



# INSURANCE POLICY FOR THE RESTORATION OF MANGROVES IN THE BLACK RIVER MORASS

## TECHNOLOGY DESCRIPTION

### TECHNICAL DESCRIPTION

This project addresses the development of financial instruments to help safeguard the sustainability of the Black River Morass which is vulnerable to climate hazards. It entails consideration of an insurance product that can fund the protection and restoration of mangroves if damaged by storm surge, winds, and terrestrial flooding during hurricane/storm events.

Feasibility studies conducted for mangrove systems across Jamaica have indicated that post-storm mangrove restoration can be cost-effective, faster, and more efficient in rehabilitating the ecosystem and maintaining coastal protection to properties post-disaster. The project would involve forging partnerships between the National Environment and Planning Agency (NEPA) and insurance companies which could form a part of the ongoing initiative to green their business portfolio by providing climate risk insurance policies. The project would be highly consultative to ensure a suitable policy is developed that can be implemented and owned by the coastal property owners.

To mitigate any potential challenges, NEPA would play a significant role in aligning the ownership of insurance policies and up-to-date payment of premiums as a requirement for renewing permits annually. Critical initial consultation among the NEPA, Forestry Department and insurance agencies would help to determine: (i) estimated restoration costs which would form the basis for calculating the required amount of insurance coverage, (ii) the most appropriate trigger point for pay-outs, (iii) identifying collaboration partners (i.e., commercial entities whose livelihoods depend on the Black River Morass, community groups, hotels and other private businesses, NGOs) and (iv) identifying purchaser and primary beneficiary of insurance policy. This information would then be used to develop a suitable parametric-based policy for the area. Ideally, the insurance policy would be triggered when storm-related wind speed of a particular threshold is met or a particular extent of the ecosystem area is damaged, thus allowing the release of funds for restoration activities into the account of the Department of Forestry (who will serve as the insurance policy holders/owners) within 10 working days after a storm. The pay-out would be used to repair damage to the mangrove. Swift repair of the mangrove ecosystem enables it to recover more quickly, thus providing local communities with more consistent natural protection from coastal flooding and erosion, among other vital services.

Partnership between marine labs would facilitate access to mangrove nurseries and trained individuals who are responsible for monitoring the ecosystem health, replanting seedlings where needed and restoring the damaged areas. Existing assessments and studies conducted across the area would contribute to the understanding of the value of the ecosystem to surrounding business assets and livelihoods. Additional studies may be conducted where needed.

### CURRENT TECHNOLOGY READINESS LEVEL OR COMMERCIAL READINESS INDEX

The Technology Readiness Level (TRL) outlines the current state of the technology in the country. Similar projects have not been developed for Jamaica; however, a study<sup>1</sup> was done for several countries (including Jamaica) in the Caribbean to determine feasibility of mangrove insurance and the report indicated that it can potentially be a beneficial venture.

<sup>1</sup> TNC report: [https://www.nature.org/content/dam/tnc/nature/en/documents/TNC\\_MangroveInsurance\\_Final.pdf](https://www.nature.org/content/dam/tnc/nature/en/documents/TNC_MangroveInsurance_Final.pdf)



A similar insurance product has been developed for reefs along the coast of Mexico and has been successful thus far in protecting the beaches. Under the current policy, the insurance cover is \$ 3.8 million (50/50 for the beach and reef). The business case is built on ensuring that the reef reduces exposure to coastal flood risk from tropical storms and stabilizes beaches to protect the tourism industry along the coastline of Quintana Roo. The insurance covers 167km of coastline, including several municipalities and their towns.

The Technology Readiness level for this technology is 'TRL 2 – technology concept formulated'

## CLIMATE RATIONALE OF THE TECHNOLOGY

Approximately 60% of Jamaica's population resides within 5km of the coastline (STATIN 2011) and 90% of Jamaica's major commercial facilities and towns (banks, tourism centers, port facilities) are located along the coast. This underscores the vulnerable nature of the Jamaican economy and emphasizes the importance of coastal ecosystems in shoreline protection. Mangroves, more specifically help to protect coastal communities from storm surge, flooding, sea level rise and coastal erosion, all of which are exacerbated by the impacts of climate change. They are also critical nursery habitats that help support local fisheries and ecosystem connectivity across coral reefs. Additionally, mangrove forests store huge quantities of carbon, thereby mitigating greenhouse gas (GHG) emissions. Despite this, they are among the most threatened ecosystems because their value is neither fully calculated nor understood and they are often destroyed to make way for tourism, other infrastructure and for urban development.

The Black River Great Morass is a vital economic resource for over 20,000 people who depend on the ecosystem for farming, fishing, and eco-tourism. It is a RAMSAR site and is the largest freshwater wetland ecosystem in Jamaica with high biodiversity that includes plants such as the Red, Black and White Mangrove species, Anchovy Pear (*Grias cauliflora*), Swamp Cabbage (*Roystonea princeps*) and Bull Thatch (*Sabal jamaicensis*). At least 150 vertebrate species have been recorded, including endangered species. Just below 50% of the island's avian species have been identified in the morass including the West Indian Whistling Duck (*Dendrocygna arborea*). Given its undeniable value, losing these ecosystems and the services they provide will be especially costly to the surrounding Black River community with increased exposure and potential for greater damage and loss during hurricane/storm events.

One way to address the climate triggered hazard risk surrounding the loss of mangrove ecosystems is the establishment of an insurance policy that provides a pay-out for the repair of storm affected mangrove systems. The policy would protect against loss of valuable mangrove ecosystems which provides a wide range of benefits including the protection of business assets and maintenance of coastal industries dual benefit. This policy will ensure the quick restoration of damaged mangroves within the Black River Morass, thus improving their resilience as natural barriers to storms and sea level rise. Given the wide range of protection that these mangroves provide, consistent maintenance and restoration would boost their contribution to coastal protection and reduce the risks to residential communities, commercial facilities, infrastructure, and livelihoods along the coast.

## AMBITION OF THE TECHNOLOGY

### SCALE FOR IMPLEMENTATION AND TIME-LINE

The intention is that this project will target commercial properties along or near the Black River coastline. The Black River Morass plays an important protective role and must remain and be maintained to ensure continuity. The surrounding commercial properties and housing schemes have benefitted from this and should therefore be encouraged to play a part in their conservation, preservation, and restoration. Engaging insurance companies may take approximately 4 months. Simultaneously, consulting hoteliers, new developers and existing coastal commercial entities may take 6 months. Once all parties are on board NEPA will begin to incorporate in their permitting process to accelerate



the take up of the insurance policies. Overall, evidence of contributions should be noted within a year of implementation.

Once this project has been successfully implemented and lessons learnt have been incorporated, the project can be extended to include other RAMSAR sites and other extensive coastal wetland areas. This type of ecosystem insurance can also be applied to protected coastal ecosystem areas (wetlands and coral reefs) across the island with payouts going to the organization that is mandated to manage the respective area. Additionally, individual residential homeowners, schemes, local hoteliers, commercial business operators who live and/or operate directly on the coastline can also find value in such a policy and seek to purchase it to ensure the area of mangrove (or other coastal ecosystem like coral reefs) that is directly in line with their property.

## AMBITION FOR TECHNOLOGY READINESS LEVEL OR COMMERCIAL READINESS INDEX

TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies). At the end of this project, it is anticipated that the structure of the insurance policy would be fully conceptualized and established, supported by the necessary legislation and regulations. It would be incorporated into the permitting requirements for coastal developments and consistent payments made. Additionally, annual monitoring would be in place to ensure health data of the mangrove ecosystem is up to date.

## EXPECTED IMPACTS OF THE TECHNOLOGY

Facilitating the development of such an insurance product will help to ease some of the costly burden of coastal restoration experienced over the years. It would also help with the conservation and swift restoration of mangroves and support the economic resilience of the area. Limited access to funds for restoration and rehabilitation activities, has led to much neglect, resulting in loss of habitat due to both natural disasters and coastal development. The policy provides accountability as well as investment in the shoreline protection by those who benefit from it. Additionally, it will ensure that mangrove forests within a given area are maintained sufficiently to maximize protection to inland communities from storms.

## POLICY ACTIONS FOR TECHNOLOGY IMPLEMENTATION

### EXISTING POLICIES IN RELATION TO THE TECHNOLOGY

- National Policy on Environmental Management Systems (2018)
- Climate Change Policy
- Policy for the National System of Protected Areas
- Draft Public Financial Management Policy for Jamaica's Disaster Risk
- National Land Policy (1997)
- National Community Tourism Policy and Strategy
- Draft Ocean and coastal zone management Action Plan
- National Biodiversity Strategy and Action Plan

### PROPOSED POLICIES TO ENHANCE TECHNOLOGY IMPLEMENTATION

Implementation of the proposed technology will be enhanced by national environmental risk laws and policies related to the development of various environmental insurance schemes for supporting climate resilience of coastal and marine ecosystems. Specific to this project, the policy would provide governmental commitment to ensuring that current and future developers within the coastal zone carry out environmental due diligence for best use and sustainable



management of the coastal ecosystem in the respective area. Protection of individual properties should be enhanced through the appropriate risk insurance. The policy would emphasize the initial preservation/conservation of the surrounding marine flora and fauna during development and responsibility for subsequent maintenance of this system.

## COSTS RELATED TO THE IMPLEMENTATION OF POLICIES

- Consultant fees to develop recommended policy (USD \$30,000.00)
- Consultant fees to guide policy acceptance by Cabinet and integration (USD \$15,000.00)
- Consultant fees for the economic valuation of mangroves across Jamaica (Estimated lump sum cost: USD\$150,000.00)
- Consulting fees to develop insurance policy product (Estimated Lump Sum: USD \$49,500.00)
- Consulting fees to develop policy and sensitization programs (USD350,000)

## USEFUL INFORMATION

### CONTACT DETAILS

- Ms. Una May Gordon – National TNA Coordinator ([unamay.gordon@megic.gov.jm](mailto:unamay.gordon@megic.gov.jm) | cc: [climate.change@megic.gov.jm](mailto:climate.change@megic.gov.jm))
- Ms. Ayesha Constable – Assistant Coordinator ([ayesha\\_constable@yahoo.com](mailto:ayesha_constable@yahoo.com))
- Ms. Monique Curtis – NEPA ([Monique.Curtis@nepa.gov.jm](mailto:Monique.Curtis@nepa.gov.jm))

### LINKS TO TNA REPORTS

All reports can be found at: <https://tech-action.unepdtu.org/country/jamaica/>