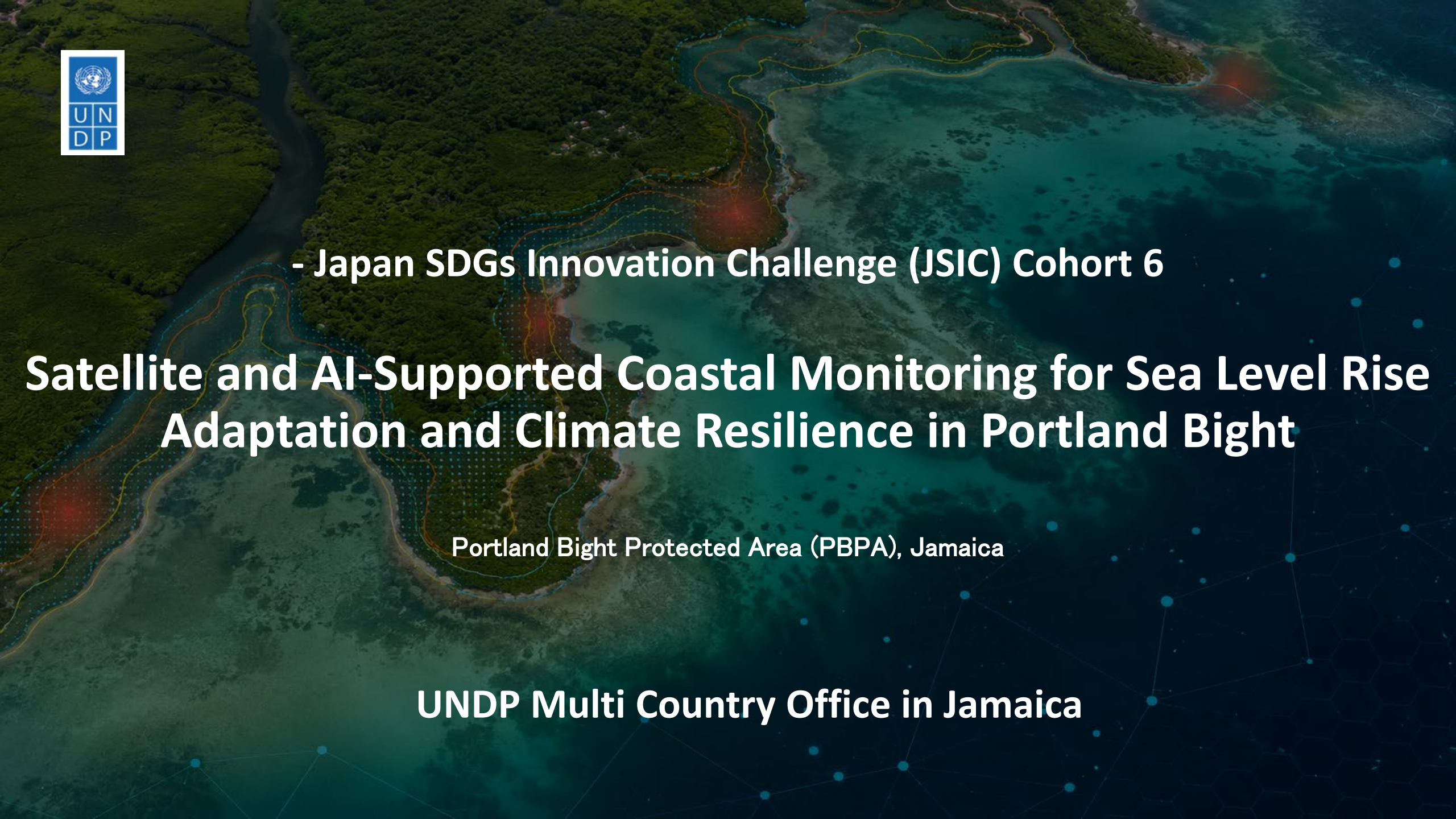


- Japan SDGs Innovation Challenge (JSIC) Cohort 6

Satellite and AI-Supported Coastal Monitoring for Sea Level Rise Adaptation and Climate Resilience in Portland Bight

Portland Bight Protected Area (PBPA), Jamaica

UNDP Multi Country Office in Jamaica

Issues identified by UNDP Multi Country Office in Jamaica

While natural buffers like mangroves, seagrasses, and coral reefs are vital, there is a critical need for stronger long-term monitoring to understand changes in ecosystem conditions and coastal dynamics over time.

Background

The Portland Bight Protected Area (PBPA), located along Jamaica's south coast and spanning sections of St. Catherine and Clarendon, is the largest protected area in Jamaica.

It comprises an extensive terrestrial and marine landscape (including mangrove forests, wetlands, salt marshes, seagrass beds, coral reef systems, offshore cays, and fish sanctuaries) that provides critical ecological services, supports local livelihoods, and sustains important biodiversity.

Core challenge

PBPA is highly vulnerable to climate and coastal hazards while current monitoring remains fragmented and reactive.

Lack of continuous evidence base

Limited long-term data to track ecosystem degradation and coastal dynamics.

Coastal erosion and habitat degradation

Shoreline movement, erosion/accretion and stress on mangroves, seagrass beds and coral reefs.

Delayed hazard response

Need earlier detection of rapid change after storms, inundation and sudden coastal degradation.

Project idea by UNDP Multi Country Office in Jamaica

Specific location: Portland Bight Protected Area (PBPA), Jamaica

1
Satellite + field data
high-resolution imagery + NEPA baselines

2
AI analytics
shoreline change + ecosystem stress

3
Decision tools
hotspots, alerts and model outputs

4
Protection benefits
better planning for communities and livelihoods

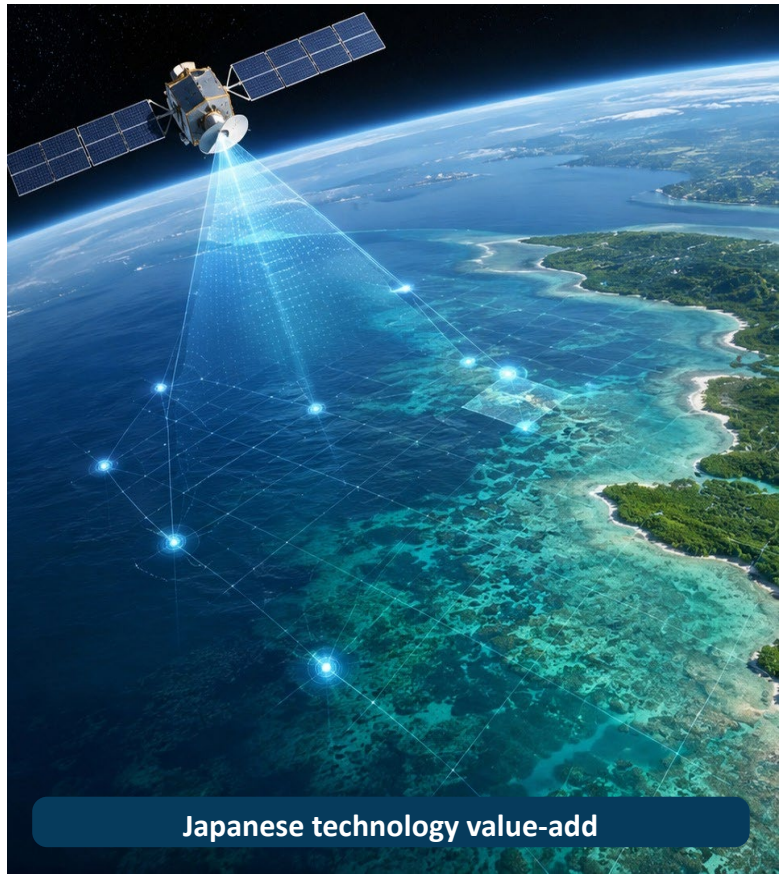
Potential Beneficiaries : The National Environment and Planning Agency (NEPA), Government of Jamaica, local authorities, fisheries stakeholders, and communities within and around the PBPA.

Customers of the Solution: Technical officers and decision-makers working on coastal management, fisheries, disaster risk reduction, land-use planning, and ecosystem conservation.

New value to be expected by beneficiaries/customers

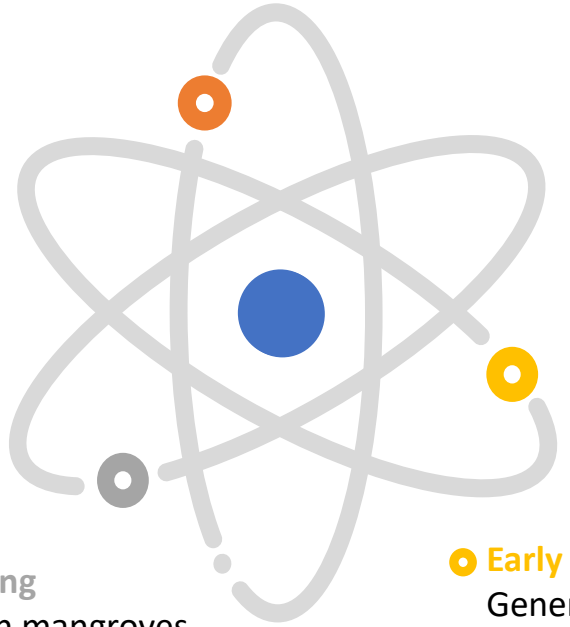
- Transition from fragmented, reactive monitoring to a **continuous, evidence-based, and predictive coastal management system**. NEPA will gain the ability to pinpoint exact vulnerability hotspots and receive early warnings on storm-induced degradation, enabling proactive rather than reactive policy interventions.
- Enhanced protection of their livelihoods and socio-economic well-being through the **preservation of critical natural coastal buffers** (mangroves, coral reefs, and seagrasses)

Technologies/Expertise expected from Japanese partners



A practical package of satellite analytics, AI monitoring and predictive tools

Satellite analytics
Monitor long-term coastal dynamics, shoreline movement, erosion and accretion patterns.



AI-enabled coastal monitoring
Assess biophysical changes in mangroves, seagrass beds and coral reefs, and identify vulnerability hotspots.

Early detection + predictive modelling
Generate warning signals linked to storm events, inundation and rapid degradation.

Resources UNDP Multi Country Office in Jamaica can provide

DATA **Research data + existing frameworks**

Facilitation of engagement with NEPA to identify relevant coastal and marine monitoring data, baselines, and past assessment reports regarding the PBPA.

PM **Human resources + project management**

Dedicated project management support from UNDP Country Office to coordinate between Japanese stakeholders, NEPA, and the Government of Jamaica.

NET **Institutional infrastructure + network**

Strong institutional networks and local presence to facilitate policy dialogues, stakeholder consultations, and field-level coordination within the protected area.

ALIGN **Competencies + strategic alignment**

Technical competency in refining project concepts, defining practical scopes of work, and aligning local environmental priorities with the objectives of the Japan Innovation Challenge

Local value: stronger protection of coastal livelihoods and natural buffers

National Environment and Planning Agency

Stakeholders of the project

UNDP Jamaica Multi-Country Office

Coordinates the project, facilitates partnerships, and ensures alignment with national priorities and JSIC requirements

Japanese Tech Partners

Provide satellite analytics, AI tools, and technical expertise to monitor coastal change, ecosystem stress and vulnerability hotspots.

National Environment and Planning Agency (NEPA) and Government of Jamaica

Guides technical priorities, shares existing data, and uses the outputs for coastal management, adaptation planning and policy decisions.

Community and Local NGOs

Contribute local knowledge, support field validation, and help ensure the solution responds to livelihood and coastal resilience needs.

Expected outcomes and follow-up activities of the project

Activities you expect to conduct after the project period (Feb 2027)

1. **Scale-up**

   plan to expand the coastal risk and satellite/AI monitoring models to other major tourism hubs across Jamaica and UNDP Multi-Country Office Countries and territories, including The Bahamas, Bermuda, Cayman Islands, and Turks and Caicos Islands.

2. **Institutionalize**

   The digital risk tools developed during the project will be institutionalized and integrated directly into Jamaica's national planning approval systems.

3. **Showcase**

   The outcomes will be used to position Jamaica as a regional leader in climate-smart tourism and coastal development within the Caribbean

Plan for presenting and showcasing outcomes

- **Policy Dialogues:** Convene discussions with NEPA, government agencies, coastal managers and local stakeholders to use monitoring outputs for coastal resilience and protected area management.
- **Knowledge Product Dissemination:** Produce a concise advisory note on “Risk-Informed Coastal Management in Portland Bight to support climate-resilient planning, ecosystem protection, and future investment decisions.

UNDP Multi Country Office in Jamaica Team

Project Governance & Oversight

Kishan Khoday

Resident Representative

Governance

Lesley-Ann Ennevor

Assistant Resident Representative

Governance

Stacy-Ann Tomlinson

Programmes Lead

Oversight

Project Management & Technical Delivery

Omar Marzouk

Regional Programme Analyst

Delivery

Jamaro Marville

Programme Analyst

Delivery

Yoonjung Jang

Programme Specialist

Delivery