academia, Consultants</p>

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<p><u>Output 3.1.3:</u> Existing GIS portal on Forestry Dept website modified to include revised forested wetland locations as a layer/feature.</p>	<p><u>Project Indicator #25:</u> - Interactive map updated</p> <p><u>Project Indicator #26:</u> - Number of applications submitted using outputs from interactive map</p>	<p>- Existing GIS portal on Forestry Dept website does not include revised forested wetland locations as a layer/feature</p>	<p>- Existing GIS portal on Forestry Dept website modified to include revised forested wetland locations as a layer/feature</p>	<p>- Outputs from interactive map used by NEPA, FD, Min of Local Government, JNHT to show the precise location of planned developments using this map. for any development approval.</p>	<p>- GIS portal accessible</p> <p>- FD/NEPA records</p> <p>-</p>	<p>- Various GOJ agencies currently possess the data, which needs to be collated and presented in a standard and a user-friendly format</p> <p>- GOJ agencies agree on the presentation format or platform to share this information to stakeholders, and the need for applicants to submit the development location via this map</p>	<p>FD, other GOJ agencies, Consultant</p>
<p><u>Output 3.1.4:</u> Land use and/or zoning maps created with an overlay to illustrate forested wetland locations and physical boundaries using data collected and verified by FD</p>	<p><u>Project Indicator #27:</u> - Number of land use/zoning maps updated</p>	<p>Land use and/or zoning maps with an overlay to illustrate forested wetland locations and physical boundaries not available</p>	<p>Land use and/or zoning maps created with an overlay to illustrate forested wetland locations and physical boundaries using data collected and verified by FD</p>	<p>Land use and/or zoning map showing FW locations and boundaries, are freely accessible to FW stakeholders and the public</p>	<p>- Zoning/land use planning maps</p>	<p>- Various GOJ agencies currently possess the data, which needs to be collated and presented in a standard and a user-friendly format</p> <p>- GOJ agencies agree on the presentation format or platform to share this information to stakeholders</p>	<p>FD, NSDMD, NEPA, Consultant</p>



Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
<b>Outcome 3.2:</b> Effective project management and evaluation to inform adaptive management	<u>Project Indicator #28:</u> Results Based Monitoring (RBM) system		RBM system in place that monitors project results  1 Mid-term Review Report	1 Final Evaluation Report	MTR and FE reports	The results of the Mid-Term Review and the Final Evaluation are used to review the progress of the project and define corrective actions to achieve the results and objective.	
<u>Output 3.2.1:</u> Monitoring and Evaluation Strategy developed with relevant stakeholders, clearly defining expected results, the expected time periods for their completion, and their confirmation through objectively verifiable indicators and means of verification.	<u>Project Indicator #29:</u> - Project results framework with results and output indicators, baseline and targets  <u>Project Indicator #30:</u> - Gender perspective incorporated in project management and actions	-	9 progress reports (6 PPR and 3 PIR), including analysis of the situation of women and of peoples and nationalities in relation to the project	15 progress reports (10 PPR and 5 PIR), including analysis of the situation of women and of peoples and nationalities in relation to the project	PPR / PIR	M&E system designed for the project, including the monitoring of activities, the mechanisms for verifying compliance with the indicators of results and products, and responsibilities for M&E, deadlines and budgets.	-

Results chain	Indicators	Baseline	Mid-term target	Final target	Means of verification	Assumptions	Responsible for data collection
Output 3.2.2: Mid-term review and final evaluation conducted to constructively inform and guide project implementation, sustainability considerations, and the application of adaptive measures when necessary	Project Indicator #31: 1 Mid-term review and 1 Final evaluation	-	1 Mid-term Review Report -	1 Final Evaluation Report -	MTR and FE reports	The results of the Mid-Term Review and the Final Evaluation are used to review the progress of the project and define corrective actions to achieve the results and objective.	-

**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).**

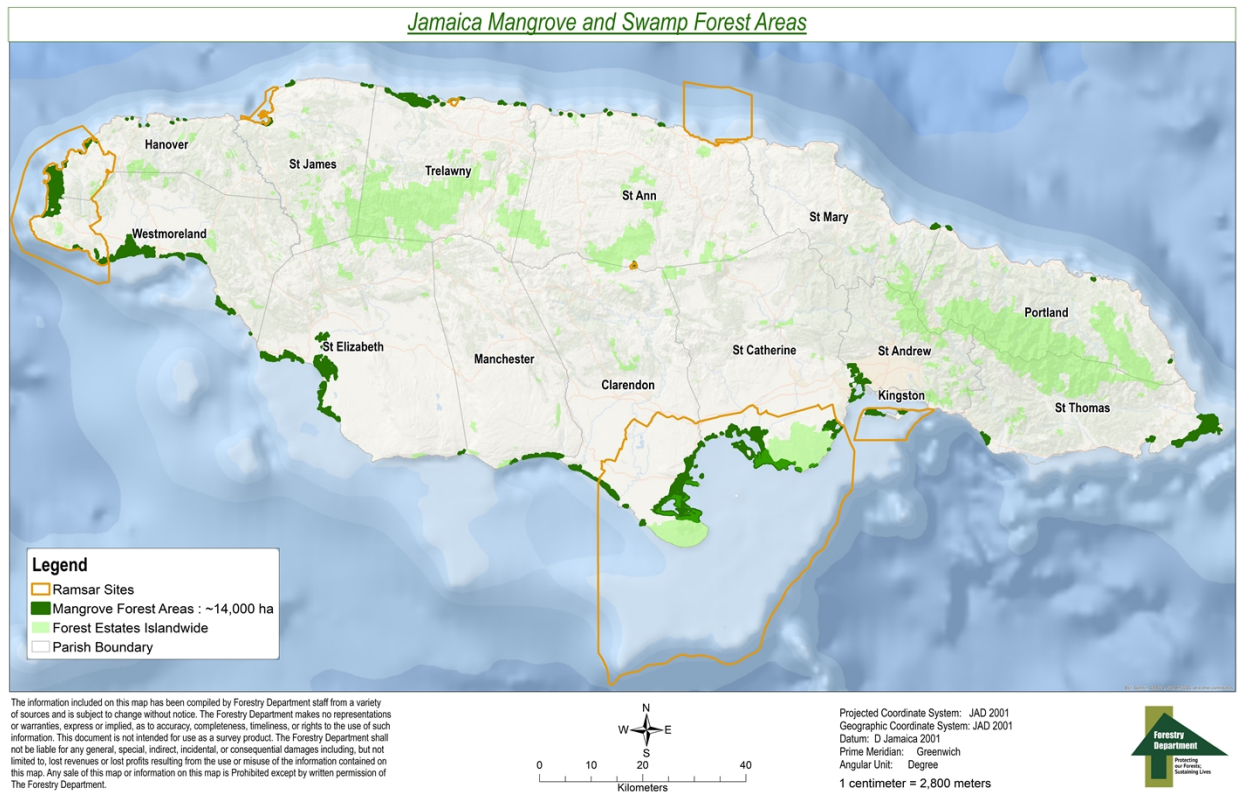
**ANNEX C: Status of Utilization of Project Preparation Grant (PPG). (Provide detailed funding amount of the PPG activities financing status in the table below:**

PPG Grant Approved at PIF: USD 50,000			
<i>Project Preparation Activities Implemented</i>	<i>GETF/LDCF/SCCF Amount (\$)</i>		
	<i>Budgeted Amount</i>	<i>Amount Spent to date</i>	<i>Amount Committed</i>

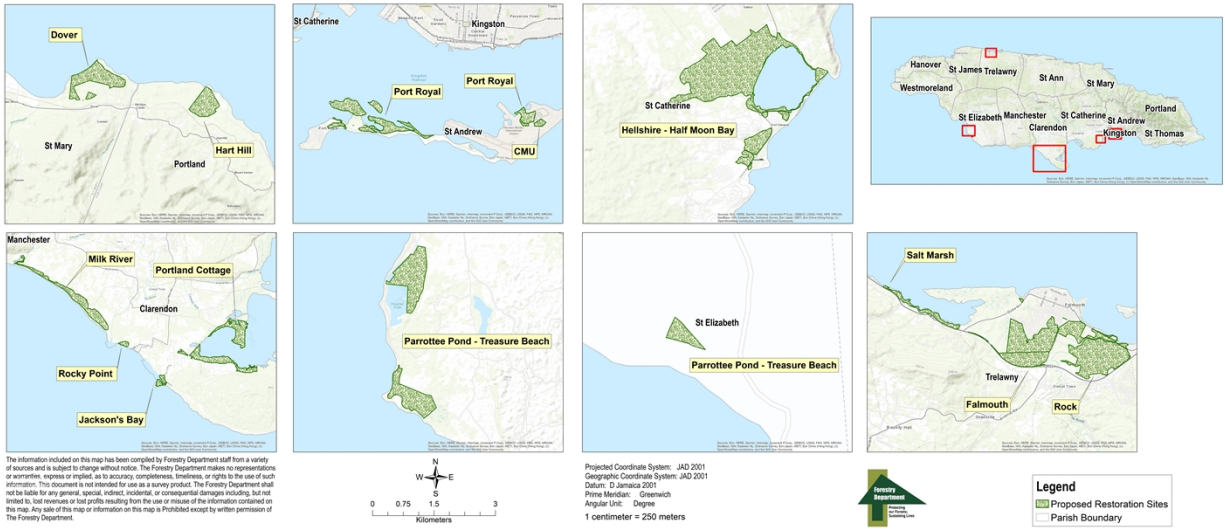
<u>International Consultant:</u> Project Design Expert. National Consultations and leading the work for writing and consolidating the template for Agency Project Document and GEF CEO Endorsement Request.	39,078	28,440	10,638
<u>Contracts for National Consultant:</u> Socioeconomic and gender Baseline collection. Writing Reports including Gender Action Plan and stakeholder engagement matrix.	7,677	7,677	0
<u>Travel</u> for baseline data collection and national consultations	3,245	3,245	0
<b>Total</b>	<b>50,000</b>	<b>39,362</b>	<b>10,638</b>

## ANNEX D: Project Map(s) and Coordinates

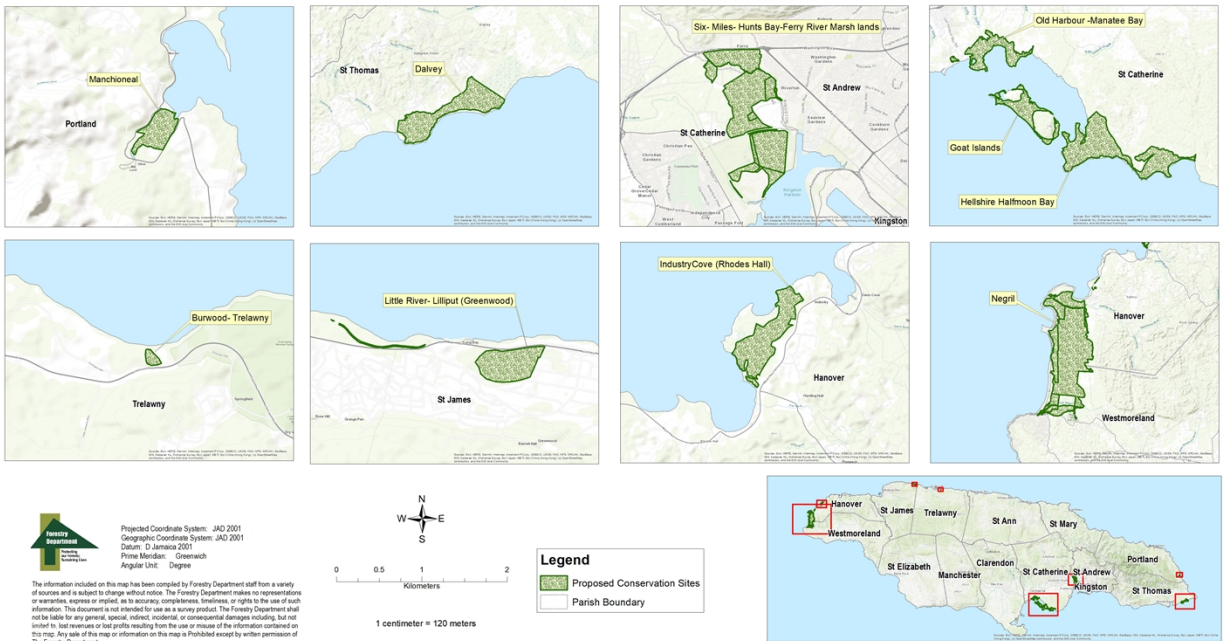
Please attach the geographical location of the project area, if possible.



**Jamaica Mangrove Forest Areas - Proposed Restoration Sites**



**Jamaica Mangrove Forest Areas - Proposed Conservation Areas**



Site Name	X Coordinates	Y Coordinates
Parrottee Pond - Treasure Beach	-77.83025254	17.96785483
Six Miles - Hunts Bay - Ferry	-76.86127521	18.01556446
Hellshire - Half Moon Bay	-76.90012971	17.91688717
Portland Cottage	-77.19122673	17.77584246

Six Miles-Hunts Bay-Ferry River	-76.85944664	18.0034187
Old Harbour-Manatee Bay	-77.03142821	17.87122543
Negril	-78.32404645	18.32428437
Little River - Lilliput (Greenwood)	-77.74561172	18.51022338
Rock	-77.64557014	18.48055538
Falmoth	-77.6636873	18.48209837
Hart Hill	-76.68401342	18.26172507
Dover	-76.70932731	18.26718898
Dalvey	-76.2526694	17.89192188
Port Royal - includes the Cays and CMU	-76.81618999	17.94256171
Milk River	-77.31581847	17.8127543
Rocky Point	-77.27599472	17.77811641
Jacksons Bay	-77.2455032	17.74845326
Scarlett Hall - Salt Marsh 1	-77.69281141	18.49123011
Burwood_Royalton	-77.60512473	18.48276285
Manchioneal	-76.28017348	18.02990441
Goat Island	-77.06093701	17.87771562
Industry Cove (Rhodes Hall)	-78.2648487	18.40671999

**ANNEX E: Project Budget Table**

**Please attach a project budget table.**

FAO Cost Categories	Unit	No. Units	Unit Cost	Component 1	Component 2	Component 3	M&E	Subtotal	PMC	Total	Year 1	Year 2	Year 3	Year 4
<b>5013 Consultants</b>														
<b>National consultants</b>														
Project Coordinator	Months	48	1,600	0	0	0	0	0	76,800	76,800	19,200	19,200	19,200	0
Administrative Assistant	Months	48	1,100	0	0	0	0	0	52,800	52,800	13,200	13,200	13,200	0
M&E and Knowledge Management Specialist	Months	48	1,300	0	0	0	62,400	62,400	0	62,400	15,600	15,600	15,600	0
Communication Specialist	Months	48	1,300	0	31,200	31,200	0	62,400	0	62,400	15,600	15,600	15,600	0
Socioeconomic youth and gender specialist	Days	45	400	9,000	9,000	0	0	18,000	0	18,000	4,500	4,500	4,500	0
<b>5013 Sub-total consultants</b>				<b>9,000</b>	<b>40,200</b>	<b>31,200</b>	<b>62,400</b>	<b>142,800</b>	<b>129,600</b>	<b>272,400</b>	<b>68,100</b>	<b>68,100</b>	<b>68,100</b>	<b>0</b>
<b>5650 Contracts</b>														
Output 1.1.1 Relevant provisional Parish Development Orders (DO) and Local Sustainable Development Plans (LSDP) revised and/or updated with appropriate zoning of forested wetlands, recommended uses and conservation status (Including consultation costs)	Lumpsum	1	40,000	40,000	0	0	0	40,000	0	40,000	0	20,000	20,000	0
Output 1.1.2 – Permitting requirements and processes related to wetland replanting, rehabilitation and/or restoration projects revised to minimise illegal entry into mangroves (Including consultation costs)	Lumpsum	1	35,000	35,000	0	0	0	35,000	0	35,000	20,000	15,000	0	0
Output 1.1.3 – Mangrove and Coastal Wetlands Protection Draft Policy and Regulation, 1997, reviewed, updated and finalised to compel and coordinate action to protect and sustainably use forested wetlands (Including consultation costs)	Lumpsum	1	30,000	30,000	0	0	0	30,000	0	30,000	30,000	0	0	0
Output 1.1.4 – Five policy briefs tailored to specific sectors (Port and Coastal Infrastructure, Tourism, Climate Change and Environment, Waste Management, Agriculture and Fisheries) that raise awareness on the value of mangrove ecosystems and biodiversity. (Including consultation costs)	Lumpsum	1	25,000	25,000	0	0	0	25,000	0	25,000	0	0	25,000	0
Output 1.1.5 – Potential for acquisition of privately owned forest wetlands by GOJ institutions investigated, with indicative costs for the acquisitions (Including consultation costs)	Lumpsum	1	40,000	40,000	0	0	0	40,000	0	40,000	0	40,000	0	0
Output 1.2.1 – A minimum of 7,600 ha of forested wetlands of high ecosystem value and/or special interest designated as protected areas/forest reserves, with boundaries for gazetting and corresponding regulations drafted (Including consultation costs)	Lumpsum	1	70,000	70,000	0	0	0	70,000	0	70,000	23,333	23,333	23,333	0
Output 1.2.2 – Gender and youth mainstreaming strategy and plan for ecosystem-based management of priority forested wetland areas developed and implemented (Including consultation costs)	Lumpsum	1	40,000	40,000	0	0	0	40,000	0	40,000	10,000	10,000	10,000	0
Output 1.2.3 – Feasibility of a payment for ecosystem services (PES) program in selected forest wetland areas and adjacent communities examined (pilot) (Including consultation costs)	Lumpsum	1	20,000	20,000	0	0	0	20,000	0	20,000	0	0	20,000	0
Output 1.3.1 – GOJ forest wetlands in need of urgent conservation and to be transferred to FD prioritised (from identified sites on FD working list) (Including consultation costs)	Lumpsum	1	25,000	25,000	0	0	0	25,000	0	25,000	25,000	0	0	0
Output 1.3.2 – GOJ lands, including crown lands transferred to the Forestry Department by the Commissioner of Lands, as well as Ministries, Departments and Agencies (MDAs), for the management of forested wetlands (Including consultation costs)	Lumpsum	1	25,000	25,000	0	0	0	25,000	0	25,000	0	8,333	8,333	0
Output 2.1.1 – Forest wetlands in need of urgent conservation/restoration prioritised (from identified sites on FD working list) (Including consultation costs)	Lumpsum	1	35,000	0	35,000	0	0	35,000	0	35,000	35,000	0	0	0
Output 2.1.2 – Restoration plans developed for prioritised "restorable" mangrove areas in Jamaica with the costs for effecting conservation and/or hydrological restoration (Including consultation costs)	Lumpsum	1	35,000	0	35,000	0	0	35,000	0	35,000	35,000	0	0	0
Output 2.1.3 – Hydrological/ hydrodynamic and vegetation features and a natural resource valuation investigated of FD working list of forest wetland sites to be conserved/ protected (Including consultation costs)	Lumpsum	1	75,000	0	75,000	0	0	75,000	0	75,000	0	75,000	0	0
Output 2.1.4 – Restoration/ rehabilitation of prioritised degraded mangrove areas in Jamaica accomplished - Inputs, technical advise and supervision (Including consultation costs)	Lumpsum	1	400,000	0	400,000	0	0	400,000	0	400,000	0	160,000	240,000	0
Output 2.1.4 – Restoration/ rehabilitation of prioritised degraded mangrove areas in Jamaica accomplished - labor costs (Including consultation costs)	Lumpsum	1	50,000	0	50,000	0	0	50,000	0	50,000	0	20,000	30,000	0
Output 2.1.5 – Mangrove ecosystem education "Mangrove Matters" billboards designed and erected alongside restored mangrove areas (Including consultation costs)	Lumpsum	1	70,000	0	70,000	0	0	70,000	0	70,000	0	0	0	0
Output 3.1.1 – A standard and GOJ entity used/agreed repository or webpage with forested wetlands use, status and management data in Jamaica created (Including consultation costs)	Lumpsum	1	40,000	0	0	40,000	0	40,000	0	40,000	40,000	0	0	0
Output 3.1.2 – Relevant agencies trained on the purpose and use of the Jamaica forest wetlands database and granted appropriate access (Including consultation costs)	Lumpsum	1	40,000	0	0	40,000	0	40,000	0	40,000	0	20,000	20,000	0
Output 3.1.3 – Existing GIS portal on Forestry Dept website modified to include revised forested wetland locations as a layer/feature. (Including consultation costs)	Lumpsum	1	40,000	0	0	40,000	0	40,000	0	40,000	10,000	10,000	10,000	0
Output 3.1.4 – Land use and/or zoning maps created with an overlay to illustrate forested wetland locations and physical boundaries using data collected and verified by FD (Including consultation costs)	Lumpsum	1	40,000	0	0	40,000	0	40,000	0	40,000	0	20,000	20,000	0
Mid-Term Review	Lumpsum	1	30,000	0	0	0	30,000	30,000	0	30,000	0	15,000	15,000	0
Terminal Evaluation	Lumpsum	1	40,000	0	0	0	40,000	40,000	0	40,000	0	0	0	0
Terminal Report	Lumpsum	1	10,000	0	0	0	10,000	10,000	0	10,000	0	0	0	0
<b>5650 Sub-total Contracts</b>				<b>350,000</b>	<b>665,000</b>	<b>160,000</b>	<b>80,000</b>	<b>1,255,000</b>	<b>0</b>	<b>1,255,000</b>	<b>228,333</b>	<b>436,667</b>	<b>441,667</b>	<b>0</b>
<b>5021 Travel</b>														
Travel for Component 1 activities	Travel	15	250	3,750	0	0	0	3,750	0	3,750	1,875	1,875	0	0
Travel for Component 2 activities	Travel	45	250	0	11,250	0	0	11,250	0	11,250	3,750	3,750	3,750	0
Travel for Component 3 activities	Travel	15	250	0	0	3,750	0	3,750	0	3,750	0	1,250	1,250	0
<b>5021 Sub-total travel</b>				<b>3,750</b>	<b>11,250</b>	<b>3,750</b>	<b>0</b>	<b>18,750</b>	<b>0</b>	<b>18,750</b>	<b>5,625</b>	<b>6,875</b>	<b>5,000</b>	<b>0</b>
<b>5023 Training</b>														
Inception Workshop	Workshop	1	9,150	0	0	0	9,150	9,150	0	9,150	9,150	0	0	0
Mid Term Workshop	Workshop	1	5,000	0	0	0	5,000	5,000	0	5,000	0	0	5,000	0
Capacity Building workshops and Training	Workshop	8	7,500	20,000	20,000	20,000	0	60,000	0	60,000	15,000	15,000	15,000	0
Final Workshop	Workshop	1	8,330	0	0	0	8,330	8,330	0	8,330	0	0	0	0
<b>5023 Sub-total training</b>				<b>20,000</b>	<b>20,000</b>	<b>20,000</b>	<b>22,480</b>	<b>82,480</b>	<b>0</b>	<b>82,480</b>	<b>24,150</b>	<b>15,000</b>	<b>20,000</b>	<b>0</b>
<b>5024 Expendable procurement</b>														
Office and communication materials	Lumpsum	1	20,000	0	0	0	0	20,000	0	20,000	5,000	5,000	5,000	0
<b>5024 Sub-total expendable procurement</b>				<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>20,000</b>	<b>0</b>	<b>20,000</b>	<b>5,000</b>	<b>5,000</b>	<b>5,000</b>	<b>0</b>
<b>TOTAL</b>				<b>382,750</b>	<b>736,450</b>	<b>214,950</b>	<b>164,880</b>	<b>1,499,030</b>	<b>149,600</b>	<b>1,648,630</b>	<b>331,208</b>	<b>531,642</b>	<b>539,767</b>	<b>0</b>

**ANNEX F: (For NGI only) Termsheet**

Instructions. Please submit an finalized termsheet in this section. The NGI Program Call for Proposals provided a template in Annex A of the Call for Proposals that can be used by the Agency. Agencies can use their own termsheets but must add sections on Currency Risk, Co-financing Ratio and Financial Additionality as defined in the template provided in Annex A of the Call for proposals. Termsheets submitted at CEO endorsement stage should include final terms and conditions of the financing.

**ANNEX G: (For NGI only) Reflows**

Instructions. Please submit a reflows table as provided in Annex B of the NGI Program Call for Proposals and the Trustee excel sheet for reflows (as provided by the Secretariat or the Trustee) in the Document Section of the CEO endorsement. The Agency is required to quantify any expected financial return/gains/interests earned on non-grant instruments that will be transferred to the GEF Trust Fund as noted in the Guidelines on the Project and Program Cycle Policy. Partner Agencies will be required to comply with the reflows procedures established in their respective Financial Procedures Agreement with the GEF Trustee. Agencies are welcomed to provide assumptions that explain expected financial reflow schedules.

**ANNEX H: (For NGI only) Agency Capacity to generate reflows**

Instructions. The GEF Agency submitting the CEO endorsement request is required to respond to any questions raised as part of the PIF review process that required clarifications on the Agency Capacity to manage reflows. This Annex seeks to demonstrate Agencies' capacity and eligibility to administer NGI resources as established in the Guidelines on the Project and Program Cycle Policy, GEF/C.52/Inf.06/Rev.01, June 9, 2017 (Annex 5).