



# Assessment and Economic Valuation of Coastal Protection Services Provided by **Mangroves** in Jamaica

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# World Bank Program for Resilience in Jamaica



## JDVRP Component 1: Understanding Risk

1. Risk Information: Seismic Monitoring Network, Costal Risk Atlas, Risk Information Platform
2. Technical Assistance: Building Code
3. Risk Assessments for Critical Facilities
4. Risk Assessments for National Infrastructure
5. Risk assessments for coastal areas
6. Financial Protection

1. Policy Development (Development Policy Loan Preparation)
2. Risk Assessment of Road Transport Infrastructure
3. Coastal Management and Beach Restoration Guidelines
4. Jamaica National Flood Risk Program
5. Preventative Resettlement Strategy
6. Disaster Risk Financing & Insurance
7. Developing DRM Strategy in Jamaica Education Sector
8. PROFOR: Mangroves for Coastal Risk Reduction

## JDVRP Component 2: Risk Reduction

1. Selected Retrofitting of Critical Facilities (Fire Stations and Schools)
2. Selected Retrofitting of National Infrastructure (Bridges, Urban Drainage)
3. Selected Coastal Protection Measures (Hard & Nature-Based)

## JDVRP Component 3: Contingent Emergency Response

1. Contingent Emergency Response
1. Post Disaster Social Safety Nets (Social Protection WB Team)

## Pilot Project for Climate Resilience (Environment WB team)

1. Strengthening Hydromet Monitoring Network: Instrumentation
2. Promoting Community Based Climate Resilience in the Fisheries Sector in Jamaica

Legend: Financing  
Mechanisms

JDVRP Investment Loan

Grant Financing

# WB DRM Work on Coastal Nature-Based Infrastructure

## Disaster Vulnerability Reduction Project (2016-2022)

1. Understanding Risk
2. Risk Reduction

## ACP-EU (GFDRR)

- Coastal Management and Beach Restoration Guidelines



# Rationale for this WB Technical Assistance

Lack of ecological and physical data at mangrove level

Limited data on social reliance on mangrove ecosystems for coastal protection, livelihoods, food, and materials.

Licenses for development in coastline in exchange for restoration/relocation activities.

Limits the development of economic cases for coastal management

Restored areas take time to fully provide benefits to people (ecosystem services)

Coastal Resilience is Diminished



# Financing Source

Program on Forests (PROFOR) Grant under the window “DRM and Forestry”

## Project Objective

Provide and to evaluate the ways in which mangrove ecosystems are protecting coastal communities from natural hazards such as tropical storms, coastal inundation and shoreline erosion.





# Contributes to ...



"In God we Trust" Credit: Simone Lee

## Vision 2030 Jamaica:

Outcome 13 "Sustainable Management and Use of Environmental and Natural Resources".

Outcome 14 "Hazards Risk Reduction and Adaptation to Climate Change"



# Four Strategic Areas of Work



1. **Habitat Status Assessment** to determine the current physical and ecological status of mangroves, and the existing natural capital involved in the provision of coastal risk reduction.



# Four Strategic Areas of Work



2. **Coastal Ecosystem Services Assessment:** related to coastal risk reduction provided by mangroves, and the estimation of coastal hazard reduction by these ecosystems. These calculations should provide an economic value on those coastal risk reduction services (i.e. avoided asset and well-being losses; impact on poor households)





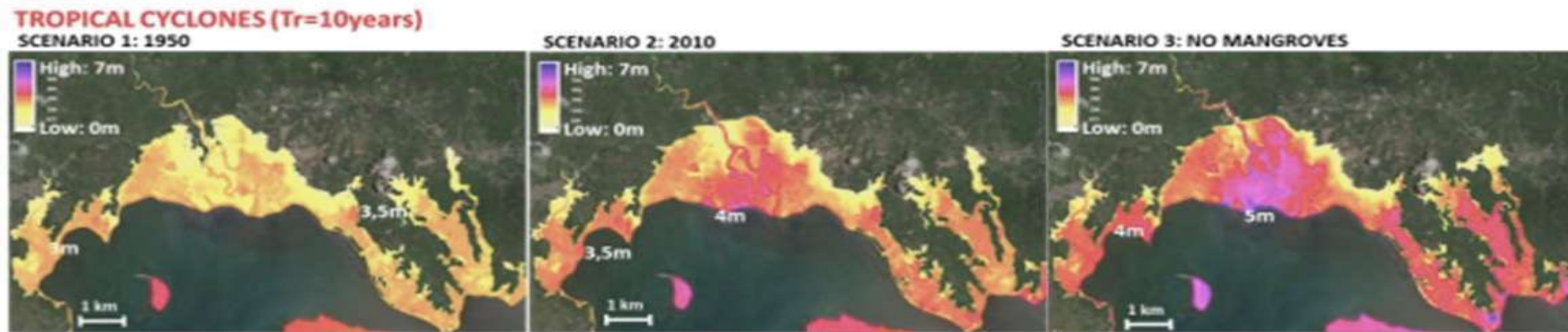
# Four Strategic Areas of Work



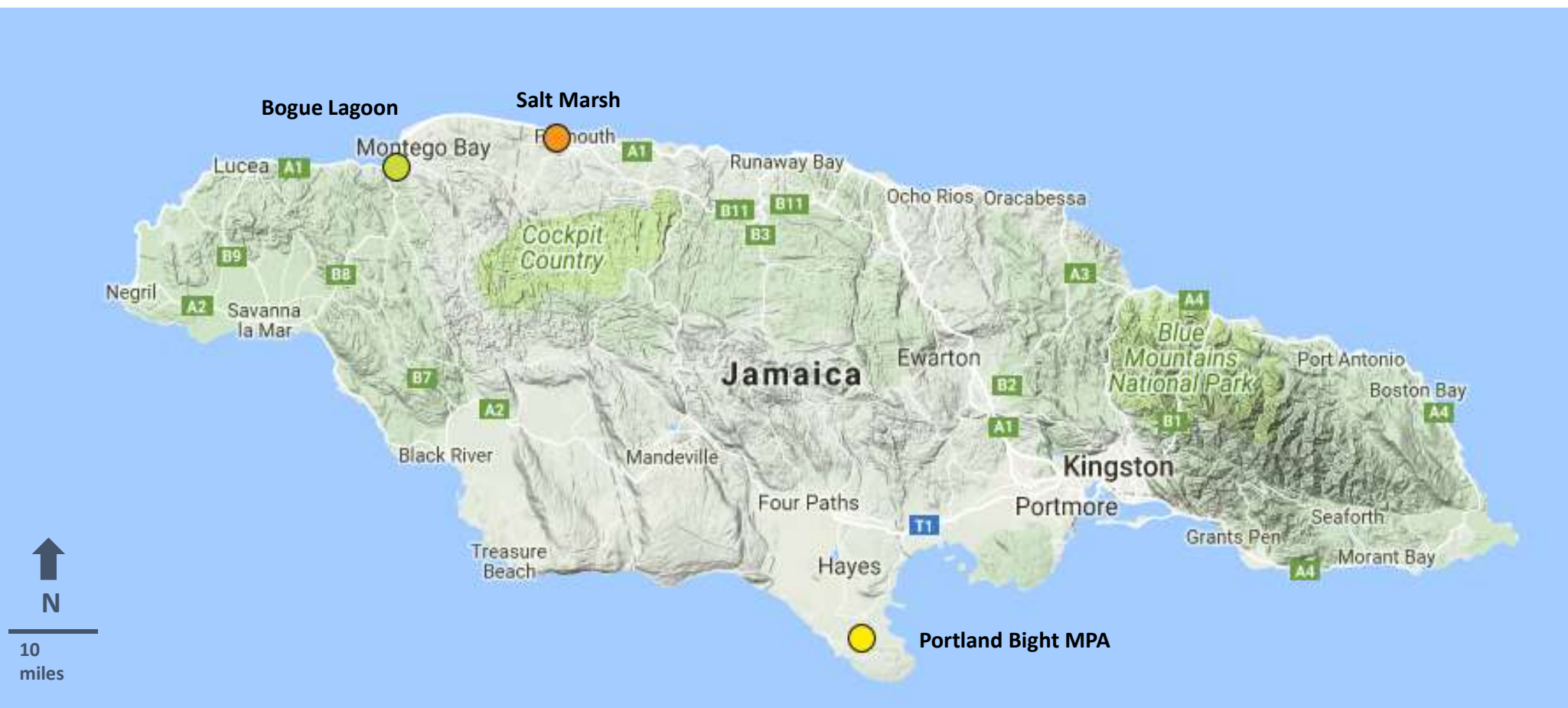
3. **Habitat Risk Assessment** to evaluate the anthropogenic pressures on mangroves, and their effect on the delivery of ecosystem services involved in coastal risk reduction. This assessment should identify areas where the conservation or restoration of mangroves could be effective solution to disaster risk reduction and climate adaptation.



## Four Strategic Areas of Work



4. **Economic Case** demonstrating the impact of mangrove loss in coastal risk in Jamaica. This Economic Case should estimate nonlinear values for ecosystem services that support a mix of conservation and economic uses, which is consistent with the goals of ecosystem-based management. A *Cost Effectiveness Assessment* should also be developed showing different coastal protection measures in existing mangrove areas, or areas to be restored.



## Three Priority Areas for Detailed Assessments (UWI)



# Expected Results:

1. New data on **habitat quality and natural capital** associated to mangrove ecosystems in multiple locations in Jamaica.
2. New data on **wave and wind attenuation and erosion control** by mangroves in three locations in Jamaica.
3. **Risk reduction ecosystem services** presented through calculations of avoided losses (TNC)
4. **Data on additional benefits** (co-benefits) obtained from mangroves including number of livelihoods (fisheries and tourism), tons of fish products, and water quality.
5. Series of **prioritized management strategies** that best mitigate risk in mangrove ecosystems.





# Capacity Building:

1. On the ground capacity building on the assessment of **ecological and physical variables to understand mangroves health** and its contribution to coastal resilience (~30).
2. On the ground capacity building on **socio-economic vulnerability assessments**, linked to mangroves presence/absence (~30)
3. Training on **natural capital and ecosystem services valuation**.
4. Hands-on training on the **evaluation of mangrove habitats for flood risk reduction in Jamaica**





5. Updated **M&E manual** on mangrove habitat quality, linked to coastal resilience.
6. **Policy Notes** to inform decision makers on the use of natural resources as key elements for disaster risk reduction and climate adaptation.







Thank you

Salt Marsh, Falmouth Jamaica