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Climate Resilient Integrated Coastal Zone Management (ICZM) Governance and Performance Indicators in The Bahamas

A Case study

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Inter-American Development Bank
Environment, Rural Development and
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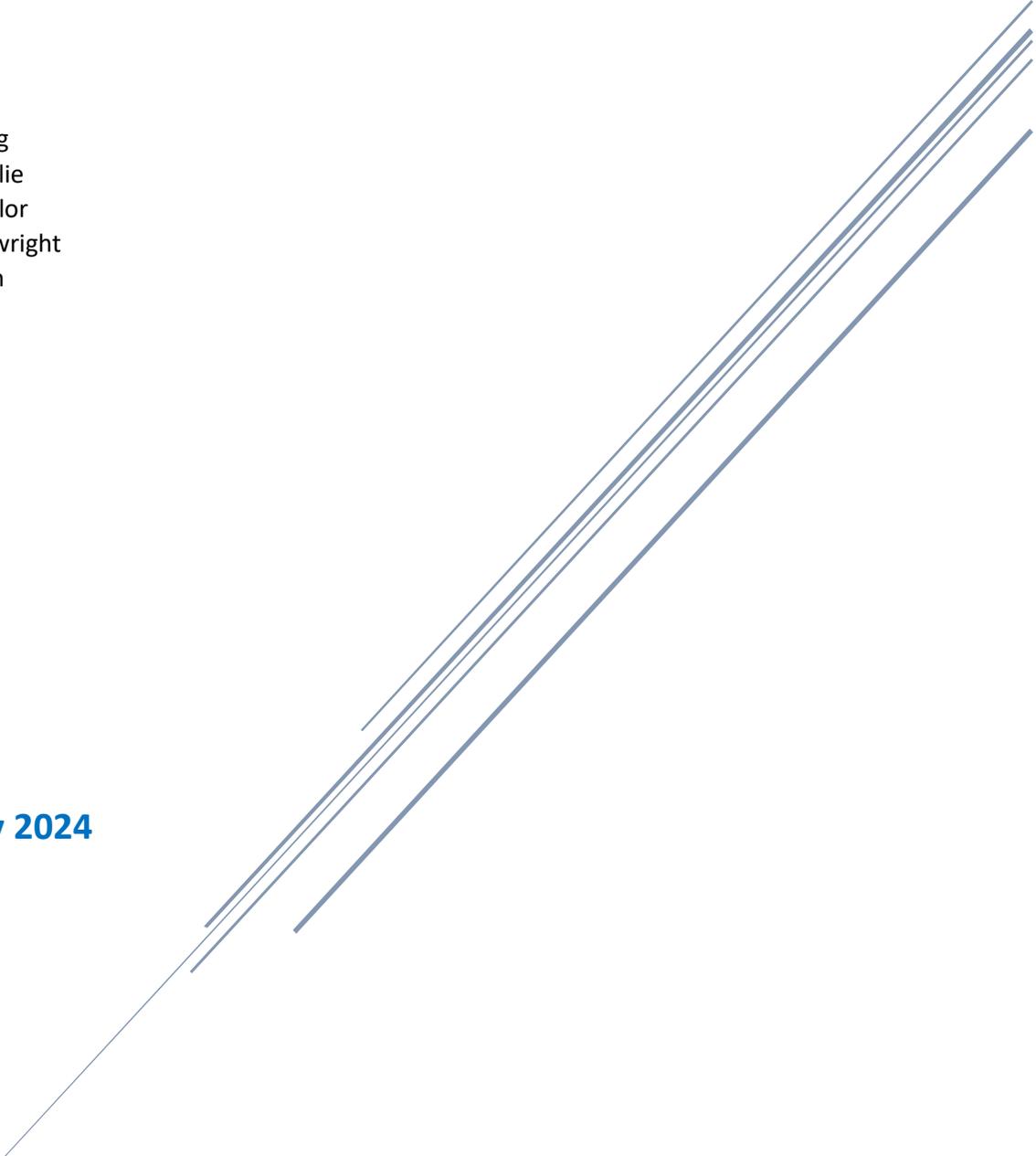


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1. Executive Summary

In 2022, the Inter-American Development Bank's (IDB's) Climate-Resilient Integrated Coastal Zone Management (ICZM) Performance Indicators framework was used to assess the enabling governance environment for resilient ICZM in The Bahamas in 2022. The assessment was conducted by the IDB in collaboration with the Government of the Bahamas as a study to complement the activities of the IDB- financed loan project: *Climate-Resilient Coastal Management & Infrastructure Programme* (BH- L1043)¹.

The indicators framework used in The Bahamas was developed by the IDB and the World Resources Institute (WRI) during 2018, and was piloted and subsequently formalised, in Belize in early 2019.

The indicators framework was developed as a diagnostic tool to assist countries in the Latin American and Caribbean (LAC) region in evaluating the extent to which they have in place, the governance conditions, institutions technical capacity, implementation practices, monitoring and evaluation frameworks, and the necessary information, to sustainably manage coastal areas in the face of evolving climate variability and climate change. The indicators identify gaps and weaknesses and highlights key conditions and good practices that can help a country support climate resilient ICZM that incorporates climate change adaptation and resilience building in coastal areas.

The indicators framework is not intended for the comparison of coastal zone management capabilities between countries. Rather, the indicators framework is intended to support better within-country- understanding of strengths and weaknesses with regard to ICZM and climate preparedness in coastal areas. The regular application of the indicators framework, for periodic assessment and analysis of the enabling governance environment for ICZM, will also allow the Bahamian government to objectively monitor and track the progress and challenges of its own ICZM public policy. The indicators framework was developed under the Technical Cooperation (TC): *Knowledge and Innovation: Disaster and Climate-Resilient Coastal Zone Management*, which aims to catalyse sustainable, replicable, and innovative investments in disaster and climate-resilient ICZM. The methodology used to develop the indicators framework is available as the IDB technical note, [Climate-Resilient ICZM Performance Indicators \(IDB-TN01848, 2020\)](#).

1.1. The Structure of the Indicators Framework.

There are 15 indicators under four categories, which cover:

- a) legal and institutional framework for ICZM and climate preparedness;
- b) the availability and quality of information – both on the coastal environment, as well as on vulnerability and adaptation potential to climate change;
- c) whether the requisite technical capacity is present to develop and evaluate initiatives to reduce climate-related risk; and
- d) whether there is sufficient and sustainable financing for ICZM.

¹ The objective of the program is to build resilience to coastal risks (including those associated with climate change) through sustainable coastal protection infrastructure, including natural infrastructure and integrated management of the coast. This program is expected to result in a reduction of economic losses due to natural disasters and an increase in local economic activity through coastal resilience. The Program consist of 4 components: C1: Sustainable Coastal Protection Infrastructure; C2: Natural Infrastructure for Hazard Resilience in Andros; and C3 Institutional Strengthening for Coastal Risk Management. See: <https://www.iadb.org/en/whats-our-impact/BH-L1043>

Each indicator has component criteria which are evaluated individually, and subsequently averaged to arrive at the indicator score. Scores are in the form of a percentage – the percent of criteria achieved within each indicator. Indicator scores can also be averaged to arrive at the category score. The indicators were developed based on an extensive literature review (on coastal management, governance, disaster risk reduction and management, climate vulnerability and adaptation, and on financing of ICZM) complemented by interviews with experts on coastal zone management and disaster risk management in the LAC region.

The primary audience for these indicators of climate resilient ICZM performance framework includes government officials working on coastal zone management, disaster risk reduction, and climate preparedness, as well as those working in sectoral agencies in coastal areas, and national and international environmental NGOs, with coastal zone management mandates. A secondary audience is donor agencies and other potential investors in coastal areas that seek information on the preparedness of the country (or area) for climate change.

1.2. Results from the Pilot Application in The Bahamas.

During the period November 2021 to November 2022 a team including the IDB, the Ministry of Public Works and Utilities (MOPU) of the Government of The Bahamas, and the Consultant, engaged with stakeholders within the Government of the Bahamas and national and international environmental non-governmental organisations for the purpose of implementing the assessment of The Bahamas enabling governance environment in support of resilient-ICZM.

Evaluation of the fifteen (15) ICZM governance indicators criteria across four categories (legal and institutional arrangements, data and information management, technical and assessment capacities, and ICZM financing) revealed that The Bahamas recorded high scores (1.0) in three criteria areas but needed to address climate resilient ICZM performance in other key criteria, including two criteria that scored zero, to foster effective climate resilient ICZM.

The Bahamas performed well in **Identifying Adaptation Opportunities and Protecting Investment (0.73)**. Within this category, The Bahamas scored well with regards to *Identifying ICZM-related Responses to Climate Change* (1.0) and *Skills and Experience Developing and Evaluating Adaptation Solutions* (1.0). The Bahamas performed well in a number of areas under the category **Assessment of Climate Risks in the Coastal Zone (0.51)**. Within this category the Bahamas performed well with regards to *Data on Environmental Conditions and Trends in Coastal Areas* (0.61), and in *Climate Vulnerability and Risk Assessment* (0.87) initiatives. The category **Financing ICZM** achieved a comparatively low score (0.51) to the absence of *Sustainable Funding for ICZM Operations* (0.2) and *Financial Incentives and Schemes to Incentivize Private Sector and Individual Action* (0.33).

The lowest category score was recorded for **Legal and Institutional Framework for ICZM and Climate Preparedness (0.23)**. Although there are a number of government MDAs and NGOs with formal, ICZM-related mandates in law and policy, there is no dedicated ICZM legislation or enabling framework to ensure a coherent and integrated approach to the management of coastal resources and spaces, that maximises synergies and minimises the necessity for developmentally sub-optimal trade-offs. The elements for effective ICZM management exist in legislation, policy, programming, and institutional capacity. A dedicated ICZM enabling framework would facilitate the rationalisation and coordination of the fragmented and siloed ICZM-related mandates that currently maintain.

The assessment provided immediate insights into gaps, needs, barriers, and weaknesses in the national ICZM governance and enabling frameworks. The assessment also revealed opportunities for harnessing national ICZM strengths to address ICZM gaps or weaknesses, through creative coordination and synergy. One suggested opportunity involved harnessing The *Commonwealth of the Bahamas Research and Permitting System* administered by the Department of Environmental Planning and Protection (DEPP) to (a) strengthen the national mechanism for monitoring and evaluating ICZM activities and projects, and (b) informing the acquisition of data, reports, information, to populate the national ICZM GIS coverages within the Bahamas National GIS. The suggested arrangement would lead to improved performance as measured by 12 indicators in three of four ICZM indicator categories.

The recommendations that flow from the assessment were captured in the Bahamas Roadmap to a Resilient ICZM Enabling Framework at the end of the report. The Roadmap provides a comprehensive plan, to address, the gaps, weaknesses, threats, and opportunities, identified in, the Baseline Assessment, the Resilient ICZM Performance Indicators Framework assessment, and implement the guidance and recommendations provided by stakeholders during the review and validation processes. The Roadmap also provides an ordered sequence of detailed activities for the design, development, approval, and implementation, of a national climate resilient ICZM governance and institutional mechanism. The Roadmap represents a comprehensive plan, proposed to accomplish The Bahamas' national R-ICZM goals.

2. Introduction

2.1. Importance of Climate Resilient Integrated Coastal Zone Management

The Bahamas is an archipelagic state characterised by urban centres and villages widely disbursed among the family of Bahamian islands, with population densities of some islands being as low as 2 to five persons per square mile. The population of 412,623² people (2s unevenly distributed across nearly two dozen islands with a combined area of approximately 5,383 Square miles (13, 943 sq. km).

The archipelagic character of the Bahamian state makes coastal issues and governance a matter of daily consideration for Bahamas, from the perspectives of, transport, logistics, and communications (delivery of mail, transportation of goods); livelihoods, recreation, international trade and transportation, industry (tourism and fisheries), community development, and natural resource management and conservation.

Unlike a continental state or large island, all of The Bahamas' social, economic, developmental, and environmental activity occurs in the geographic area referred to as the coastal zone; that is, the maritime area of the Bahamas that is influenced by land-based activities and processes, and the land area influenced by marine processes and activities.

Much of The Bahamas's prosperity and wellbeing derives from the coastal ecosystems and the services (Fig. 1), amenities, and opportunities that they provide (Fig. 2).



Figure 1: Economic Value of Ecosystem Services Associated with Protected Areas in the Bahamas (TNC (2013), Section ES-1).

It follows therefore, that processes and factors that threaten health and existence of The Bahamas' coastal ecosystems, threatens the prosperity and wellbeing of The Bahamas.

The effects of evolving climate variability and climate change are already impacting the health of a range of coastal ecosystems. This is evident in the increasing frequency of physical damage from hurricanes in addition to a number of coral bleaching and disease^{3,4} events which have been observed

² PAHO (2023). The Bahamas Country Profile. Health in the Americas. URL: <https://hia.paho.org/en/countries-22/bahamas-country-profile>.

³ United Nations Environment Programme- Caribbean Environment Programme. (2021). White Paper on Stony Coral Tissue Loss Disease. Ninth Meeting of the Scientific and Technical Advisory Committee (STAC) to the Protocol Concerning Specially Protected Areas and wildlife (SPAW) in the Wider Caribbean Region. Kingston, Jamaica.

⁴ Dahlgren, C. (2020). Rapid Assessment of the occurrence of Stony Coral Tissue Loss Disease (SCTLD) along the southern coast of Grand Bahama, Bahamas. Perry Institute for Marine Science. Source [URL:https://agrra.org/wp-content/uploads/2020/08/SCTLD-report-for-Grand-Bahama-3-20_compressed.pdf](https://agrra.org/wp-content/uploads/2020/08/SCTLD-report-for-Grand-Bahama-3-20_compressed.pdf).

in recent years⁵. Climate change and associated sea level rise pose direct threats to coastal communities, infrastructure, livelihoods, and economic activity, as approximately 80% of the Bahamas lies within 1.5 meters of the high tide mark.

ECOSYSTEM GOODS AND SERVICES	CORAL REEFS	MANGROVES	BEACHES	SEAGRASSES
Provisioning services				
Food (e.g., fisheries)	X	X	X	X
Raw materials	X	X	X	X
Medicinal resources	X	X		X
Genetic resources	X	X		X
Regulating services				
Flood/storm/erosion regulation	X	X	X	X
Climate regulation	X	X	X	X
Cultural services				
Tourism and recreation	X	X	X	X
History, culture, traditions	X	X	X	X
Science, knowledge, education	X	X	X	X
Supporting services				
Primary production	X	X	X	X
Nutrient cycling	X	X		X
Species/ecosystem protection	X	X	X	X

Figure 2: Examples of Coastal Ecosystem Goods and Services. (Waite, R., et al. (2014), Pg. 7)

The threats posed to coastal ecosystems by climate change represent direct threats to the goods and services that they provide (Fig. 2).

This situation is exacerbated by the ongoing threats that human and development activities pose to ecosystem health and function (Table 1). Effectively managing the wide range of threats and impacts to coastal ecosystems requires the coordinated participation of a wide range of public sector, private sector, civil society, and non-governmental stakeholders to ensure sustainable and resilient national development⁶.

Integrated coastal zone management (ICZM) provides the approach and governance framework for effectively coordinating the wide range of activities and interests in the coastal zone, to ensure that development outcomes in the coastal zone are resilient and sustainable, and consistent with the

⁵ Mott MacDonald (2016). Design and feasibility analysis of Risk-resilient ICZM in the Bahamas. Source URL: <https://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=EZSHARE-658310466-55>.

⁶ GoBH (2017), Vision 2040 National Development Plan of the Bahamas. 2nd Working Draft. Source URL: https://www.vision2040bahamas.org/media/uploads/2nd_Working_Draft_of_the_NDP_website_30.11.17_c.pdf.

national vision for development as expressed in the Draft National Development Plan for the Bahamas, Vision 2040.

To this end, and over the long term, ICZM seeks to “... *balance the benefits from economic development and human uses of the coastal zone, the benefits from protecting, preserving, and restoring Coastal Zones, the benefits from minimizing loss of human life and property, and the benefits*

Table 1: Risks Associated with Activities in the Ocean and Coastal Zone.	
HUMAN USES	RISKS
Energy and Pipelines	<ul style="list-style-type: none"> • Increased risk of oil spills • Environmental damage associated with new energy transport. • Need for effective communication. • Infrastructure development
Environment	<ul style="list-style-type: none"> • Eutrophication • Unsustainable exploitation of living and non-living marine resources. • Disruption of delivery of ecosystem services
Air transport	<ul style="list-style-type: none"> • Habitat loss and degradation from airport expansion
Ports and Shipping	<ul style="list-style-type: none"> • Habitat loss and degradation from port expansion and dredging • Increased ship-born pollution risk • Increased navigational risk.
Tourism	<ul style="list-style-type: none"> • Habitat loss and degradation from tourism resort development • Eutrophication nutrient enrichment • Increase in informal and unplanned settlements. • Reduction in public access to beaches • Displacement or takeover of traditional fishing beaches and mangrove habitats • Coastal pollution
Economic Use	<ul style="list-style-type: none"> • low investments in infrastructure administrative barriers • environmental pressures caused by land use
Human Settlement	<ul style="list-style-type: none"> • Unplanned and informal settlements • Solid and liquid waste pollution

from public access to and enjoyment of the Coastal Zone, all within the limits set by natural dynamics and carrying capacity” (Schernewski, 2016).

The need for a dedicated governance framework for ICZM can be better appreciated when considering the intersection of Bahamas national development goals as defined by its Sustainable Development Goals (SDG) ambitions and ICZM (Fig. 4).

The centrality of coastal resources and spaces to all of the interacting dimensions of national development (Fig. 4) provides the rationale for strengthening national ICZM governance capabilities. However, in the face of evolving climate variability and climate change, it is imperative that ICZM initiatives in the Caribbean fully consider and incorporate climate resilience considerations in addition to the SDGs.



Figure 4: The Intersection of Ocean and Coastal Spaces with the Achievement of National Sustainable Development Goals (SDGs). Source: Ocean University Initiative: www.ocean-univ.org.

The starting point for the indicator study developed by the IDB was the question of whether the general concept of ICZM public-policy used in the wider world could be applied directly to the countries in the Caribbean region; or whether the small island, and low lying coastal, states of the Caribbean, were required to give special consideration to the mainstreaming climate resilience into, and in addition to, the usual ICZM polices, given the high levels of exposure and susceptibility to climate risks (Box 1)

2.2. Evolving Climate Variability and Climate Change in the Bahamas

Much of The Bahama's exposure to extreme hydrometeorological events arises from its geographic location in the North Atlantic "Hurricane Alley". This places The Bahamas' archipelago in the direct path of Atlantic hurricanes and tropical storms. Since the beginning of the 20th Century The Bahamas has been impacted by 55 hurricanes, of which 13 were high-intensity events (Category 3 or over)⁷.

Historically this has exposed The Bahamas to seasonal threats of hurricane and tropical storm impacts, with The Bahamas being affected by hurricanes, on average, once every three years. This has implications for immediate physical damage and economic loss, human wellbeing, and state of environmental resources such as ecosystems and their associated services. The frequency of extreme meteorological events also have implications for short- and medium- term progress in national and sectoral economic development. By repeatedly setting back national GDP, The Bahamas and other Caribbean Small Island Developing States (SIDS) are placed in the position of being in a permanent state of economic and developmental recovery and restoration.

The State of the Caribbean Climate Report (CSGM, 2020) documents an increase in the frequency and duration of Atlantic hurricanes since 1995, and an increase in category 4 and 5 hurricanes, rainfall, intensity, associated peak wind intensity and mean rainfall. The Bahamas can attest to these observations from experience. The report advises that there will be an 80% increase in the frequency of Saffir-Simpson category 4 and 5 hurricanes over the next 80 years.

The Bahamas Second National Communication (GoBH, 2014) reports that under the worst-case climate change scenarios, and with variable intensity hurricanes, the storm surge height over land in many of the Bahamian islands will be up

Box 1: The Concept of Sustainability in an ICZM Context.

In the case of the ICZM programme adopted for the Mediterranean a sustainable coast is defined as one that is:

- **Resilient** - resilient to future uncertainties of climate change, including rising sea levels, warming and drought; resilient to climate variability such as extreme storms, floods, waves, etc; resilient to earthquakes and erosion; resilient to negative impacts of human processes, including the pressure of tourism and urban development on the coast.
- **Productive** - productive financially in traditional, modern, and future economic sectors; supporting the economic aspirations of the coastal community; providing a competitive asset to the local economy, high in natural and economic values - increasing GDP and alleviating poverty.
- **Diverse** - ecologically diverse: a rich mosaic of marine and terrestrial ecosystems; diverse rural and urban landscapes, old and new; a diverse economy - providing a diverse, but distinctly Mediterranean experience; a diverse society – providing conditions for a rich mixture of social groups, open to the outside world, etc.
- **Distinctive** - retaining the cultural distinctiveness of coastal areas, including their architecture, customs, and landscapes, recognising the Mediterranean as the "cradle of civilisation" - providing a distinctive marketing image on which to attract investment.
- **Attractive** - retaining the attractiveness of the coast, not only to visitors but also to investors and local people to promote a self-sustaining cycle of sustainable growth.
- **Healthy** - free from pollution from land and marine-based sources, with clean fresh and marine waters and the air - providing a healthy environment for people, natural resources such as fisheries, and wildlife.

⁷ IDB (2020). Impact of Hurricane Dorian in the Bahamas: A View from the Sky. Technical Note No. IDB-TN-1857. Country Department Caribbean Group. Section 2, Pg. 3.

to 7 m., submerging most parts of inhabited islands⁸. The relative exposure of coastal populations to the impacts associated with sea level rise was assessed to be high (73.0 %) with severe losses in coastal GDP (65.7%), because of the of high vulnerability of coastal areas to inundation from storm surges (94.1%).

Much of the coastline of the Bahamas, particularly in built up areas, was described as protected by seawalls. These engineered protective solutions were assessed to be under serious threat from climate change induced sea level rise and storm surges associated with hurricanes. Climate change impacts to coastally located infrastructure such as the strategically important local and international ports central to national disaster response, recovery, and restoration efforts; and to the coastally based tourism sector were assessed and quantified.

Policies and measures were proposed for adoption to protect the nation's freshwater resources and related environmental concerns included, *inter alia*, (a) the regulation of the excavation of waterways and areas below the water table, (b) the protection of beach ridge and coastal dune formations, (c) the regulation of rock and sand mining activities, (d) the protection of mangroves and similar coastal assemblages, (e) the adoption of appropriate physical planning policies that will protect coastal infrastructure from storm surges and rising water tables, (f) promotion of careers in environmental engineering and hydrology assessment, and (g) the provision of local courses and training programmes.

2.3. The Bahamas Context of Climate-Resilient ICZM

The Bahamas consists of an archipelago of 700 islands and more than 2000 cays, islets, and rocks in the western Atlantic Ocean. The islands cover approximately 100,000 square miles (sq. mi.) of ocean between latitudes 21° and 27° North and longitudes 72° and 79° West with a total land area of only 5,382 square miles (13,940 km²). Approximately 80% of The Bahama's land area lies at an elevation of less than 1.5 meters above the high tide mark. The highest elevation in The Bahamas is 206 ft (63 m) above mean sea level. The hydrological records indicate that sea level has risen over the past century by 0.3 meters (GoBH, 2015. INDC).

The Bahamas economy is mainly based on coastal tourism which is the primary contributor to GDP and foreign exchange earnings of The Bahamas with the financial services sector being the second largest contributor to GDP. The Bahamas is one of the world's fastest growing of the larger ship registry centres, with nearly 1,600 vessels. The archipelagic character of the Bahamian State make inter-island boat transport and the shore-based support infrastructure, essential for the movement of, *inter alia*, people, goods, mail, and vehicles. There is a small but growing industrial sector, and Grand Bahama is home to several industries that include crude oil storage for trans-shipment. The agriculture and fisheries sectors combined account for 3 to 5% of GDP.

The coastal environment plays a strong cultural role in the life and development of the Bahamas. Beaches serve as foci of recreation for the Bahamian population, in much the same way that parks in metropolitan centres serve their populations.

The proximity of villages to coastlines reflects the importance of livelihoods dependent on the marine environment and the related cultural connections.

⁸ IDB (2020). On 1 September 2019, the eye of Hurricane Dorian made landfall on the Abaco. The central and northern part of the island were affected by hurricane force winds, storm surge and flooding. According to the Bahamas Department of Meteorology, the storm surge provoked storm tide of 6.1 m to 7.6 m. In: Assessment of the Effects and Impacts of Hurricane Dorian in The Bahamas. Technical Report.

The recognition by the Government of the Bahamas that the entire population lives within the coastal zone⁹ establishes the scope for assessments, planning, and policy making related to coastal zone management.

It has been recognised that coordination of the many types of activity carried out in the coastal and marine spaces, and the management of the resulting conflicts, and impacts to coastal ecosystems is essential if development in the Bahamas is to be sustainable and resilient in the face of climate change and climate variability.

The Government of the Bahamas (GoBH) recognises that near shore marine environments play an integral role in the protection of critical infrastructure across the archipelago¹⁰. Reflecting this understanding, the Bahama’s Intended Nationally Determined Contributions GoBH, 2015) prescribes the adoption of short-, medium term-, and long-term, measures to protect coastlines and increase the resilience of coastal ecosystems, enforcement of setbacks, and the restoration of coastal wetlands ((Pg. 5).

The need for the implementation of an ICZM enabling framework *to serve the dual national development priorities of sustainable and resilient coastal development and climate risk reduction* was proposed over 15-years ago in **The Bahamas National Climate Change Policy** (GoBH, 2005). The Policy recognised the great levels of threat to the coastal and marine, ecosystems, habitats, species, and coastline of The Bahamas, posed by the projected impacts of climate variability and climate change (Table 2 and Box 1).

Table 2: Indicative List of Ecosystem Services Provided in and by the Coastal Marine Environment

Reefs	Seagrass Beds	Mangroves	Coastal Features	Coastal/Marine Waters
Beach Sand		Wood for scaffolding, fenceposts and charcoal making.	Ports	
Coastal Protection	Coastal Protection	Coastal Protection	Harbours	Shipping Channels
Protection from Coastal Erosion	Protection from Coastal Erosion	Protection from Coastal Erosion, Flood control	Sheltered moorings, Storm protection	
Storm Protection		Storm Protection		
Nursery for fishable resources	Nursery for fishable resources	Nursery for fishable resources	Beaches	Pelagic fisheries
Habitat for fishable resources / capture	Habitat for fishable resources / capture fishery	Habitat for fishable resources / capture	Sheltered habitat for coastal ecosystems	Habitat for fishable resources / capture fishery (food provision)

⁹ GoBH (2022). The Bahamas’ Updated Nationally Determined Contributions. Pg. 7. Government of the Commonwealth of the Bahamas.

¹⁰ GoBH (2015). Intended Nationally Determined Contribution (INDC) Under the United Nations Framework Convention on Climate Change. Pg. 3. Government of the Commonwealth of the Bahamas.

Table 2: Indicative List of Ecosystem Services Provided in and by the Coastal Marine Environment

Reefs	Seagrass Beds	Mangroves	Coastal Features	Coastal/Marine Waters
fishery (food provision)		fishery (food provision)		
Local Recreation & Tourism	Fishing, snorkelling	Tours, fishing, snorkelling	View-scapes	Sailing, boating, fishing
Aesthetic / spiritual	Aesthetic / spiritual	Aesthetic / spiritual	Aesthetic / spiritual	Aesthetic / spiritual
Carbon sequestration	Carbon sequestration	Carbon sequestration	-	-

To address these impacts the policy sets out several directives for the government to implement.

- The expansion and strengthening of coastal monitoring and data collection to inform decision making,
- The promotion and facilitation of a national assessment of coastal areas and fisheries resources at risk.
- The adoption of measures to protect coastline and increase the resilience of coastal ecosystems.
- Promoting the restoration of damages or destroyed coastal resources and ecosystems.
- The development of a comprehensive National Land Use Management Plan.
- Identify and promote alternative fishery and resource use activities where climate change and other factors preclude continued traditional approaches.
- Foster increased awareness and knowledge on the part of the public regarding Climate Change impacts on the coastal and marine environment, and
- Establish a Coastal Zone Management Unit to integrate coastal activities and compile Geographical Information System data sets for all the major islands of The Bahamas (GoB, 2005. Pg. 14).

Polices that reference resilience building in the coastal zone are described in Table 3 below.

Table 3: Adverse Climate Change Impacts and Adaptation Matrix (Adapted from GoBH, 2015. Second national Communication. Pgs. 148 to 152 .)		
Climate Change Factor	Adverse Impacts	Coastal Adaptation Measures
Increased Temperature	<p>Increase in sea surface temperature affects marine resources (e.g., sensitive to coral species leading to bleaching)</p> <p>Sea surface temperature increase intensity of tropical cyclone activity and associated threats of storm surges and coastal inundation.</p>	<p>Better building codes; retrofitting older buildings; early warning systems (MET office capability)</p> <p>Protect (natural) buffer zones along the coast (i.e., sand dunes, mangroves, beaches, coral reefs)</p> <p>Restricting development along the coast (zoning)</p> <p>Protect existing coastal ecosystems and their associated protective services.</p> <p>Restore natural environment.</p>

Table 3: Adverse Climate Change Impacts and Adaptation Matrix <i>(Adapted from GoBH, 2015. Second national Communication. Pgs. 148 to 152 .)</i>		
Climate Change Factor	Adverse Impacts	Coastal Adaptation Measures
		Coral reef management
Decreasing Rainfall	Salt water intrusion; Loss of coastal vegetation on beaches and dunes increasing erosion risk Mangrove loss due to changes in freshwater/sea water hydraulic balance.	Ecosystem conservation and restoration Integrated watershed management Dune stabilisation (fencing) Construction of engineered protection (sea walls).
Ocean Acidification	Coral reef degradation Reduced protective function of coral reefs. Reduced natural sand replenishment	Reduce threats to coral reef survival from coastal development and stakeholder activities (land-based and ship-based pollution, siltation, direct physical damage, land “reclamation”)
Sea Level Rise	Loss of beaches, dunes, and coastal land to increased coastal erosion. Increased frequency, magnitude, and extent of coastal inundation Loss of mangroves and mangrove retreat.	Engineered coastal protection (e.g., sea walls; Sand dune enrichment Integrated management and conservation of coastal ecosystems, the services that they provide, and the threats to their health, wellbeing, and the benefits that they provide.

More recently The Bahamas Second National Communication (2NC) sets out the Governments response to the impacts of climate change that threaten the tourism sector and the resources on which the tourism sector depends. The 2NC sets out four steps to be implemented to achieve the necessary levels of protection for the sector and its resource base. The steps include the development of a fund-raising mechanism, public education, and the establishment of an integrated coastal zone management (ICZM) unit to effectively manage coastal resources (GoB, 2015. Pg. 147). The 2NC identifies the financial, technical, and human resources required to support adaptation measures, strategies, and options, to include:

- a) trained personnel to monitor climate change impacts on coastal resources;
- b) training of personnel and procurement of equipment to assist in mapping coastal areas throughout The Bahamas vulnerable to sea level rise;
- c) training of additional technicians in the use of storm surge modelling to be able to assist in the forecast of hurricane landfall; and the
- d) establishment of an integrated coastal zone management unit to effectively manage our coastal resources (GoB, 2015. Pg. 147).

The **Draft National Development Plan for the Bahamas (2016)** proposes action under **National Strategy 11.3: Sustainably Use and Manage Resources**, to create policies and enact and enforce legislation for sustainable resource use. Action 11.3.1 of the strategy for the sustainable usage and

management of natural resources, stipulates the delivery of the following outputs in the context of creating policies and enacting and enforcing legislation for sustainable development:

- Integrated coastal zone managements framework and policy developed and operationalized.
- Integrated Coastal Zone Management Unit established (GoBH, 2016).

2.4. Climate-Resilient ICZM Performance Indicators

In 2018 the Inter-American Development Bank (IDB) and World Resources Institute (WRI) developed a set of Climate Resilient Integrated Coastal Zone Management (ICZM) Performance Indicators as a tool to assist countries in the Latin American and Caribbean (LAC) region to objectively evaluate progress toward sustainable, climate-resilient management of coastal areas¹¹.

There are a number of accepted definitions for integrated coastal zone management, but there is no single, accepted, globally uniform, and formalized definition. Generally, ICZM has been defined as:

- a continuous and dynamic process by which decisions are made for the sustainable use, development and protection of coastal and marine areas and resources.
- the process of coordinated implementation of various policies, which have an impact on the coastal zone.

Considering the long-term goals of ICZM is instructive in helping to gain a better understanding of ICZM. Over the long term ICZM seeks to “... *balance the benefits from economic development and human uses of the Coastal Zone, the benefits from protecting, preserving, and restoring Coastal Zones, the benefits from minimizing loss of human life and property, and the benefits from public access to and enjoyment of the Coastal Zone, all within the limits set by natural dynamics and carrying capacity*” (Schernewski, 2016).

The suite of complex issues that ICZM is called on to address, will be determined by national and local circumstances. To be effective, it will be necessary to formulate a locally unique ICZM public policy framework that takes into account, the unique characteristics of the Caribbean region, and unique national and local circumstances, in addition to these global common conditions. It is essential that Caribbean countries make efforts toward tailoring their ICZM approaches and solutions to their respective, country -specific, and -appropriate, ICZM circumstances. The purpose of the Climate-Resilient ICZM Performance Indicator framework, is to assist Caribbean countries in this task.

As a process, ICZM is clearly a multipurpose oriented framework for governance: it analyses implications of development, conflicting use, and interrelationships among physical processes and human activities, and it promotes linkages and harmonization between sectoral coastal and ocean activities¹². ICZM tends to be a highly complex and potentially contentious area of decision-making and resource management, with significant levels of political consideration across the economic, environmental, and social sectors that operate within coastal and marine spaces.

It is in this context, that the indicators framework was designed. The indicators explore, and provide insights to, whether the country has the required policies, institutions, information management, implementation practices, and monitoring frameworks, in place, to enable them to sustainably manage coastal areas, in circumstances of evolving climate change. The indicators are intended to

¹¹ IDB (2020). Climate Resilient Integrated Coastal Zone Management Performance Indicators. Technical Note No. IDB-TN-01848. Pgs. 38. URL: <https://publications.iadb.org/publications/english/document/Climate-Resilient-Integrated-Coastal-Zone-Management-Performance-Indicators.pdf>.

¹² Cicin-Sain, B., and Knecht, R. (1998). *Integrated Coastal and Ocean Management*. Island Press.

support and enhance within-country understanding of strengths and weaknesses in the national arrangements for ICZM and climate preparedness in coastal areas.

The catalyst for applying the study methodology to the Bahamas came from the findings of an extensive review of the literature on coastal management, disaster risk management, climate change adaptation planning, and governance, and ICZM finance, complimented by interviews with DRM and ICZM experts in the LAC region. The investigation was unable to find an existing, single index or diagnostic framework, that assessed the wide-ranging topics addressed by ICZM, in the context of evolving Climate variability and climate change, and resilience.

There were assessment frameworks that focused on specific aspects of the ICZM mandate, with some focused on coastal governance^{13,14}; some focused on coastal protection and management; some looking at climate vulnerability and risks and disaster risk reduction (DRR)/disaster risk management (DRM); while others were tools for countries to map their own risks and vulnerabilities.

The indicators framework developed by the IDB and WRI considers the degree to which a country's arrangements to address the legal, institutional, technical, physical, social, and fiscal issues associated with ICZM, represent good practices that would increase the likelihood of sustainably managing the country's coastal areas, while increasing climate resilience and reducing climate-related risk in these areas.

2.5. Application of the Indicators in The Bahamas

The application of the Climate-Resilient ICZM Performance Indicators framework was conducted by the Consultant and the Project Implementation Unit (PIU) of the Ministry of Public Works and Utilities (MPOU) as a frame of reference for Component 3: Institutional Strengthening for Coastal Risk Management, one of three components making up the *Climate-Resilient Coastal Management & Infrastructure Programme* (BH-L1043)¹⁵.

A two-tiered approach was taken to the application of the framework with the Consultant conducting the initial review of searchable websites, literature, plans, policies, and legislation, to populate the indicators framework, in consultation with the PIU Team. In the second phase of the exercise the PIU engaged ICZM stakeholders through one-to-one consultations and dedicated Technical Advisory Committee (TAC) meetings, to elicit feedback and guidance on data and information sources, and the status of specific performance indicators. In the case of the dedicated TAC meetings, the Indicators were shared with stakeholders invited to participate in the consultations, so that they would have time to review, interpret, and consider the indicators, in preparation for the consultations. The Study was conducted from late 2021 to the end of 2022.

¹³ Coastal and marine governance involves formal and informal arrangements (e.g., policy, regulations, economic incentives, and social and cultural norms) that mediate how humans interact with the environment and its resources. Source: Centre for Marine Sociology: <https://marinesocioecology.org/themes/coastal-and-marine-governance/#:~:text=Coastal%20and%20marine%20governance%20involves,governance%20from%20local%20to%20global>.

¹⁴ IDB (2020). Climate Resilient Integrated Coastal Zone Management Performance Indicators. Technical Note No. IDB-TN-01848.

¹⁵ The objective of the program is to build resilience to coastal risks (including those associated with climate change) through sustainable coastal protection infrastructure, including natural infrastructure and integrated management of the coast. This program is expected to result in a reduction of economic losses due to natural disasters and an increase in local economic activity through coastal resilience. The Program consist of 4 components: C1: Sustainable Coastal Protection Infrastructure; C2: Natural Infrastructure for Hazard Resilience in Andros; and C3 Institutional Strengthening for Coastal Risk Management. See: <https://www.iadb.org/en/whats-our-impact/BH-L1043>

The Climate-Resilient ICZM Performance Indicators framework is made up of fifteen indicators arranged in four categories that are configured to assess performance in four areas (Figs. 2 and 3, and Table 4):

- (i) Legal and institutional frameworks for ICZM and climate preparedness (5 indicators);
- (ii) The availability of quality information for planning and decision making for the sustainable management of coastal resources and spaces for resilient development (4 indicators);
- (iii) The technical capacities required to develop and evaluate initiatives to reduce climate risk (3 indicators);
- (iv) The sufficiency and sustainability of funding for ICZM (3 indicators).

Each indicator provides information on an aspect of the country's preparedness to sustainably manage coastal and marine areas and increase climate resilience. Indicator scores are meaningful in their own right but can be aggregated to the category-level by averaging the component indicator scores to provide an unweighted "category score".

Each indicator, in turn, is based on a number of criteria that facilitate the collection of relevant information on specific aspects of performance. The criteria are evaluated individually and are subsequently averaged to arrive at an "indicator score". Most criteria are binary (yes/no or achieved/not achieved). Other criteria allow for a more graded response based on a series of incrementally improved options (e.g., whether a given environmental variable has been assessed once, multiple times, or is routinely monitored). In another case, the criterion may include a list of variables monitored, with one point being awarded for each variable monitored. In all cases, each indicator receives a score ranging from zero to one, based on the percentage criteria achieved. The number of criteria and possible total point score for each indicator are listed in Fig. 5.

The indicators provided in the assessment framework are intended to encompass the full suite of measures and information needed to assess current actions and arrangements contribute to ICZM, in the context of climate variability and climate change.

Because ICZM is a cross-cutting thematic-area, and area of practice, the primary audience for this report are not only the government officials working in coastal zone management, disaster risk management, and climate preparedness, but also, those stakeholders working in sectoral agencies with a footprint and/or interests in the coastal and marine areas of The Bahamas. The indicators were selected based on the extent to which they highlighted good practice in sustainably managing coastal areas while reducing climate-related risk and enhancing resilience (Annex II).

1. Legal and Institutional Framework for ICZM and Climate Preparedness	2. Assessing Climate Risks in the Coastal Zone	3. Identifying coastal resilient Investments	4. Financing ICZM
a. Status of National ICZM Regulatory Framework b. Status of National Regulatory Framework on Climate Change Adaptation and Disaster Risk Management c. Regulatory Environment for Coastal Development d. Interagency Coordination of Entities Relevant to ICZM, DRM and Climate Change e. Institutional Responsibility for Monitoring and Evaluation of ICZM Activities and Projects	a. Data on Environmental Condition and Trends in Coastal Areas b. Shared Information Platform c. Climate Vulnerability and Risk Assessment (VRA) d. Timeliness of Data and Assessments	a. Identifying ICZM-related Responses to Climate Change b. Skills and Experience Developing and Evaluating Adaptation Solutions c. Monitoring and Protecting Investments in Infrastructure	a. Sustainable Funding for ICZM Operations b. Access to International Development Finance c. Financial Incentives and Schemes to Incentivize Private Action

Fig. 5: Climate Resilient ICZM Indicator Framework - Areas of Performance and Performance Criteria (IDB, 2020).

The performance indicators form an objective, verifiable, easily communicated & understood, assessment-framework against which The Bahamas’ national ICZM and CCA circumstances can be assessed, evaluated, and communicated.

The rationale for incorporating the "**Climate-Resilient Integrated Coastal Zone Management Performance Indicators**" framework into the assessment methodology lies in the potential for climate resilient ICZM to:

- Strengthen territorial/area development policies, targeting both urban and rural areas.
- Catalyse institutional reforms and optimizations to achieve long-term development processes.
- Contribute to sustainable development (balancing socio-economic development and natural resource management, addressing disaster and climate change risks).
- Promote nature-based solutions in addition to conventional hard infrastructure.

Categories	Indicators	Number of Criteria	Maximum points possible
1. Legal and Institutional Framework for ICZM and Climate Preparedness	a. Status of National ICZM Regulatory Framework	8	8
	b. Status of National Regulatory Framework on Climate Change Adaptation and Disaster Risk Management	5	5
	c. Regulatory Environment for Coastal Development	5	5
	d. Interagency Coordination of Entities Relevant to ICZM, DRM and Climate Change	5	5

Table 4: ICZM-CCA Indicators Framework - Indicator Categories, Indicators, and Number of Criteria			
Categories	Indicators	Number of Criteria	Maximum points possible
	e. Institutional Responsibility for Monitoring and Evaluation of ICZM Activities and Projects	3	3
2. Assessing Climate Risks in the Coastal Zone	a. Data on Environmental Condition and Trends in Coastal Areas	22	66
	b. Shared Information Platform	17	17
	c. Climate Vulnerability and Risk Assessment (VRA)	7	32
	d. Timeliness of Data and Assessments	6	6
3. Identifying Adaptation Opportunities and Protecting Investments	a. Identifying ICZM-related Responses to Climate Change	3	3
	b. Skills and Experience Developing and Evaluating Adaptation Solutions	5	5
	c. Monitoring and Protecting Investments in Infrastructure	4	4
4. Financing ICZM	a. Sustainable Funding for ICZM Operations	5	5
	b. Access to International Development Finance	4	4
	c. Financial Incentives and Schemes to Incentivize Private Action	3	3

In this application, the criteria for each indicator were assessed to collect details on how The Bahamas is doing on each given thematic area (indicator). The application of the IDB's Resilient ICZM Indicators framework in The Bahamas was carried out by means of desktop research and key interviews with government stakeholders. Stakeholders from the following organizations were engaged and interviewed (Table 5).

Table 5: Organisations Represented at Technical Advisory Committee Workshop Consultations (See Annexes II and III)		
Invitees	Attended 21-SEP-22 TAC	Attended 30-NOV-22 TAC
Bahamas Reef Environment Education Foundation (BREEF)	✓	
Bahamas National Trust (BNT)	✓	✓
Bahamas National Geographical Information Systems (BNGIS)	✓	✓
Department of Environmental Planning and Protection (DEPP)		✓
Department of Lands and Surveys	✓	
Department of Marine Resources	✓	
Department of Meteorology	✓	✓
Ministry of Agriculture, Marine Resources and Family Island Affairs	✓	✓
Ministry of Finance	✓	
Ministry of the Environment & Department of Environmental Planning and Protection		
Ministry of Tourism Investment and Aviation	✓	✓

Table 5: Organisations Represented at Technical Advisory Committee Workshop Consultations (See Annexes II and III)		
Invitees	Attended 21-SEP-22 TAC	Attended 30-NOV-22 TAC
Ministry of Transport & Housing		
Ministry of Works & Utilities	✓	✓
National Emergency Management Agency	✓	✓
Office of Disaster Preparedness	✓	✓
Office of the Prime Minister		
Physical Planning	✓	✓
Port Department	✓	
Public Parks and Beaches		
The Nature Conservancy (TNC)	✓	
The University of the Bahamas	✓	✓

3. Results of Climate-Resilient ICZM Indicators Assessment

This section presents the results for The Bahamas for the four categories and 15 associated indicators. For each category, an overview of results is presented in tabular form, with a summary score for the category. In addition, scores for each indicator in the category are included to show how the category score was reached. This is followed by a short interpretation of results in narrative form. Next, results for each indicator within the category are presented, including a description of the indicator and a table summarizing the findings for all criteria under that indicator, as well as an interpretation of results for that indicator. For full details of the results at the criteria-level, including the evidence which supports the scoring for each criterion, please see details in the tables in Appendix A.

3.1. Category 1: Legal and Institutional Framework for ICZM and Climate Preparedness

Overview of Category Results (table showing scores for each indicator and summary score for the category).

This indicator category covers the *legislative* and *institutional* arrangements that support planning, coordination, and service delivery for ICZM and climate preparedness. For this assessment, we considered several measures, such as whether The Bahamas has in place framework legislation for ICZM that incorporates climate change and disaster risk management and whether a lead institution for resilient ICZM has been identified with designated counterparts across sectors. In addition, we examined the regulatory environment governing development in the coastal zone, the degree of interagency coordination for ICZM and DRM, and the existence of an M&E system to monitor the success of coastal zone management efforts.

Five indicators were assessed under this category, resulting in an average category score of 0.28 (see Table 6). Results for each of the five (5) indicators are provide in Tables Seven (7) to twelve (11).

Table 6: Indicator Scores for Category 1		Average Category Score	Indicator Score
1. Legal and institutional Framework for ICZM and Climate Preparedness		0.28	
a.	Status of National ICZM Regulatory Framework		0.37
b.	Status of National Regulatory Framework on CC Adaptation and Disaster Risk Management		0.25
c.	Regulatory Environment for Coastal Development		0.8
d.	Interagency Coordination of Entities Relevant to ICZM, DRM and Climate Change		0.0
e.	Institutional Responsibility for Monitoring and Evaluation of ICZM Activities and Projects		0.0

Interpretation of results:

1A. Status of National ICZM Regulatory Framework

Indicator Description: This indicator evaluates the extent to which ICZM legislation provides the mandate, structure and processes that enable effective coastal zone management. It has eight criteria.

Summary of all criteria under the indicator:

Table 7: Criteria Results for Indicator 1 A – Status of National ICZM Regulatory Framework.			
Indicator Criteria		Finding	Score
1.	ICZM-specific or inclusive legislation has been approved, which designates a lead agency.	NO	0
2.	Legislation designates sectoral competencies, including an agency responsible for environment, planning, public works, and fisheries.	YES	1
3.	Legislation establishes collaboration with the agency responsible for climate change adaptation.	NO	0
4.	Legislation establishes a process for public participation, review, and comment on the ICZM planning process and on the approval of coastal development public-investment projects. (“Public” includes citizens, community groups, as well as stakeholders with vested economic interests.)	NO	0
5.	A coastal zone management plan has been officially published.	NO	0
6.	Regulations have been officially published to implement the ICZM plan.	NO	0
7.	Regulations establish a system of penalties to public and private entities when ICZM-related regulations are violated.	YES	1
8.	A system for reporting violations of ICZM or related regulations is in place.	YES	1
TOTAL		3/8	0.37

Interpretation of Results:

The Bahamas currently achieves three (3) out of eight (8) criteria for a score of 0.375.

Achievements: Although there is no government agency formally mandated to oversee coastal zone management, the agencies separately responsible for environment, planning, public works, and fisheries, have the competencies to participate in ICZM planning. These competencies are evidenced in the legislated that defines their respective mandates, roles, responsibilities, authorities, and powers (Annex I).

The ICZM-related legislation and regulations that have been promulgated for environment, planning, public works, and fisheries, provide for oversight of activities in The Bahamas ocean and coastal spaces and the reporting of violations of regulations, these regulations having bearing or being relevant to, effective ICZM. These regulations establish a system of penalties to public and private entities.

Gaps: The assessment determined that there is no ICZM-specific **legislation** that addresses integrated management of coastal resource in the Bahamas. There is, therefore, no ICZM legislation that establishes a process for public participation, review, and comment on the ICZM planning process. Put another way, there is no ICZM planning process defined in Bahamian legislation or regulations.

Enabling ICZM legislation is required to provide support the promulgation of a broad framework of, regulations, permits, environmental assessment requirements, and development planning requirements, and administrative processes, for managing and coordinating uses of coastal resources (IDB 2020). This level of integrated management is essential as the full spectrum of socio-cultural, economic, and environmental activity in The Bahamas, occurs in the coastal zone. This creates sections in which one type of activity can positively or negatively impact another. The ICZM public policy framework and legal structure is needed to effectively reconcile the interests of these complex situations at the public policy level to achieve long-term climate resilience and sustainable development by balancing:

“... the benefits from economic development and human uses of the Coastal Zone, the benefits from protecting, preserving, and restoring Coastal Zones, the benefits from minimizing loss of human life and property, and the benefits from public access to and enjoyment of the Coastal Zone, all within the limits set by natural dynamics and carrying capacity”¹⁶.

Provision for public participation, review, and comment on the approval of public investment projects, to be located in the coastal areas, prior to approval, is made under general environmental legislation, which captures coastal development without being ICZM specific¹⁷.

The enabling environment that The Bahamas has established to facilitate management of the environment, is centred on the Environmental Planning and Protection Act (2019), which considers the entire environment, terrestrial, coastal, and marine. The Act has as one of its ten objectives, the establishment of a mechanism for effective public participation in decision making and the formulation of environmental policy.

Under the Environmental Planning and Protection Act (2019) provision is made for the Director of the Department of Environmental Planning and Protection to invite the public to comment on the Environmental Policy Framework (Section 16(5)).

The draft Bahamas National Maritime Policy (2015) proposes a vision for the ocean, policy framework and governance arrangements for coordinating the use of coastal resources. The policy was approved in 2022. At the time of the assessment, it was not possible to secure a copy of the approved policy for

¹⁶ Schernewski, G. (2014). Integrated Coastal Zone Management. In: Harff, J., Meschede, M., Petersen, S., Thiede, J. (eds) Encyclopedia of Marine Geosciences. Springer, Dordrecht. https://doi.org/10.1007/978-94-007-6644-0_183-3.

¹⁷ GoBH (2019). The Environmental Planning and Protection Act, 2019. Under, Sub-section (2), Section 4 Responsibilities of Minister of Part I – Administration, of the Act, the Minister is charged with the responsibility of *“encouraging and facilitating the participation of all persons, non-governmental organizations, and local communities in matters relating to environmental planning and protection.”* This is for the purpose of administering and enforcing the Act. Under Section (12) Principles of Accountability, of the First Schedule (Section 3(2)) Principles of Environmental Protection, it is stipulated that *“The public should ...be given opportunities to participate in policy and programme development.”*

review to confirm the scope, objectives and goals of the policy, the defined governance and institutional arrangements, roles, responsibilities, and authorities.

Under the BH-L1043 Programme, one of the expected outcomes is that the Coastal Protection Unit (CPU) that is being established in the MOPU will become champion of ICZM policy in The Bahamas, and that the Project Implementation Unit (PIU) will become the national Coastal Management Unit.

1B. Status of National Regulatory Framework on Climate Change Adaptation and Disaster Risk Management

Indicator Description: This indicator evaluates the level to which policy and/or legislation provides the mandate, structure and processes that enable national planning and management for climate and disaster preparedness, including coordination with key sectoral agencies. It has four criteria.

Summary of Criteria Under the Indicator:

Table 8: Criteria Results for Indicator 1 B - Status of National Regulatory Framework on CCA and DRM.		
Indicator Criteria	Finding	Score
1. National legislation to implement DRM has been officially published (not only for an emergency preparedness. See the definition of DRM).	NO	0
2. There is an officially published national policy or legislation focused on climate change adaptation.	YES	1
3. National regulations on DRM coordinate with related standards on climate change adaptation, integrated water resources management, and land use planning.	NO	0
4. National policy / legislation on both DRM and climate change adaptation establishes a process for public participation, review, and comment in the development of disaster risk management and / or climate adaptation plans.	NO	0
TOTAL	1/4	0.25

Interpretation of Results:

The Bahamas currently achieves on (1) of the four (4) criteria for a score of 0.25 (Table 8).

Achievements: The Bahamas has a national climate change policy. The **National Policy for the Adaptation to Climate Change (2005)**¹⁸ was prepared by the National Climate Change Committee and the Bahamas Environmental Science and Technology (BEST) Commission. The Ministry of Environment and Natural Resources is responsible for climate related issues. The goal of the Policy is to avoid, minimize, adapt to, or mitigate, the negative impacts of climate change on environment, economy, human health, and well-being, through institutional capacity building, research and development, technology transfer and public and private sector investments. The (2005) Policy has not been updated (Source: Leslie Brace BNT & Trueranda Cox TNC – No update to knowledge). However, A Disaster Risk Reduction Management Act was enacted in The Bahamas in December, 2022. It is intended that the proposed legislation will provide for a more effective and comprehensive Disaster Risk Management Policy and Framework through the establishment of a Disaster Risk

¹⁸ GoBH (2005). The **National Policy for the Adaptation to Climate Change** Source URL: https://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/2006/2006-0004/DisasterPreparednessandResponseAct_1.pdf

Management Authority and for connected matters¹⁹.

Gaps: The country falls short on:

- (i) having a disaster risk management legislation that fully addresses preparedness response and management, including rehabilitation and reconstruction planning, and financial protection. A description of the Disaster Preparedness and Response Act (Cap. 34 A) refers to the mitigation of, preparedness for, response to and recovery from emergencies and disasters in The Bahamas. This Act was replaced by the DRM Act as noted above, but in any case, review of this past legislation in its entirety reveals that it is focused on emergency preparedness and does not address the full disaster risk management cycle as defined by the IDB in the Coastal Resilience Integrated Coastal Zone Management Performance Indicators framework.²⁰
- (ii) having national regulations on DRM that coordinate with related standards on climate change adaptation, integrated water resources management, and land use planning. The Disaster Preparedness and Response Act (2008) does not mention climate change or CCA. Water is not mentioned in the explicit contexts of either IWRM. Under Article 13 (Undertaking of Participating States) the government agency responsible disaster management is mandated to:
 - (j) identify and map areas with special problems like flood prone and landslide prone areas.
 - (n) to develop strategies for loss reduction in the public and private sectors focusing on vital economic activities and life-line activities like water supply²¹.
- (iii) having clearly established processes for public participation, review, and comment in the development of climate adaptation plans and disaster risk management. Neither the past Disaster Preparedness and Response Act (2008) or The Bahamas National Climate Change Policy (2005) makes provision for public participation, review, and comment in the development of disaster risk management and / or climate adaptation plans.

The past Disaster Preparedness and Response Act (2008) Section 17, makes provisions to invite submissions from the public relating to the contents of a draft special area precautionary plan and their revision (Section 19).

The Bahamas National Climate Change Policy stipulates that *“On the fifth anniversary of the date of this policy, the NCCC shall conduct a public review of this policy to determine its effectiveness in achieving its goals and objectives.”* (BNCCP, 2005). Page 34, Monitoring and Review section.

¹⁹ “Shortly after this study, a new Disaster Risk Management Act 2022 was adopted by the Government of the Bahamas. See <https://www.bahamas.gov.bs/wps/wcm/connect/f3da125f-6b52-4a40-b8da-75b6f7029f16/Exo+9+December%2C+2022.pdf?MOD=AJPERES>. Therefore, the gaps identified should be reconfirmed in light of this new Act.

²⁰ Disaster Risk Management* – Processes to design, apply and evaluate strategies, policies and measures aimed at: improving the understanding of disaster risks, fostering risk reduction and financial protection from disaster risks, and promoting the continuous improvement of preparedness, response, and recovery practices, with the explicit objective of increasing human security, well-being, quality of life, resilience, and sustainable development. Disaster Risk Management is not only for emergency preparedness but, as indicated clearly in the definition, has a broader perspective to incorporate it in socioeconomic development planning and process both at the national and the local/community level.

²¹ URL Source: https://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/2006/2006-0004/DisasterPreparednessandResponseAct_1.pdf

1C. Regulatory Environment for Coastal Development

Indicator Description: This indicator evaluates the rules governing development in the coastal zone and whether they are helping the government ensure that investments incorporate climate risks into decision-making processes. It has five criteria.

Summary of Criteria Under the Indicator:

Table 9: Criteria Results for Indicator 1 C - Regulatory Environment for Coastal Development.		
Indicator Criteria	Finding	Score
1. The regulations that standardize the carrying out of environmental impact assessments (or equivalent process) integrate climate-hazard analysis.	Yes	1
2. The regulations that standardize the carrying out of project impact assessments (or equivalent process) prior to project implementation require evaluation of social and environmental impact (and natural capital opportunities).	YES	1
3. The National Development Plan (or equivalent instrument) contains objectives, targets and / or indicators about climate risk reduction and / or climate resilience.	YES	1
4. Regulations establish a system of penalties to public and private entities when coastal development-related regulations are violated.	YES	1
5. The lead agency for ICZM has defined priority (or critical) areas for coastal management.	NO	0
	TOTAL	4/5
		0.8

Interpretation of Results:

The Bahamas currently achieves four (4) out of five (5) criteria, scoring 0.80 (Table 9).

Achievements:

The Environmental Impact Assessment (EIA) Regulations (2020) define an EIA as a study identifying and evaluating, *inter alia*, "... the potential means of mitigating and accessing the likely climate related impacts of the proposed project."

The Bahamas has Environmental Impact Assessment (EIA) Regulations that call for addressing environmental, social, and economic impacts of projects. Part III, Section 12, of the Environmental Planning and Protection Act (2019)²² sets out the procedures for Environmental Impact Assessments (EIAs). Regulations made under the Act provide for any aspect of the EIA. Regulations for EIAs make provisions for:

- The types of projects, developments, and activities requiring an EIA prior to its establishment or operation.
- The procedures for an EIA, including, reporting, testing, or analysis.
- Approvals and conditions
- Enforcement of conditions which apply to approved projects.
- Offences and penalties.

The conditions for EIAs are binding on all government entities (Section 14) as no approval or documentary authorization shall be granted under any enactment in respect of a project that has the

²² URL Source: https://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/2019/2019-0040/EnvironmentalPlanningandProtectionAct2019_1.pdf

potential to have an adverse effect on the environment.

The regulations governing EIAs are set out in the Environmental Impact Assessment Regulations (2020)²³, and sets out the relationship between the EIA process and the Certificate of Environmental Clearance (Part II). Environmental Impact Assessment Regulations (2020) standardize the conducting of project impact assessments prior to project implementation requires evaluation of social and environmental impacts. The regulations establish a system of penalties to public and private entities when coastal development-related regulations are violated.

The National Development Plan of the Bahamas (2016) contains objectives, targets and proposed actions for climate risk reduction and climate resilience.

Strategy 11.1: Researching and Implementing Climate Change Adaptation and Mitigation Measures in the National Development Plan Speaks to climate change research, implementation of climate change mitigation and adaptation, changes to the National Policy for Adaptation to Climate Change and so on²⁴.

Under Goal 8 (**The Bahamas will have a land administration system that is efficient and fair**), Strategy 8.4 (Pg. 259) speaks to the creation of a Land Use Plan to guide the Country's physical development, that among other things, incorporates disaster risk reduction actions.

Under Goal 9 the Plan, The Bahamas will have modern infrastructure in New Providence and the Family Islands built to grow the economy and withstand the effect of climate change (Pg. 245). One of the key steps to be taken to achieve this goal is:

creating a new Capital Improvement Plan that drives which projects are funded, the criteria to include a projects impact on the economy and human welfare, balances the needs of family islands and its ability to withstand changes to climate change (Pg. 246).

The Capital Investment Framework proposed under the plan (Action 9.1.2) is to include provisions for periodic updating of both projects and standards of construction that are consistent with evolving trends in climate change best practices (Pg. 265), embracing the incorporation of best practices in climate change resistant design and conservation.

Under Strategy 11.1 Research and Implementation of CCA and Mitigation Measures, The Government of the Bahamas plans to develop a national response to climate change adaptation and introduce appropriate legislation (Pg. 295). This would see legislation and regulatory instruments incorporating the National Policy for Adaptation to Climate Change into law (Pg. 296).

The Department of Environmental Planning and Protection (DEPP) is also responsible for enforcement environmental regulation related to coastal developments. Within the EPP Act 2019, Part III section 11 speaks to No Work Without Clearance granted (Certificate of Environmental Clearance) and anybody who violates this order can be fined up to \$10,000.00 or 3 years in prison or both. In the EIA regulations 2020, the CEC is granted with particular stipulation that have to be adhered. Failure in

²³ GoBH (2020). Environmental Impact Assessment Regulations. S.I. no. 150 of 2020. URL Source: https://laws.bahamas.gov.bs/cms/images/LEGISLATION/SUBORDINATE/2020/2020-0150/EnvironmentalImpactAssessmentRegulations2020_1.pdf

²⁴ GoBH, (2016) Draft National Development Plan for the Bahamas. Source: https://www.vision2040bahamas.org/media/uploads/2nd_Working_Draft_of_the_NDP_website_30.11.17c.pdf

compliance to the CEC can result in decommissioning, demolition and removal of structures, restoration of the natural environment to a state similar to the original before the commencement of the project, or anything else required by the DEPP. The Fines fees and penalties associated with the breach of the act can be found in section 63 and 65.

Gaps:

There is no legislation that establishes (a) a designated coastal zone management entity, or (b) an “ICZM Planning Process.” As a result, there are no priority or critical areas defined for coastal management by a designated ICZM lead agency.

1D. Interagency Coordination of Entities Relevant to ICZM, DRM and Climate Change Adaptation

Indicator Description: This indicator evaluates whether authority over coastal ecosystem resource use, management, and development resides across multiple agencies and sectors, and explores the extent of collaboration. In addition to coastal resource managers, the cooperation of the land use planning authority, business development authority, waste managers, fisheries managers, and disaster risk management authorities are needed for truly integrated and effective coastal zone management. It looks at five criteria.

Summary of Criteria Under the Indicator:

Table 10: Criteria Results for Indicator 1D - Interagency Coordination of Entities Relevant to ICZM, DRM and Climate Change Adaptation.		
Indicator Criteria	Finding	Score
1. An inter-institutional framework for ICZM has been officially established.	NO	0
2. The framework includes the agency(ies) responsible for DRM and climate change adaptation.	NO	0
3. The framework includes provisions for a technical information sharing mechanism necessary for ICZM development planning decision making, and relevant agencies/entities share data for this purpose.	NO	0
4. Relevant agencies/entities meet regularly (at least twice per year) to discuss and make joint planning decisions or development monitoring plans on climate related ICZM.	NO	0
5. The relevant agencies/entities develop joint multi-year work plans to coordinate and collaborate on assessing and addressing climate-related risks in coastal areas.	NO	0
TOTAL	0/5	0

Interpretation of Results:

The Bahamas achieved zero (0) out of five (5) for a score of zero (0).

Gaps:

The study determined that there is no ICZM-specific **legislation** that defines the enabling mechanism in support of ICZM, within which an inter-institutional framework for ICZM would be established. As such, there is no ICZM framework within which agencies responsible for disaster risk management (DRM) or climate change adaptation (CCA) can be engaged. Similarly, there is no framework within which provisions can be made for:

- technical information sharing mechanism necessary for ICZM development planning decision making, and relevant agencies/entities share data for this purpose;
- Relevant agencies/entities meet regularly to discuss and make joint planning decisions or development monitoring plans on climate related ICZM, or

- develop joint multi-year work plans to coordinate and collaborate on assessing and addressing climate-related risks in coastal areas.

Prospects:

Inter-institutional Framework: The 2015 draft Bahamas National Marine Policy (BNMP)²⁵ identifies the National Maritime Policy Steering Committee as the inter-institutional coordinating framework under the Ministry of Transport and Aviation.

Mandated to:

- establish a clear coordinated institutional mechanism will be established for integrated marine management across relevant sectors such as fisheries, tourism, transport, and environment.
- Implementation of Multiple-use marine spatial planning and zoning mechanisms.

1E. Institutional Responsibility for Monitoring and Evaluation of ICZM Activities and Projects

Indicator Description: This indicator evaluates whether there is consistent and targeted Monitoring and Evaluation (M&E) that enables the extraction of lessons learned and which make future ICZM-related projects more sustainable and allow for adaptive ICZM management. It includes three criteria.

Summary of Criteria Under the Indicator:

Table 11: Criteria Results for Indicator 1 E - Institutional Responsibility for M&E of ICZM Activities and Projects.		
Indicator Criteria	Finding	Score
1. Regulations assign a public or academic entity or a third party to undertake independent monitoring during implementation of ICZM-related projects.	NO	0
2. Regulations assign a public or academic entity or a third party to undertake independent technical performance evaluations at the end of ICZM-related projects.	NO	0
3. Regulations mandate the project monitoring results are presented to the ICZM authority at regular intervals (at least annually) and inform updates to management plans.	NO	0
TOTAL	0/3	0

Interpretation of Results:

The Bahamas does not fulfil any of the three criteria, as currently defined, scoring zero (0). A review of the legislation indicates that criteria as described are not in place, and that existing legislation does not assign a third-party entity to independently evaluate initiatives related to ICZM-related project and does not mandate that project monitoring results be used to inform the updating of management plans. There is no designated ICZM-authority to receive project monitoring results.

²⁵ It is understood that the BNMP was approved in 2022. However, a copy of the approved policy has not been secured for review and therefore details of an approved inter-institutional framework for ICZM cannot be verified.

3.2. Category 2: Assessing Climate Risks in the Coastal Zone

Category 2 focuses on understanding status and trends of ecosystems, as well as current and potential future climate-related hazards and risk in coastal areas, essential to planning actions to reduce risk and build coastal resilience. The category examines:

- a) what data are collected through environmental monitoring and the frequency and density of data collection;
- b) whether data are integrated (available in a central or shared information hub);
- c) the quality and completeness of data on risk from climate change in coastal areas; and
- d) the frequency of update of assessments.

Overview of Category Results

Table 12: Indicator Scores for Category 2		Average Category Score	Indicator Score
2. Assessing Climate Risks in the Coastal Zone		0.51	
a.	Data on Environmental Condition and Trends in Coastal Areas		0.61
b.	Shared Information Platform		0.23
c.	Climate Vulnerability and Risk Assessment (VRA)		0.87
d.	Timeliness of Data and Assessments		0.33

2A. Data on Environmental Condition and Trends in Coastal Areas

Indicator Description: This indicator evaluates the extent of monitoring of coastal habitats and environmental conditions for management of coastal areas, including the planning of actions to reduce risk from climate-related hazards. Initial assessment (creating a baseline), complemented by repeat observations, allows tracking of change and is an important input to both the design and evaluation of actions. Environmental or ecological variables were assessed both for:

- a. spatial extent of monitoring coverage and
- b. temporal frequency of monitoring.

This indicator has 22 criteria, each of which could score 3 points for a potential total of 66 points). Spatial extent and density of coverage, as well as temporal frequency, of monitoring of the following 22 variables were evaluated.

Summary of all criteria under the indicator:

Table 13: Findings for Indicator 2A i - Spatial extent and density of coverage of monitoring for Environmental and Ecological Variables.					
Environmental / Ecological Variable	0 - none	1 -single location, limited area.	2 – covers all critical areas	3 – monitored across country at adequate density	Score
1. Coral reef condition			X		2
2. Mangrove extent			X		2

Table 13: Findings for Indicator 2A i - Spatial extent and density of coverage of monitoring for Environmental and Ecological Variables.

Environmental / Ecological Variable	0 - none	1 -single location, limited area.	2 – covers all critical areas	3 – monitored across country at adequate density	Score
3. Seagrass extent			X		2
4. Commercial fish stocks and condition (for at least 50% of the commercial species)			X		2
5. Bycatch from fishing activities			X		2
6. Coastal water quality - bacteria	X				1
7. Coastal water quality – nutrients	X				1
8. Physical shoreline change – coastal erosion and beach profile change			X		2
9. Wave and surge – tides, wave hight, storm surge.			X		2
10. Precipitation in coastal areas			X		2
11. Water temperature			X		2
	2		18/33		0.61

Table 14: Findings for Indicator 2A ii - Temporal Frequency of monitoring for Environmental and Ecological Variables

Environmental / Ecological Variable	0 - none	1 -baseline available	2 – Info available for multiple time periods	3 – Regularly monitored	Score
1. Coral reef condition			X		2
2. Mangrove extent			X		2
3. Seagrass extent			X		2
4. Commercial fish stocks and condition (for at least 50% of the commercial species)			X		2
5. Bycatch from fishing activities			X		2
6. Coastal water quality - bacteria			X		2
7. Coastal water quality – nutrients			X		2
8. Physical shoreline change – coastal erosion and beach profile change		X			1

Table 14: Findings for Indicator 2A ii - Temporal Frequency of monitoring for Environmental and Ecological Variables					
Environmental / Ecological Variable	0 - none	1 -baseline available	2 – Info available for multiple time periods	3 – Regularly monitored	Score
9. Wave and surge – tides, wave hight, storm surge.		X			1
10. Precipitation in coastal areas			X		2
11. Water temperature			X		2
	TOTAL	2/33	18/33		0.61

Interpretation of Results:

Achievements:

The Ministry of Environment Act (MEA) establishes the Ministry of the Environment, and charges it with the responsibility setting standards for collecting, storing, retrieving, analysing, and publishing environmental data (Fig. 4). However, it appears that a wide range of actors are involved in the monitoring and reporting on the condition, status, and trends, of coastal ecosystems in the Bahamas²⁶.

The spatial coverage of various coral reef monitoring initiatives has been substantial, establishing a robust baseline against which to assess ongoing and future trends. Between 1997 and 2019, 775 AGRRA reef surveys were conducted.

In July 2020, the new Bahamas Coral Reef Report Card was released by the Perry Institute. The Report Card was based on AGRRA data from >250 surveys over the 5 year period 2015 to 2019, and provides an overview on key health indicators such as coral cover, macroalgal overgrowth, and key fish species²⁷. It also focused on recent impacts such as Hurricane Dorian and Stony Coral tissue Loss Disease (Table 15).

²⁶ Coral reef data collected over the period 2015 to 2019²⁶ showed a shift from coral covered reefs, to reefs increasingly covered with sea weeds that rapidly take over when coral die, preventing corals from re-establishing colonies. Average coral cove on surveyed reefs was found to be 11%. Macroalgal cover was found to have increased on coral reefs in the Bahamas to levels of between approximately 24% (Long Island) and 57% (Abaco and Grand Bahama). The main stressors causing coral reef degradation were identified as, coral bleaching due to climate change, disease, hurricanes, and chemical and nutrient pollution.

²⁷ AGRRA (2020). The Bahamas Coral Reef Report Card Volume 2: 2015 – 2019. Source URL: <https://www.agrra.org/wp-content/uploads/2020/08/Bahamas-Coral-Reef-Report-Card-2020.pdf>.

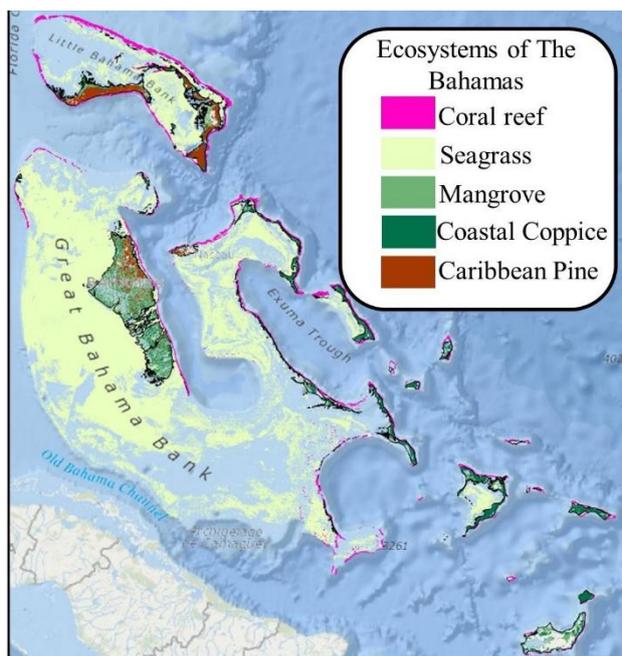


Figure 3: Figure 4: Major coastal, nearshore, and marine ecosystems of The Bahamas (Source: Silver, J.M. et al, 2019).

The extent, status and function of mangroves and seagrass beds have been assessed and documented under a range of studies and projects.^{28, 29, 30} The FAO Global Forest Resources Assessment Report - Bahamas Country Profile (2005) provided data on trends in mangrove area extent for 1980, 1990, 1991, 2000, and 2005.³¹ The FAO Global Forest Resources Assessment Report -The Bahamas (2020) provided data on total national mangrove cover (extent), characteristics, and changes, in 1990, 2000, 2010, 2015, 2020³². These reports, along with the findings of localized studies, provide a reference baseline for future assessments.

Table 15: The Bahamas Reef Health Index (Source: AGRR, 2020)							COMMENTS
LOCATION	BENTHIC	CORAL CONDITION	CORAL DISEASE	RECRUITMENT	LARGE PARROT FISH	GROUPEr	
Abaco	Yellow	Green	Green	Red	Green	Green	Majority of reefs had below average index scores. Two reefs with highest live coral cover in the country.
Andros	Green	Green	Yellow	Green	Blue	Green	Over 75% scored above average. Higher than average prevalence of disease.

²⁸ NCP (2017). Economic Valuation of Ecosystem Services in Bahamian Marine Protected Areas. Pg. 87. <https://brief.org/wp-content/uploads/2020/02/Economic-Valuation-Report.pdf>.

²⁹ AGRR (2020). The Bahamas Coral Reef Report Card Volume 2: 2015 – 2019. Source URL: <https://www.agrra.org/wp-content/uploads/2020/08/Bahamas-Coral-Reef-Report-Card-2020.pdf>

³⁰ Gallagher, A. J. et al (2022). Tiger sharks support the characterization of the world’s largest seagrass ecosystem. *Nat Commun* **13**, 6328 (2022). Source: <https://www.nature.com/articles/s41467-022-33926-1>.

³¹ FAO (2005). Global Forest Resources Assessment 2005. Thematic Study on Mangroves. Bahamas Country Profile. Forestry Department. Food and Agricultural Organization of the United Nations. Source: <https://www.fao.org/forestry/9179-045cf77fac860abf017c6833a248e7843.pdf>.

³² FAO (2020). Global Forest Resources Assessment 2020: Main report. Rome. <https://doi.org/10.4060/ca9825en>.

Table 15: The Bahamas Reef Health Index (Source: AGRRA, 2020)							
LOCATION	BENTHIC	CORAL CONDITION	CORAL DISEASE	RECRUITMENT	LARGE PARROT FISH	GROUPER	COMMENTS
Conception Is.	Good	Fair	Good	Impaired	Fair	Fair	Highest Index score. Remote area. Under national park protection. Limited enforcement. High coral recruitment.
Cat Is.	Impaired	Fair	Good	Impaired	Good	Good	Sites off Cat Island had above average scores for reef condition, but higher than average rates of disease, and low coral cover.
Western Bahamas	Poor	Good	Good	Poor	Impaired	Impaired	Lowest overall index scores. Impacts of decades of commercial dredging. High and cyanobacteria and turf algae mats.
Eleuthera	Poor	Fair	Good	Impaired	Impaired	Fair	Had one site that ranked among the top sites in coral cover and health, 90% of sites had below average benthic index rankings, primarily due to low coral and high macroalgae cover.
Exuma Cays	Good	Good	Good	Good	Good	Fair	Well protected, no-take, national park. Low levels of development, resulting in healthiest reefs, with the highest live coral coverage and grouper biomass, as well as the lowest macroalgae abundance of any area.
Great Exuma	Impaired	Fair	Good	Poor	Fair	Fair	Surveyed reefs were all within the Moriah Harbour Cay National Park. All sites exhibited above-average coral condition and coral cover, as well as below average macroalgae.
Grand Bahama	Impaired	Impaired	Impaired	Poor	Good	Impaired	60% of reefs received index scores of poor or impaired. Majority of reefs had below average benthic index scores.
Long Island	Good	Fair	Good	Impaired	Impaired	Fair	Reef condition off Long Island was above average but exhibited below average scores of coral cover and high levels of disease.
New Providence and Rose Island	Impaired	Impaired	Good	Good	Impaired	Good	Reefs were generally below average.

KEY:	POOR	IMPAIRED	FAIR	GOOD
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Section 18. Information Gathering of the Fisheries Act (2020)³³, charges the Director of the Department of Marine Resources³⁴ with the responsibility of collecting information relating to fisheries resources by means of surveys, questionnaires, or any other appropriate means for the purpose, inter alia, of; conduction marine scientific research, creating an inventory of data,

³³ Source : <https://img1.wsimg.com/blobby/go/3cc51733-d4fe-4572-b5fa-01fb8ab0ebdb/downloads/Fisheries%20Act%202020.pdf?ver=1655850445264>

³⁴ The Mission of the Department of Marine Resources is the development of the fisheries sector through sustainable use and integrated management of the fishery resources, coastal zone, and the marine environment for the wellbeing of the Bahamian Environment.

formulating objectives, guidelines, and codes of conduct; and reporting on the state of the marine environment.

The status of The Bahamas fisheries and aquaculture sector has been characterised and assessed from a commercial perspective (production, landings, employment, exports). The FAO (2016) Fisheries and Aquaculture in the Bahamas – A Review Report³⁵ provides maps on, *inter alia*, seagrass distribution, conch habit, and designated fishing areas. The FAO (2018) Global Fish Market Profile for the Bahamas³⁶ provides production statistics for the top ten (10) fished species in Tonnes, as well as statistics for the top ten exported species.

Tide data generated at the Settlement Point station, Grand Bahama (Lat 26.71, Long. -78.996667) is available for the period 1985 to 2001³⁷. Wave data is monitored and report by the designated “Station 41047 - NE BAHAMAS - 350 NM ENE of Nassau, Bahamas” (27.465 N 71.452 W) and “Station 41046 - EAST BAHAMAS - 335 NM East of San Salvador Is, Bahamas” (23.822 N 68.384 W)³⁸.

The Department of Meteorology has published mean and extreme values of climatic elements for the period 1991-2020, with data gathered at the Lynden Pindling international Airport³⁹.

Rainfall data is available for the period 1991 to 2020⁴⁰. The Caribbean institute of Meteorology and Hydrology (CIMH) makes available historical data and reports for the period 1971 to 2013⁴¹

Gaps:

During the assessment period, information on coastal water quality was not found.

Whereas data and information on Bahamian coastal resources are readily available on the websites of international and regional research organisations and NGOs, comparatively little information and data is available through GoBH websites and information portals. The absence of an accessible GoBH platform for the assembly, compilation, and display, of national coastal resource and ecosystem data suggests the absence of access to integrated data and information holdings for planning and decision making. This has been reflected in the difficulty that has been experienced identifying, characterising, or accessing information and data for this report. This also suggests a heavy reliance on extra-national entities to produce and share coastal resource information and data for management purposes. This may or may not be problematic if (a) specific national data and information needs for management and decision-making, coincide with priorities of the entities generating the data and information, and (b) this data and information is accessible and, in a form, needed (e.g., raw data as opposed to informational and statistical snapshots).

³⁵ The FAO (2016). Fisheries and Aquaculture in the Bahamas – A Review Report. Food and Agriculture Organization of the United Nations/Department of Marine Resources Nassau, The Bahamas. Source: <https://www.bahamas.gov.bs/wps/wcm/connect/e1d636dd-1a9b-4661-9e38-ba9bf546a534/FINAL+Bahamas+Fisheries+%26+Aquaculture+Sector+Review+17Nov16.pdf?MOD=AJPERES>

³⁶ The FAO (2018). Global Fish Market Profile for the Bahamas. Source. <https://www.fao.org/3/cc5515en/cc5515en.pdf>.

³⁷ NOS - PSMSL (2023). National Oceanographic Centre, Permanent Service for Mean Sea Level. Settlement Point, The Bahamas. Source: <https://psmsl.org/data/obtaining/stations/1646.php>.

³⁸ NOAA (2023). National Data Bouy Centre. Station 41046 - EAST BAHAMAS - 335 NM East of San Salvador Is, Bahamas. Source: https://www.ndbc.noaa.gov/station_page.php?station=41046.

³⁹ Department of Meteorology (2022). Source: <https://met.gov.bs/wp-content/uploads/2022/05/78073-MEANS-EXTREME-TABLE-OF-ELEMENTS-1991-2020.pdf>

⁴⁰ The World Bank (2023). Climate Change Knowledge Portal. Source: <https://climateknowledgeportal.worldbank.org/country/bahamas/climate-data-historical>

⁴¹ CIMH. Source: <https://rcc.cimh.edu.bb/caribbean-climatology/stations/bahamas/>

2B: Shared Information Platform

This indicator evaluates climate risk assessment in the context of ICZM, which requires information from multiple sources to ***come together for integration, unified display, and analysis***. Note that the emphasis here is on data and information integration, and presentation in a unified display, for the purpose of analysis and interpretation⁴². This indicator evaluates 17 criteria.

Table 16: Findings for Indicator 2B – Shared Information Platform		
Criteria	Finding	Score
1. An information hub or integrated information sharing platform exists supporting the management of coastal areas.	No	0
The Information Platform Includes:		
2. information on ecosystem extent and condition - both mapped location and data on condition for each of the following ecosystems (if present in the country) – coral reefs, mangroves, sea grass, salt marsh, other wetlands, sandy beach.	No	0
3. information on monitoring of coastal waters – all of the following: water quality, tidal range / storm surge / wave heights	No	0
4. information on land use and the built environment – including all of the following - location of roads, public infrastructure and public/private housings, wastewater treatment facilities, and energy facilities (if present in area)	Yes	1
5. information on shoreline areas with built coastal protection infrastructure present (such as sea walls, jetty, breakwater, etc.), as well as information on the condition on the infrastructure	Yes	1
6. information on permits for infrastructure construction and operation ⁴³	No	0
7. information on elevation in coastal areas ⁴⁴	Yes	1
8. projections of sea level rise ^{45, 46}	No	0
9. information on drainage system – both natural (rivers, creeks) and built (canals, culverts, etc.) if such features exist	No	0
10. information on land use zoning (for urbanized areas) ^{47, 48}	No	0

⁴² The Bahamas Natural Hazard Viewer provides an example of this type of functionality. Source: <https://marineapps.naturalcapitalproject.org/bahamas/>.

⁴³ EIA & EMP Guidelines. Source URL: <https://www.depp.gov.bs/eia-emp/>.

⁴⁴ BNGIS Digital Elevation Models (DTM), and coastlines information for, New Providence, Bimini, Cat Island, Long Island, Eleuthera, Exuma.

⁴⁵ GoBH (2014). Bahamas Second National Communication: “Modelling of future Climate Change and Sea Level Rise for The Bahamas involved the creation and/or generation of climate change and sea-level rise scenarios, appropriate global circulation models, (from the IPCC Special Report on Emission Scenarios (SRES)) greenhouse gas, other emission scenarios and the interpretation of results. This component also allowed for input of country-specific or site-specific data to The Bahamas’ SimCLIM system”. Pg. 22, Par. 5; Pg. 33 -34.

⁴⁶ IDB (2020). Disaster Risk Profile of The Bahamas. Inter-American Development Bank, Technical Note No. IDB-TN-02018. Pg. 155. Source URL: <https://publications.iadb.org/publications/english/document/Disaster-Risk-Profile-for-The-Bahamas.pdf>.

⁴⁷ Town Planning Zoning (No. 2) Order (2008). Source URL: https://laws.bahamas.gov.bs/cms/images/LEGISLATION/SUBORDINATE/2008/2008-0007/TownPlanningZoningNo.2Order2008_1.pdf.

⁴⁸ Planning and Subdivision Act (2010). https://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/2010/2010-0004/PlanningandSubdivisionAct2010_1.pdf.

Table 16: Findings for Indicator 2B – Shared Information Platform		
Criteria	Finding	Score
11. information on marine zoning ⁴⁹ / marine protected areas ⁵⁰ / fisheries management areas.	Yes	1
12. information on shoreline change – including all the following: coastal erosion; change in beach profile; shifting of the coastline	No	0
13. information on proposed coastal development (applications pending approval, including preliminary design information which contains type of development, proposed location, and building footprints)	No	0
14. information on past flooding in coastal areas (extent and date)	No	0
15. information on estimates of damage from past storms (for at least one storm event) ^{51,52,53}	No	0
16. information on ecological impacts in coastal areas (such as algal blooms, fish kills, marine mammal strandings)	No	0
17. The system includes some projections related to climate change (at least one of the following - projections of temperature, changes in storm intensity, change in intensity and frequency of precipitations, or probabilities of loss due to future hazards) ⁵⁴	No	0
TOTAL	4/17	0.23

The Bahamas currently delivers four (4) of the 17 criteria for a score of 0.23. In this assessment a distinction was made between information hubs, and data and information holdings developed, owned, and managed by extra-national actors, and those holdings developed, owned, and managed by the Government of the Bahamas (GoBH).

Interpretation of Results:

In this assessment a distinction was made between information hubs, and data and information holdings developed, owned, and managed by extra-national or non-governmental actors, and those holdings developed, owned, and managed by the Government of the Bahamas (GoBH).

Immediate access to, and ownership, of the source datasets needed to establish the thematic coverages and to generate queries, synthesis data and information, and generate reports in data hubs, was used to distinguish between GoBH ownership, and other ownership. Ownership, by extension, was interpreted as an indicator of, or proxy for, the presence of the specialist skills-sets required to collect, compile, analyse, interpret, and present the ICZM data, in an integrated and unified display, as client accessible, ICZM policy-relevant, information.

⁴⁹ Archipelagic Waters And Maritime Jurisdiction Act (2001) defines, and make provisions for, the ocean and coastal spaces: archipelagic waters, territorial sea, internal waters, Exclusive Economic Zone, and sea lanes. Source URL: https://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/1993/1993-0037/ArchipelagicWatersandMaritimeJurisdictionAct_1.pdf.

⁵⁰ Protected Areas Register. Source URL: <https://bahamasprotected.com/protected-areas/register/>.

⁵¹ UN-ECLAC/ IDB (2020). Assessment of the Effects and Impacts of Hurricane Dorian in the Bahamas (<https://publications.iadb.org/publications/english/document/Assessment-of-the-Effects-and-Impacts-of-Hurricane-Dorian-in-the-Bahamas.pdf>).

⁵² UN-ECLAC/ IDB (2017). Assessment of the Effects and Impacts Caused by Hurricane Irma in the Bahamas (<http://dx.doi.org/10.18235/0002617>).

⁵³ IDB (2021). The Macro-Economic Effects of Hurricanes in The Bahamas (<http://dx.doi.org/10.18235/0003602>).

⁵⁴ IDB (2020). Disaster Risk Profile of The Bahamas. Inter-American Development Bank, Technical Note No. IDB-TN-02018. Pg. 155. Source URL: <https://publications.iadb.org/publications/english/document/Disaster-Risk-Profile-for-The-Bahamas.pdf>.

The assessment attempted to determine the ICZM-related data holdings that the BNGIS was mandated to retain and manage; the actual ICZM-related data and information holdings, and thematic coverages, that reside in the BNGIS; and whether or not the various ICZM-related data and information holdings, and thematic coverages, were compiled and integrated in a unified display, for interpretation, review, and analysis for ICZM.

A GoBH information hub does exist in the form of the BNGIS. However, the assessment found that a wider range of information, data, and thematic coverage relevant to ICZM exists, but that this material is held in separate or and data/information management systems, by a range of GoBH, NGO, research, and private sector actors with ICZM interests. For this reason, the assessment determined that the BNGIS did not appear to function as an integrated information sharing platform supporting the management of coastal areas. This was confirmed by feedback from the BNGIS representative on the 21-SEP-22 Technical Advisory Committee (TAC) Meeting consultations and subsequent responses to a follow-up questionnaire. The BNGIS a representatives advised that they were not aware of inventories of coastal resources (ecosystems: coral reefs, sea grass beds, mangroves, offshore banks, beaches, etc.)? This was taken as indicating that the BNGIS does not hold such data coverages. The assessment finding was therefore “No” and the score “zero” (Table 16, Question 1). For all subsequent questions, the finding “No” was reached, if the information or data specified did not reside with the BNGIS in a compiled and integrated format, presented in a unified display, for interpretation, review, and analysis in support of ICZM. Where data or information was held by ICZM actors other than the BNGIS, this was confirmed and referenced in the footnotes.

The overall assessment suggests that a number of the ICZM-related data and information elements necessary to inform effective resilient ICZM are in place. However, the dispersed nature of the data and information holdings, and thematic coverages, would make, integration, interrogation, synthesis, cross-referencing, interpretation, for demonstration, decision making and communications, changing and time consuming.

Achievements:

The [Bahamas Spatial Data Infrastructure Act, 2014 \(No. 9 of 2014\)](#): The Act governs the system of geospatial data collection and storage in the Bahamas. It establishes the Bahamas National Geographic Information Systems Centre as a department of government within article 127(c) of the Constitution; to:

- define the special purposes and functions of the department.
- establish the Bahamas Spatial Data Infrastructure System and Program and the Geospatial Advisory Council.
- define the functions and objectives of the system, the program, and the Council and for connected matters.

Under the Act, the National Geographic Information System Centre (the Centre) is designated to play a critical strategic function:

- Serving as the Government's technical focal point for the collection and management of geospatial data on The Bahamas, and
- Ensuring that the Bahamas Spatial Data Infrastructure (BSDI) *assists policymaking in relation to policies and activities that may have a direct or indirect impact on the environment.*

The first Schedule (Section 5(Q)) of the Bahamas Spatial Infrastructure Act (2014) 45 Spatial Data Themes that the BNGIS is mandated to hold. Of the forty-five (45) spatial data themes, eighteen (18)

can be considered to be directly relevant to ICZM⁵⁵, and nine (9) of these spatial data themes are relevant to DRM and CCA. In addition, there are another eleven (11) spatial data themes that are directly relevant to disaster risk management and climate change adaptation planning⁵⁶.

The BNGIS was unable to confirm whether there is an inventory, or thematic coverages for, natural coastal resources such as, coral reefs, sea grass beds, mangroves, offshore banks, beaches.

Stakeholders confirmed that BNGIS holds the following ICZM-related data sets:

- Digital Terrain Models (DTM), coastlines, buildings for only *New Providence, Bimini, Cat Island, Long Island, Eleuthera, Exuma*.
- Data sets specific to *Andros* were identified as: coastline, coastal features, coastal infrastructure, various flora, and fauna datasets.

Stakeholder feedback indicated that the BNGIS has engaged with extra-national, NGO, and private sector, data clients to acquire data sets. Stakeholders advised that datasets for Andros Island were obtained from the Nature Conservancy, SEV Consulting Group, IDB National Capital Project and GEF-IWACAM Project.

There are data and information holdings, relevant to ICZM held by GoBH ministries, departments, and agencies (MDAs) other than BNGIS and by research NGOs. These entities are:

- Perry Institute of Marine Science (PIMS) <https://www.perryinstitute.org/>,
- Bahamas Reef Environment Educational Foundation (BREEF) <https://breef.org/>,
- Bahamas National Trust – BNT (<https://bnt.bs/>),
- Coral Gene Bank,
- GenBank (<https://www.ncbi.nlm.nih.gov/nuccore/?term=Bahamas>)
- Atlantis,
- The Nature Conservancy – TNC (<https://www.nature.org/en-us/about-us/where-we-work/caribbean/bahamas/>)
- Department of Marine Resources – DMR⁵⁷
- Department of Environment Planning and Protection – DEPP (<https://www.depp.gov.bs/>).

The Bahamas Natural Hazard Viewer⁵⁸ is an example of a an integrated, ICZM-related, data hub, accessible to the public, which compiles and integrates information from multiple sources in a unified

⁵⁵ Spatial Date Themes Relevant to ICZM include: biological resources, coastal and marine sensitivity mapping, elevation, bathymetric and terrestrial, hydrography, shoreline, transportation network (marine), vegetation, watershed boundaries, wetlands, offshore mineral reserves, land ownership status, international boundaries, land use (existing and proposed and zoning), scientific research, agriculture and aquaculture facilities, oceanographic geographic features, protected areas (marine and terrestrial), and biogeographic regions.

⁵⁶ Spatial Date Themes Relevant to DRM and CCA include buildings and facilities, climate & meteorological geographical features, elevation bathymetric & terrestrial, flood hazard and natural risk zones, addresses, electoral boundaries, housing, transport networks (terrestrial, air, and marine), aviation infrastructure, public health, census, and statistical units (demographic and population distribution, and socio-economic statistics), energy resources.

⁵⁷ DMR webpage URL: https://bahamas.gov.bs/wps/portal/public/marine/DOMR!/ut/p/b1/04_Sj9CPykssy0xPLMnMz0vMAfGjzOIDnQwCg30sjR0NPN2MDTxDjAMNvS2MDf3NDYAKIoEKDHAARwNC-r30o9Jz8pOAVoXrR-FVHGQMvYDhMj-P_NxU_YLciMrggHRFADumAvw!/d14/d5/L2dBIS9nQSEh/

⁵⁸ Bahamas Natural Hazard Viewer. Source : <https://marineapps.naturalcapitalproject.org/bahamas/>

display, for interpretation, review, and analysis. The hub makes the results of the **National Coastal Hazard and Social Vulnerability Analysis of the Bahamas** accessible to the public and decision-makers through the online platform.

Stakeholders advised that the development of an ICZM interface or hub within the BNGIS framework would be dependent on the needs and wants of the ICZM lead-agency and stakeholders. This guidance would be an output of a dedicated, participatory, strategic planning process, involving all stakeholders, including, *inter alia*, GoBH ministries, departments, and agencies (MDAs), private sector organisations and actors, local and international NGOs, civil society, development partners, Bahamas Based and international research institutions.

Gaps:

Based on feedback from a BNGIS stakeholder to the 21-SEP-22 TAC questionnaire, it was confirmed that there is:

“... not a hub or integrated information sharing platform that exists specifically for the management of coastal areas.”

Further guidance was provided as follows:

“There may be NGO’s that have hubs that house information that can support the management of coastal areas. There is also the BNGIS Portal which is slated to launch in the near future that may house some geospatial information that can support the management of coastal areas.”

2C: Climate Vulnerability and Risk Assessment

Understanding risks posed by climate hazards across the islands and seascape of The Bahamas’ archipelago is an important step toward being able to manage for climate-associated vulnerabilities.

This indicator reflects the understanding that coastal ecosystems play a protective role, performing ecosystem-based-adaption function, when healthy. This indicator assess whether data from coastal ecosystems was considered in climate vulnerability and risk assessment studies. Relevant factors in this indicator assessment exercise include:

- a) who conducted the analysis;
- b) which climate hazards are included;
- c) which sectors are included;
- d) whether all priority/critical areas are covered;
- e) whether national/local climate data is used; and
- f) whether multiple climate change scenarios/projections are incorporated.

This indicator has seven criteria (Table 17).

Table 17: Findings for Indicator 2C: Climate Variability and Risk Assessment (VRA)			
Criteria	Assessed Element	Findings	Score
1. At least one climate VRA is available for	National ⁵⁹ New Providence	Yes	1

⁵⁹ IDB (2020). Disaster Risk Profile of The Bahamas. Inter-American Development Bank, Technical Note No. IDB-TN-02018. Pg. 155. Source URL: <https://publications.iadb.org/publications/english/document/Disaster-Risk-Profile-for-The-Bahamas.pdf>. Pgs. 63 – 88.

Table 17: Findings for Indicator 2C: Climate Variability and Risk Assessment (VRA)			
Criteria	Assessed Element	Findings	Score
the country or pre-identified priority/critical area.	Grand Bahama Long Island Andros Island ⁶⁰ Grand Bahama Abaco		
2. Has data from the following ecosystems been included in climate VRA assessment studies? ⁶¹	Map of Coral reefs ^{62, 63}	Yes	1
	Map of Mangroves	Yes	1
	Map of wetlands	Yes	1
	Map of Sand dunes	Yes	1
3. Please indicate which of the following hazards have been evaluated in the VRA.	Coastal flooding	Yes	1
	Fluvial flooding	No	0
	Damage from wind	Yes	1
	Temperature stress (e.g., coral bleaching)	Yes	1
	Coastal erosion	Yes	1
	Landslides	No	0
4. Please indicate which of the following economic sectors have been evaluated for its climate-related vulnerability (sectors which are not relevant for the area can be marked "N/A" - "not applicable") ⁶⁴ :	Coastal Development	Yes	1
	Tourism ⁶⁵	Yes	1
	Agriculture	Yes	1
	Fisheries and Aquaculture	Yes	1
	Energy	Yes	1
	Water and Waste Water	Yes	1
	Cultural Assets	No	0
	Marine transportation	Yes	1
5. Please indicate which of the following factors relevant for climate vulnerability were evaluated in the VRA (factors which are not relevant can be marked "N/A" - "not applicable"):	Economic factors (wealth and poverty levels)	Yes	1
	Environmental Factors (ecosystems/Natural Capital)	Yes	1
	Demographic Characteristics (age distribution, disability, gender, ethnicity)	Yes	1
	Social factors (education, literacy, phone ownership, access to internet)	No	0

⁶⁰ Wyatt, K. H. et al (2021). Integrated and Innovative Scenario Approaches for Sustainable Development in the Bahamas Source. *Ecology & Society*. Vol. 26, No. 4, Art. 23 URL: <https://www.ecologyandsociety.org/vol26/iss4/art23/>

⁶¹ Wyatt, K. H., K. K. Arkema, S. Wells-Moultrie, J. M. Silver, B. Lashley, A. Thomas, J. J. Kuiper, A. D. Guerry, and M. Ruckelshaus. (2021). Integrated and innovative scenario approaches for sustainable development planning in The Bahamas. *Ecology and Society* 26(4):23. URL: <https://www.ecologyandsociety.org/vol26/iss4/art23/>.

⁶² Natural Capital project (2019). A national Coastal Hazard and Social Vulnerability Analysis for the Bahamas. Source URL: <https://marineapps.naturalcapitalproject.org/bahamas/docs/Bahamas>.

⁶³ National Capital Project. Innovations in Climate Resilient Coastal Zones (The Bahamas). Source URL: <https://naturalcapitalproject.stanford.edu/projects/innovations-climate-resilient-coastal-zones-bahamas>.

⁶⁴ GoBH (2014). Second National Communication of the Commonwealth of the Bahamas Under the United Nations Framework Convention on Climate Change. Chapter 4, Pg. 109 -153. Source URL: <https://unfccc.int/sites/default/files/resource/bhscnc2.pdf>

⁶⁵ IDB (2020). Disaster Risk Profile of The Bahamas. Inter-American Development Bank, Technical Note No. IDB-TN-02018. Pg. 155. Pg. 127. Source URL: <https://publications.iadb.org/publications/english/document/Disaster-Risk-Profile-for-The-Bahamas.pdf>.

Table 17: Findings for Indicator 2C: Climate Variability and Risk Assessment (VRA)			
Criteria	Assessed Element	Findings	Score
	Public service provision (drinking water, trash-pickup, shelters, cooling-centres)	Yes	1
	Construction materials	Yes	1
6. Please indicate which of the following parameters were included in the VRA (if not relevant, mark "N/A" - "not applicable") ⁶⁶ :	Projected change in temperature, including intensity and duration of extreme heat events	Yes	1
	Projected change in precipitation and precipitation variability	Yes	1
	Projected change in frequency and intensity of storm events	Yes	1
	Exploration of thresholds – Examining past impacts in coastal areas (such as floods or coral bleaching) in conjunction with the temperature and precipitation conditions at the time	Yes	1
7. The climate VRA evaluates different possible futures by doing the following ⁶⁷ :	Using multiple climate projections (such as for multiple emissions scenarios, such as RCP 4.5 and RCP 8.5)	Yes	1
	Using projections from multiple models (either through comparing results from more than one climate model, or through using the mean value from an ensemble of models)	Yes	1
TOTAL		27/31	0.87

The Bahamas scored 27 of the 31 factors under seven criteria for a score of 0.87.

Interpretation of Results:

Achievements:

The Bahamas has made good strides in establishing partnerships and collaborations for the purpose of evaluating risks driven by a range of climatic factors. A number of the assessments have considered the role of ecosystems in climate change risk reduction and ecosystems-based adaptation and considered the impact of climate change on these coastal ecosystems and the disaster risk reduction services that they provide.

A National Coastal Hazard and Social Vulnerability Analysis for The Bahamas was developed under the Natural Capital Project. The study predicted as tripling of storm-related damage if protective ecosystems such as coral reefs and mangrove forests are degraded or lost. The online viewer allows users to explore results from the coastal hazard and social vulnerability analysis for The Bahamas including the coastal hazard index and associated metrics (A). Several different overlays are included: demographic information (on the SOCIAL tab) (B), a map of existing natural habitats (D), and

⁶⁶ GoBH (2014). Second National Communication of the Commonwealth of the Bahamas Under the United Nations Framework Convention on Climate Change. Chapter 4, Pg. 109 -153.

⁶⁷ GoBH (2014). Second National Communication of the Commonwealth of the Bahamas Under the United Nations Framework Convention on Climate Change. Chapter 4, Pg. 115 -116.

information about recent damages on New Providence during Hurricane Matthew (D). Resources and methodology are also included on the RESOURCES tab (C).

Gaps:

Partnerships with extra-national NGOs and research institutions helps to address the challenges that many of the smaller SIDS face in terms of limited specialist human resource capacity, and limited funding for ICZM. Explicit strategic consideration should be given to the specific national human resource and technical capabilities in ICZM, that the GoBH should develop, in the interest of prioritising and delivering on national aspirations, vis-à-vis the capabilities that should be outsourced.

The tracking and coordination of project-driven initiatives by a dedicated GoBH MDA, is a strategically important undertaking, required to ensure and confirm that thematic project agendas are aligned with national objectives for resilient sustainable development; that inter-project trade-offs are minimised, and potential synergies are maximised; lessons learned and good practices inform the design of future projects and national development initiatives; and that data and information is collated, synthesised, interpreted, and reported and shared⁶⁸.

2D. Timeliness of Data and Assessments

This indicator evaluates the timeliness (recentness) of data and assessments focused on the coastal zone and climate risks; whether these are routinely updated and whether monitoring equipment is maintained. This indicator consists of a total of six ranking criteria (Table 18).

Table 18: Findings for Indicator 2D: Timeliness of Data and Assessments		
Criteria	Findings	Score
1. The entity/ies responsible for data collection on coastal environmental condition maintain or replace equipment periodically (checked at least every two years).	Yes	1
2. Early warning systems for coastal flooding are in place and are checked at least annually by the responsible entity/ies ⁶⁹ .	Yes	1
3. Satellite (or other data) are used to revise coastal ecosystem maps periodically (at least one habitat, such as coral reefs or mangroves updated within the past 5 years).	No	0
4. The responsible entities update climate VRA periodically (within the past five years) and make these publicly available.	No	0
5. The responsible entities update coastal ecosystem assessments (such as a state of the coast report) periodically (within the past five years) and make these publicly available ^{70,71}	No	0

⁶⁸ The Planning Institute of Jamaica (PIOJ) provides an example of a publicly accessible project/programme tracking faciality (<https://www.pioj.gov.jm/development-partnerships/projects-and-programmes/>). The Jamaica Climate Change Adaptation and Mitigation Project Matrix (PIOJ, 2021) reports on 78 grant- and loan-funded projects that have been implemented since 2007 or are in the process of being implemented. The PIOJ is developing and coordinating a monitoring and evaluation programme for adaptation projects and economic sectors, which will assist in the resource mobilisation process, through the identification of specific adaptation needs and priorities, and well as barriers, gaps, bottlenecks in adaptation practice.

⁶⁹ Early Warning System Survey. Source URL: <http://bvs.desastres.hn/geeklog/docum/crid/AlertaPerspectiva/pdf/eng/DocsTmps/doctmp13.pdf>.

⁷⁰ UNEP (2003). State of the Environment Report – GEO Bahamas. Source URL: <https://www.unep.org/resources/report/state-environment-report-geo-bahamas>.

⁷¹ BNT (2021). State of the Environment: Post Hurricane Dorian Report. Source URL: <https://bnt.bs/wp-content/uploads/2021/12/State-of-the-Environment-Post-Dorian-Report-2021-1.pdf>.

Table 18: Findings for Indicator 2D: Timeliness of Data and Assessments		
Criteria	Findings	Score
6. The responsible entities update coastal ecosystem economic valuations periodically (within the past five years) and make these publicly available.	No	0
TOTAL	2/6	0.33

The Bahamas currently delivers two (2) of the 6 criteria for a score of 0.33.

Interpretation of Results:

Achievements:

Meteorological and tidal monitoring equipment, and early warning is monitored and maintained on regular basis by the National Meteorological Service. The Bahamas Department of Meteorology, through its website⁷² provides weather alerts, public and marine forecasts⁷³, temperature and rainfall outlooks, and tide tables.

Gaps:

To the extent that much of the research conducted on the coastal resources of The Bahamas is project driven, the updating of satellite imagery for coastal ecosystem maps tends not to be scheduled by GoBH or periodic, but rather, by the owners of the platforms or hubs. A similar situation would maintain for coastal ecosystem economic valuation.

VRA studies may be made publicly available, but because they tend to be project driven, they successive VRAs may be complimentary rather than updating previous studies.

The World Banks Climate Knowledge Portal provides country profiles on climate projections, vulnerability, trends, and extremes via a portal accessible to the public⁷⁴.

3.3. Category 3: Identifying Adaptation Opportunities and Protecting Investments

This category focuses on evaluating the extent to which:

- a) good information on coastal ecosystem conditions and climate-related hazards, is combined with.
- b) broad stakeholder input,

is being used to inform key policies, plans and actions to implement the upfront investments in reducing climate-related risk in coastal areas.

This category looks at the degree to which data on climate risks has been translated into appropriate risk-mitigation actions and whether some of the key skills required to do this are present. It also looks at whether monitoring of coastal infrastructure occurs – to protect investments made in both built and natural infrastructure.

⁷² The Bahamas Department of Meteorology website at <https://met.gov.bs/>.

⁷³ Bahamas 3-day Marine Forecast: Source URL: <https://met.gov.bs/wp-content/uploads/2022/03/BAHAMAS-3-DAY-MARINE-FORECAST-FOR-12AM-21.11.22-AC.pdf>.

⁷⁴ World Bank, Climate Change Knowledge Portal, The Bahamas: Source URL (<https://climateknowledgeportal.worldbank.org/country/bahamas/trends-variability-projections>).

Overview of Category Results

Three indicators were assessed under this category, with The Bahamas receiving an average score of 0.73 (see table 19 below).

The Bahamas performs well on two indicators - the identification of ICZM-related responses to climate change and possession of skills and experience to interpret vulnerability and risk assessment (VRA) results for coastal areas and turn these into operationalizable actions. The country, however, falls short on indicator 3, monitoring and protecting Investments in infrastructure.

		Average Category Score	Individual Category Scores
	Table 19: Identifying Adaptation Opportunities and Protecting Investments	0.73	
A	Identifying ICZM-related Responses to Climate Change		1.0
B	Skills and Experience Developing and Evaluating Adaptation Solutions		1.0
C	Monitoring and Protecting Investments in Infrastructure		0.2

3 A. Identifying ICZM-related Responses to Climate Change

Once information is available on climate risks, actions need to be identified that can most effectively help reduce these risks and prepare for a changing climate⁷⁵. This indicator looks at the degree to which the government has been able to identify appropriate responses to reduce climate-related risk in coastal areas. This indicator has three criteria (Table 20).

Table 20: Findings for Indicator 3 A - Identifying ICZM-related Responses to Climate Change.		
Criteria	Findings	Score
1. Specific actions for responding to climate-related risks in the coastal zone have been identified and listed in one or more national plan (e.g., in national development plans, ICZM plan, National Adaptation Program of Actions, National Adaptation Plan or Nationally Determined Contributions).	Yes	1
2. Potential actions to reduce climate-related risk have been prioritized with consideration of where climate impacts will be most severe (geographically) and who among the country's population is the most vulnerable, as identified in the climate VRA.	Yes	1
3. In developing actions to reduce climate-related risk in coastal areas, ecosystem-based adaptation options (e.g., restoration or protection of ecosystems providing natural infrastructure) have been evaluated (in at least one of the proposals in the last three years).	Yes	1
TOTAL	3/3	1

⁷⁵ CCCCC (2013). Caribbean Climate Online Risk and Adaptation Tool. Source URL: <https://climatechange.gov.gy/en/index.php/resources/documents/1-climate-online-risk-and-adaptation-tool-brochure/file>.

The Bahamas currently achieves three (3) of the three (3) criteria under this indicator for a score of 1.0.

Interpretation of Results:

Achievements:

Actions to respond to climate-related risks are proposed in the Bahamas Second National Communication to the UNFCCC in the Section on Adaptation Measures, Strategies and Options⁷⁶. The Draft National Development Plan of the Bahamas⁷⁷ systematically elaborates intended adaptation actions through goals, strategies, and supporting actions. Specific adaptation actions, are defined through the intended outputs, outcomes, responsible agents, time frame and level of impact.

Gaps:

From an ICZM perspective, the adaptation actions that are defined in the Draft National Development Plan of the Bahamas are ICZM related and should be considered in detail when the task of developing the ICZM mission and mandate for a designated ICZM MDA is undertaken, and the ICZM policy and enabling framework are being designed.

3 B. Skills and Experience Developing and Evaluating Adaptation Solutions

A variety of technical skills are required to interpret VRA results for coastal areas and turn these into operationalizable actions, such as restoring mangroves to reduce wave energy. Some of these requirements are commonly outsourced to engineering or consulting firms. There are, however, some core skills which are valuable either for understanding and applying the technical specification of consultant or engineering reports, or for developing comparisons of project options. This indicator looks at evaluating skills and experience on this topic. This indicator has a total of five ranking criteria (Table 21).

Table 21: Findings for Indicator 3 B - Skills and Experience Developing and Evaluating Adaptation		
Criteria	Findings	Score
1. Conducting or evaluating environmental impact assessments (based on the national standards /regulations if such exist)	Yes ⁷⁸	1
2. Conducting or evaluating reports on ecosystem service valuation ⁷⁹	Yes	1
3. Conducting or evaluating cost-benefit analysis (as a tool for comparison of options) - based on the national standards / regulations, if such exist	Yes	1
4. Conducting or evaluating studies on effectiveness of natural infrastructure (Green infrastructure solutions)	Yes	1

⁷⁶ GoBH (2014). Second National Communication of the Commonwealth of the Bahamas Under the United Nations Framework Convention on Climate Change. Chapter 4, Section 4.6, Pg. 142-153. Thematic areas addressed were, water resources, forests, tourism; financial, technical, and human resources; coastal zones, agriculture, human health, settlements and infrastructure, and energy. Climate threats considered, included, sea level rise, ocean acidification, decreased rainfall, increased temperature, tropical storms and hurricanes, storm surges, and coastal erosion.

⁷⁷ GoBH (2016). The Draft National Development Plan of the Bahamas. Pgs. 291-

⁷⁸ DEPP EIA & EMP Guidelines. URL: <https://www.depp.gov.bs/eia-emp/>.

⁷⁹ Economic Valuation of Ecosystem Services in Bahamian Marine Parks. Prepared for BREEF by the Natural Capital Project, Stanford university. Source URL: https://naturalcapitalproject.stanford.edu/sites/default/files/publications/natcap_economicvalueofmarineprotectedareas_final_0.pdf.

Table 21: Findings for Indicator 3 B - Skills and Experience Developing and Evaluating Adaptation		
Criteria	Findings	Score
5. Conducting or evaluating analyses of coastal processes / dynamics	Yes	1
TOTAL	5/5	1

Belize achieved five (5) of five (5) criteria for a score of 1.0.

Interpretation of Results:

Achievements:

The Government of The Bahamas possesses the core skills which are valuable either for understanding and applying the technical specification of consultant or engineering reports, or for developing comparisons of project options.

The functions of the Ministry of the Environment (MoE) are defined in Section 4 of the Ministry of Environment Act (2019). The functions of the MoE include, *inter alia*,

- to provide the Government of The Bahamas, its agencies, and other public authorities with advice on procedures for the assessment and monitoring of environmental impacts;
- to set standards for collecting, storing, retrieving, analysing, and publishing environmental data
- to undertake, commission and coordinate environmental studies any research relating to the environment of The Bahamas, which involves the collection or manipulation of living resources for scientific investigation;

Section 5 of the Environmental Impact Assessment Regulations (2020) Mandates the Department of Environmental Planning and Protection (DEPP) with the responsibility for determining the necessity for project proponents to submit an environmental impact assessment (EIA) or environmental management plan (EMP).

The DEPP has the required skills and experience to manage the process of conducting and evaluating environmental impact assessment studies. The DEEP has posted EIAs and EMPs on its website (www.depp.gov.bs/eia-emp/).

The DEPP is also responsible for reviewing applications and issuing permits for academic research⁸⁰. As such the DEPP evaluates proposals and the research outcomes.

3 C. Monitoring and Protecting Investments in Infrastructure

Climate-resilient ICZM performance usually requires (green/conventional) infrastructure operations with a long-lasting life span (typically 25-40 years), and these require periodic monitoring and maintenance. This indicator evaluates the extent to which The Bahamas is monitoring and maintaining its green (natural) and grey (built) infrastructure. This indicator has five ranking criteria (Table 22).

⁸⁰ Department for Environmental Planning and Protection (DEPP) webpage for the academic research permits and permitting process: Source URL: <https://www.depp.gov.bs/research-permits/>.

Table 22: Findings for Indicator 3 C - Skills and Experience Developing and Evaluating Adaptation		
Criteria	Findings	Score
1. Standards and metrics exist for monitoring and evaluating the integrity of coastal infrastructure and operations and for upgrades or decommissioning.	Yes	1
2. The national entity responsible for ICZM undertakes periodic monitoring and maintenance work of existing conventional coastal infrastructure. (Monitoring at least every three years).	No	0
3. The national entity responsible for ICZM undertakes periodic monitoring of the natural (green) infrastructure which are or have been a subject of a coastal project to assess function and integrity. (Monitoring at least every three years).	No	0
4. Evaluating the effectiveness of built coastal protection investments – temporal data on storm conditions and storm surge / water height are combined with information on coastal flooding to evaluate the effectiveness of built coastal protection structures. (Evaluation conducted within the past 5 years) ⁸¹ .	No	0
5. Evaluating the effectiveness of natural (green) coastal protection investments – temporal data on storm conditions and storm surge / water height are combined with information on coastal flooding to evaluate the effectiveness of investment in green infrastructure (such as mangroves, coral reefs, sand dunes, etc.) (Evaluation conducted within the past 5 years).	No	0
TOTAL	1/5	0.2

The Bahamas achieved one (1) of five (5) criteria for a score of 1.0.

Interpretation of Results:

Achievements:

The Ministry of Public Works and Utilities (MoPU) is the GoBH implementing agency for the *Climate Resilient Coastal Management and Infrastructure Program (BH-L1043)*. The program's objective is to build resilience to coastal risks, including those associated with climate change, through sustainable coastal protection infrastructure, including natural infrastructure and integrated management of the coast.

Under the program a comprehensive assessment and comparative analysis will be undertaken of the contents of both The Bahamas Building Code (BBC) 2003 and other global standards. This assessment will include the International Code Council's International Building Code (IBC) 2018, considering their major strengths and weakness, opportunities, international best practices, and current legislative policies to determine and produce the most practical and efficient form of standards for use within the Commonwealth of The Bahamas⁸².

⁸¹ IDB (2020). Disaster Risk Profile of The Bahamas. Inter-American Development Bank, Technical Note No. IDB-TN-02018. Pg. 155. Pg. 127. Source URL: <https://publications.iadb.org/publications/english/document/Disaster-Risk-Profile-for-The-Bahamas.pdf>.

⁸² Bahamas Building Code Upgrade Incorporating Coastal infrastructure Design Guidance. Source URL: <https://connectamericas.com/business-opportunity/bahamas-building-code-upgrade-incorporating-coastal-infrastructure-design>.

This exercise will also produce an appropriate guidance standard that incorporates coastal climate hazard exposure and risk, design guidance for coastal infrastructure along with clarified inspection guidelines.

Gaps:

There are a number of MDAs and NGOs with ICZM-related mandates and responsibilities. However, these separately defined mandates are not discharged in an integrated and fully coordinated manner. In the absence of legislation designating a national entity with the mandated responsibility for ICZM, there is no “...national entity responsible for ICZM...” as posited for criteria 2 and 2 in Table 22.

In regards of the evaluation of natural and built infrastructure coastal protection, this type of exercise has been conducted at the national and island levels, at low levels of resolution. No information was accessed on structure or reach specific assessments.

3.4. Category 4: Financing ICZM

[3 pages in length]

This category focuses on evaluating whether there are adequate financial resources available to implement relevant ICZM activities. Funding sources for coastal management agencies vary by country, but sources of funding can include annual budget allocations, taxes, dedicated fees (e.g., for marine protected areas), maintenance funds, etc. ¹⁷ These domestic sources of financing can be complemented by external funds (e.g., from development finance institutions), most appropriately for capital investments.

Overview of Category Results

		Average Category Score	Individual Category Scores
	Table 23 - Indicator Scores for Category 4 - Financing ICZM	0.51	
A	Sustainable Funding for ICZM Operations.		0.2
B	Access to International Development Finance.		1.0
C	Financial Incentives and Schemes to Incentivize Private Sector and Individual Action.		0.33

4A. Sustainable Funding for ICZM Operations

Successful ICZM requires sustainable sources of financing to cover operating costs as well as capital investments. Adequate and predictable government financing is at the core of a permanent climate resilient ICZM Program. This indicator evaluates whether there are sustainable sources of financing available for ICZM. This indicator has five criteria (Table 24).

Table 24: Findings for Indicator 4 A – Sustainable Funding for ICZM Operations.		
Criteria	Findings	Score
1. ICZM regulatory framework includes strategy or policy for financing ICZM including an estimation of financial needs for successful ICZM studies, planning, implementation /maintenance, and M&E.	No	0

Table 24: Findings for Indicator 4 A – Sustainable Funding for ICZM Operations.		
Criteria	Findings	Score
2. Annual government budget contains a dedicated (not discretionary) line item to support operating costs of government entities responsible for implementing ICZM.	No	0
3. In the most recent fiscal year, the government (e.g., ministry of finance) disbursed the annual budget allocation to support operating costs of government entities responsible for implementing ICZM.	No	0
4. The government makes use of dedicated fees (e.g., for marine protected areas) to raise funding to support ICZM ⁸³ .	No	0
5. The government disbursed more than 50% of the dedicated fees collected in direct financial support to marine protected areas (MPAs) or to the ICZM agency during the most recent fiscal year ⁸⁴ .	Yes	1
TOTAL	1/5	0.2

The Bahamas achieved one (1) of the five criteria for a score of 0.2 (Table 24). Whereas there are government MDAs that have budgets for undertaking ICZM-related activities, neither the funding or the individual activities are viewed from a coordinated and integrated perspective, but rather from the usual siloed sectoral perspective.

Interpretation of Results:

Achievements:

A dedicated funding mechanism has not been established for ICZM. However, there are ICZM-related initiatives to ensure sustainable funding for specific aspects of coastal resources management. Under the Bahamas Protected Areas Fund a dedicated national conservation trust fund has been established to ensure that Bahamian marine parks are supported by a dedicated, sustainable, source of revenue to meet operating costs, programming, and research. The fund is governed by a Board of Directors made up of representatives from the Government and civil society, national, international, and local non-governmental organizations, research and scientific organizations and the private sector.

The Bahamas National Trust (BNT) is a science-based organisation dedicated to effectively managing national parks to conserve and protect Bahamian natural resources. Though not a government entity, the BNT secures an annual government subvention of US \$1.5 M to support ICZM-related conservation and management activities.

Under Part II, Section 8, of the Ministry of Environment Act (2019) an Environmental Administration Fund (EAF) to facilitate the collection and/or holding of developer' bonds; funds to support the imposition and collection of taxes, charges, or fees, payable into the EAF; the payment of a fine or penalty into the EAF.

The Act specifies that monies from the EAF shall be used, *inter alia*, for, environmental restoration; and incentive measures to reduce environmental pollution and conserve natural resources. The Act provides a degree of flexibility for what the EAF funds may be used for, stating that:

⁸³ It is the general case that, collected fees are remitted to the consolidated fund. Collected funds are not ring fenced.

⁸⁴ All fees collected go to the consolidated fund. Collected funds are not ring fenced. They are therefore not redistributed in a targeted fashion for ICZM or PA specific activities.

“Any monies in the Administration Fund may be designated for a specific purpose or made subject to a specific condition, and any money so designated shall be preserved and utilised solely for the designated purpose.”

Although no specific mention of ICZM is made in the Ministry of the Environment Act, it does appear that the flexibility exists for funds collected and held in either the Environmental Administration Fund (EAF) Environmental Trust Fund (ETF) to be collected for, and allocated to, agencies responsible for ICZM and/or for funding ICZM activities.

Section 14 of the Act makes the provision that “... Any monies deposited into the Trust Fund may be designated for a specific purpose or made subject to a specific condition, and any money so designated shall be preserved and utilised solely for the designated purpose”.

These purposes or uses include but are not limited to; the establishment of environmental programmes and projects; creating or installing software systems (e.g., and ICZM data hub).

It would appear therefore, that the five criteria indicating provisions for the sustainable funding of ICZM, could be met through the Ministry of Environment Act, if the legal and institutional arrangements for ICZM are formally approved.

It is the general case that, collected fees are remitted to the consolidated fund. Collected funds are not ring fenced. However, under Section 8 f. the Public Works Act, the use of certain fees is governed by the provision that “Where under any rules in force fees are levied in respect of the use of any public harbour, dock or wharf in any Out Island district, the Minister shall ensure that any sums so collected are expended on the maintenance of such harbour, dock or wharf”.

Under Part III, Section 10 of the Act, the Environmental Trust Fund (ETF) is established for the purpose of providing “... stable, adequate, secure and sustainable funding to finance the conservation and management of the environment of The Bahamas pursuant to the fulfilment of any international obligations”.

Gaps:

There are a number of MDAs and NGOs with ICZM-related mandates, responsibilities, and budgets. However, there is no legislation under which a dedicated ICZM regulatory and enabling framework has been defined and developed or designating a national ICZM-entity. By extension there is no

- strategy or policy for financing ICZM including an estimation of financial needs for successful ICZM studies, planning, implementation /maintenance, and M&E.
- Annual government budget containing a dedicated (not discretionary) line item to support operating costs of government entities responsible for implementing ICZM.
- Disbursement of annual budget allocations to support operating costs of government entities responsible for implementing ICZM.
- Dedicated fees (e.g., for marine protected areas) to raise funding to support ICZM.

The draft Bahamas National Maritime Policy (Gob, 2015)

The Draft Bahamas’ National Maritime Policy (2015) was presented as the Government’s policy statement for the management of the nation’s entire maritime space with a view to promoting sustained economic growth and development as well as environmental preservation and conservation. The Policy proposed, a vision for the ocean, and a policy framework and governance arrangements, for coordinating the use of coastal resources.

The Bahamas' National Maritime Policy (GoB, 2015) proposed a framework to regulate and plan the activities on the coastline and in all marine and archipelagic waters within the 200 nautical mile limits of exclusive economic zone of the Bahamas⁸⁵. It made recommendations for the establishment of an effective governance mechanism in the form of a GoB appointed Inter-Departmental Maritime Coordination Group, under the coordination of the Minister responsible for Transport and Aviation.

The Policy also recommended the establishment of a clear, coordinated, institutional mechanism for integrated marine management across relevant, traditional coastal and marine sectors, of tourism, fisheries, transport, and the environment.

The Policy called for the implementation of a multi-use marine spatial planning and zoning mechanism and the incorporation of appropriate adaptation and resilience-building into sustainable development, conservation, and governance actions to manage the increasing risk of climate change.

It is understood that the Bahamas national Maritime Policy (2015) was updated in 2022. However, a copy of the updated policy was unavailable for review to determine how it should be considered in respect to the assessment of these assessment criteria.

4 B. Access to International Development Finance

In addition to funding at the national level, LAC countries can access external sources of finance to support ICZM.

The range of possible sources of extra-national finance, includes, for example, resources from development finance institutions (e.g., World Bank, IDB, GEF), dedicated funds (e.g., climate funds such as the Green Climate Fund or Adaptation Fund), or private foundations.

This indicator looks at whether The Bahamas has the requisite institutions in place, and whether these institutions have knowledge on coastal zone activities. This indicator has four criteria (Table 25).

Criteria	Findings	Score
1. The country has accessed public international finance (loans, grants, or other types of finance) for ICZM in the past (e.g., from multilateral development banks or bilateral aid agencies) within the last five years ^{86,87,88,89} .	Yes	1
2. Country has accessed grant funding from private sources of finance for ICZM implementation (e.g., private foundations) in the last five years.	Yes	1
3. The country has accessed finance for coastal-zone activities from multilateral climate funds and has not reached its funding cap for any of the climate funds (e.g., the Adaptation Fund or LDCF).	Yes	1

⁸⁵ This is consistent with the approach taken by Trinidad and Tobago in its Draft ICZM Policy Framework (2018)

⁸⁶ Climate Resilient Coastal Management and Infrastructure Programme (BH-L1043). Source URL: <https://www.iadb.org/en/project/BH-L1043>.

⁸⁷ The IWECO The Bahamas Project. Source URL: <https://www.iweco.org/countries/bahamas-0>.

⁸⁸ GEF Project Funding to the Bahamas. Source URL: https://www.thegef.org/projects-operations/database?f%5B0%5D=countries%3A21&f%5B1%5D=funding_source%3A399&project_search=&page=0.

⁸⁹ IDB Financed Environmental and Natural Disaster Projects: Source URL: <https://www.iadb.org/en/projects-search?country=BH§or=PA&status=&query=>.

Table 25: Findings for Indicator 4 B – Access to International Development Finance.		
Criteria	Findings	Score
4. The country has in place all relevant focal points/designated authorities and accredited entities for international funds, and these have knowledge of ICZM.	Yes	1
TOTAL	4/4	1

The Bahamas achieved 4 of 4 criteria for a score of 1.0.

Interpretation of Results:

Achievements:

The Bahamas has successfully accessed grant and loan funding with the assistance of development partners such as the Global Environmental Fund (GEF), the Inter-American Development Bank, and the Green Climate Fund⁹⁰.

The GoBH has taken out a US \$35 million loan from the Inter-American Development Bank (IDB) to build the country's resilience to coastal risk through sustainable coastal protection through sustainable built and natural (ecosystems) coastal protection, and the development of institutional capacity in the ministry of Public Works and Utilities and partner MDAs, for coastal risk management and integrated coastal management and planning⁹¹.

The IWEco The Bahamas project is a three-year (2020 – 2023) intervention funded through a GEF Medium-sized Project (MSP) grant (US \$863,242.) and a total project value is \$1.7 million. The IWEco Project focuses on ecologically important mangrove wetlands and pine forests which encompass East Grand Bahama. The project will develop further capacity for sustainable livelihoods, implement land and watershed restoration and increase ecosystem resilience.

The National Designated Authority for the Green Climate Fund is the Department of Environmental Planning and Protection (DPP) and serves as the operational focal point for the Global Environmental Facility (GEF). A National Implementing Entity (NIE) for the UNFCCC Adaptation Fund has not been designated⁹².

4 C. Financial Incentives and Schemes to Incentivize Private Sector and Individual Action.

Public financial incentives and schemes for ICZM can encourage activities that align with ICZM and climate risk reduction and/or discourage those that are misaligned. This indicator measures the degree to which a government has applied incentives to encourage actions that align with ICZM and climate adaptation. This indicator has three criteria (Table 26).

⁹⁰ GCF Bahamas Project Portal. Source URL: <https://www.greenclimate.fund/countries/bahamas#>.

⁹¹ Climate Resilient Coastal Management and Infrastructure Programme (BH-L1043). Source URL: <https://www.iadb.org/en/project/BH-L1043>.

⁹² Adaptation Fund (AF) National Implementing Entities. Source URL: <https://www.adaptation-fund.org/apply-funding/implementing-entities/national-implementing-entity/>.

Table 26: Findings for Indicator 4 C– Financial Incentives and Schemes to Incentivize Private Sector and Individual Action.		
Criteria	Findings	Score
1. Tax incentives for actions that support resilient ICZM activities (e.g., restoration of mangroves or sand dunes).	No	0
2. Government-supported grant programs to fund ICZM efforts.	No	0
3. Concessional finance (e.g., loans, equity) to support climate compatible ICZM investments by private actors.	Yes	1
TOTAL	1/3	0.33

The Bahamas achieved 1 of 3 criteria for a score of 0.33 (Table 25).

Interpretation of Results:

Achievements:

Although there is not a formally approved and resourced national ICZM framework, ICZM-related programmes, projects, and activities are undertaken by a range of MDAs, and NGOs, research organisations, and private sector entities.

The potential for concessional financing to support climate compatible ICZM investment in the private sector exists through the Bahamas Development Bank, Access Accelerator⁹³. The Bahamas Development Bank supports sustainable fisheries through targeted investment in the sector⁹⁴. and other actors like the Caribbean Climate Smart Accelerator.

There is an approved national mechanism for levying and collecting environmental taxes and fees. Under Part II, Section 8, of the Ministry of Environment Act (2019) an Environmental Administration Fund (EAF) to facilitate the collection and/or holding of developer’ bonds; funds to support the imposition and collection of taxes, charges, or fees, payable into the EAF; the payment of a fine or penalty into the EAF.

The Act specifies that monies from the EAF shall be used, *inter alia*, for, environmental restoration; and incentive measures to reduce environmental pollution and conserve natural resources. The Act provides a degree of flexibility for what the EAF funds may be used for, stating that:

“Any monies in the Administration Fund may be designated for a specific purpose or made subject to a specific condition, and any money so designated shall be preserved and utilised solely for the designated purpose.”

Although no specific mention of ICZM is made in the Ministry of the Environment Act, it does appear that the flexibility exists for funds collected and held in either the Environmental Administration Fund (EAF) to be collected for, and allocated to, agencies responsible for ICZM and/or for funding ICZM activities.

Gaps:

The assessment did not identify explicit mechanisms or initiatives for:

- Tax incentives in support of ICZM activities.
- Government supported grant programs to fund ICZM interventions.

⁹³ The Bahamas Development Bank, Access Accelerator. Source URL: <https://www.accessaccelerator.org/>.

⁹⁴ The Bahamas Development Bank Source URL: <https://bahamasdevelopmentbank.com/about-us/fisheries/>.

The tight interface between the economy and the environment in The Bahamas, and associated interdependencies, suggests that without mechanisms such as incentives and regulations in place, environmental damage will occur (IDB, 2014).

The legislation and mechanisms are in place to support ICZM-related activities, and organizations with ICZM-related mandates. However, in the absence of a legally designated lead agency for ICZM, and an approved ICZM programme, it would not be expected that government taxes and grants would be earmarked for ICZM.

ICZM is by definition and purpose, a multi-disciplinary, cross-thematic, management undertaking, requiring the active involvement of social, economic, and environmental stakeholders.

The formal establishment of an ICZM enabling environment, with the designation of an ICZM lead-agency and adoption of a national ICZM policy and programme, will initiate a collaborative and coordinated multi-agency environmental management initiative.

In order to achieve national ICZM policy objectives and goals, resources will need to be allocated to, and expended by, a wide range of governmental, non-government, civil-society, and private sector stakeholders.

The prioritization, resourcing, planning, and monitoring and evaluation of ICZM public policy initiatives, will require the adoption of ICZM budget-tags to directly link ICZM policy-budgets to performance, results, and impacts, across government agencies and implementing partners. This is “green budgeting”⁹⁵ with an ICZM focus. Green budgeting will enable the Government of the Bahamas to generate evidence that inform decisions on the likely climate and environmental impacts of an ICZM budget.

Climate change adaptation action is a new area of undertaking in the global community. To the extent that some ICZM initiatives will be implemented with adaptation and resilience building objectives, it will be important to be able to assess, not only the effectiveness of the adaptation action, but also its cost-benefit, where trade-offs are involved. The ability to track and quantify expenditure across entities involved in the specific CCA interventions will be essential to the development of accurate cost-benefit assessments.

4. Summary of Climate - Resilient ICZM Assessment Results for The Bahamas

Evaluation of the 15 indicators across four categories reveals that while The Bahamas is performing well in some areas, there are other key areas that need addressing to foster effective climate resilient ICZM (Table 27).

The Bahamas second highest scoring category was **Identifying Adaptation Opportunities and Protecting Investment (0.73)**. Within this category, The Bahamas scored well with regards to *Identifying ICZM-related Responses to Climate Change (1.0)* and *Skills and Experience Developing and Evaluating Adaptation Solutions (1.0)*.

The Bahamas second highest category scoring category was **Assessing Climate Risks in the Coastal Zone (0.61)**. Within this category the Bahamas performed well with regards to *Data on Environmental Conditions and Trends in Coastal Areas (0.94)*, and in *Climate Vulnerability and Risk Assessment (0.87)*

⁹⁵ European Union (2021). Green Budgeting: Towards Common Principles. “Green budgeting entails a systematic approach to assess the overall coherence of the budget relative to a country’s climate and environmental agenda and to mainstream an environmentally aware approach across all policy areas and within the budget process”. “It identifies expenditure, revenue, and tax expenditure in the budgets and assigns a ‘tag’ based on their relevance to climate or environmental objectives.” Source URL: [Green Budgeting: Towards Common Principles \(europa.eu\)](https://european-council.europa.eu/media/en/press-communications/infographic/interactives/2021/06/10/Pages/01.aspx).

initiatives. The greatest gap in this category was the absence of a dedicated ICZM information hub. Data and information hubs on vulnerability of coastal ecosystems, populations, and infrastructure can be accessed by the public, but these platforms are owned by extra-regional ICZM stakeholders and tend to be based on project driven initiatives. This has implications for the maintenance and updating of data sets and information products. Ideally, the BNGIS should host a fully integrated national ICZM hub, drawing from the various ICZM-related studies and assessments, and anticipating future data and information needs for ICZM decision-making, planning and programming.

The category **Financing ICZM** achieved a comparatively low score (0.51) to the absence of *Sustainable Funding for ICZM Operations* (0.2) and *Financial Incentives and Schemes to Incentivize Private Sector and Individual Action* (0.33). These gaps may be viewed as symptoms of the absence of a formally endorsed and defined ICZM enabling framework and legally mandated, dedicated, institutional ICZM capacity. The design and implementation of an ICZM enabling framework would include strategies, policies, and plans for sustainable financing.

There are aspects of ICZM-related resource management that are sustainably funded both at the governmental and non-governmental levels. These mechanisms should provide lessons and best practice guidelines for the development of sustainable approaches to ICZM financing.

The lowest category score was **Legal and Institutional Framework for ICZM and Climate Preparedness (0.23)**. Although there are a number of government MDAs and NGOs with formal, ICZM-related mandates in law and policy, there is no dedicated ICZM legislation or enabling framework to ensure a coherent and integrated approach to the management of coastal resources and spaces, that maximises synergies and minimises the necessity for developmentally sub-optimal trade-offs. The elements for effective ICZM management exist in legislation, policy, programming, and institutional capacity. A dedicated ICZM enabling framework would facilitate the rationalisation and coordination of the fragmented and siloed ICZM-related mandates that currently maintain.

Results from the application of the 15 indicators of climate resilient ICZM point to some areas where The Bahamas could improve performance.

Within **Category 1 - Legal and Institutional Framework for ICZM and Climate Preparedness**: The regulatory and policy environment for the management of coastal resources and spaces is fragmented and siloed. Resilient-ICZM is slated to play in the sustainable and resilient development of the Bahamas, as outlined in the Draft National Development Plan of the Bahamas. Achieving this ambition would benefit from:

(1A) The approval of ICZM-specific legislation and the development of an enabling governance framework that designates a lead agency for ICZM. This would support, the establishment of inter-agency collaboration and coordination for ICZM, participatory mechanisms and processes, modalities for formalised integrated and coordinated ICZM planning, and the promulgation of enabling regulations.

(1B) National disaster risk management (DRM) legislation and regulations that define and address all phases of the disaster management as defined by CDEMA with respect to Comprehensive Disaster Management (CDM). The promulgated legislation and regulations consider the need for coordination with related standards on climate change adaptation, integrated water resources management, and land use planning, through inclusive and participatory processes.

(1C) Once legally mandated, the lead ICZM agency engages stakeholders in inclusive and participatory process to identify, define, and prioritise, strategically important and critical areas for coastal management.

Table 27 - Summary of Climate Resilient ICZM Indicator Scores for Belize – as of January 2019		Average Category Score	Indicator Score
Category 1 - Legal and Institutional Framework for ICZM and Climate Preparedness:		0.28	
<i>a.</i>	Status of National ICZM Regulatory Framework		0.37
<i>b.</i>	Status of National Regulatory Framework on CC Adaptation and Disaster Risk Management		0.25
<i>c.</i>	Regulatory Environment for Coastal Development		0.8
<i>d.</i>	Interagency Coordination of Entities Relevant to ICZM, DRM and Climate Change		0.0
<i>e.</i>	Institutional Responsibility for Monitoring and Evaluation of ICZM Activities and Projects		0.0
Category 2 - Assessing Climate Risks in the Coastal Zone:		0.51	
<i>a.</i>	Data on Environmental Condition and Trends in Coastal Areas		0.61
<i>b.</i>	Shared Information Platform		0.3
<i>c.</i>	Climate Vulnerability and Risk Assessment (VRA)		0.87
<i>d.</i>	Timeliness of Data and Assessments		0.33
Category 3- Identifying Adaptation Opportunities and Protecting Investment:		0.73	
<i>a.</i>	Identifying ICZM-related Responses to Climate Change		1.0
<i>b.</i>	Skills and Experience Developing and Evaluating Adaptation Solutions		1.0
<i>c.</i>	Monitoring and Protecting Investments in Infrastructure		0.2
Category 4 - Financing ICZM:		0.51	
<i>a.</i>	Sustainable Funding for ICZM Operations.		0.2
<i>b.</i>	Access to International Development Finance.		1.0
<i>c.</i>	Financial Incentives and Schemes to Incentivize Private Sector and Individual Action.		0.33

(1D) The formal establishment of an inclusive inter-agency framework for ICZM that makes provisions for the sharing of technical information, by and among the relevant MDAs, for ICZM development planning and decision-making. A formal schedule of regular meetings facilitates the development of joint multi-year work plans for the coordinated assessment of climate risks in coastal areas and the formulation of adaptation plans.

Existing mechanisms such as the BNGIS and the recently approved draft Bahamas National Marine Policy (BNMP), provide opportunities for building on, strengthening, and extending existing arrangements in support of resilient-ICZM.

(1E) Incorporation of modalities and mechanisms for independent review and assessment of ICZM-related projects and programmes, for regular review by the ICZM authority and stakeholders.

Within **Category 2 - Assessing Climate Risks in the Coastal Zone:** The Bahamas is doing reasonably well in the collection of environmental data, facilitating and utilising climate vulnerability and risk assessments, and facilitating periodic environmental assessments.

(2A) There is a helpful amount of data and information being generated on environmental conditions and trends in coastal areas (0.0.61) and **(2C)** vulnerability and risk assessment (0.87). The strengthening and formalisation of partnerships and collaborative arrangements that have produced this data and information might facilitate the **(2D)** regular updating and repeating of critical assessments to ensure robust time series datasets that are current and policy relevant.

(2B) Develop a dedicated ICZM-hub within the BNGIS platform to serve ICZM planning, decision-making, based on sound data and information holdings, and spatial tools that facilitate planning, trade off and cost benefit analysis, scenario development, and the interpretation of technical information for presentation to non-technical stakeholders. The development and population of the ICZM Hub would be facilitated by formal arrangements with research and NGO partners for data and information sharing. This might be facilitated by provisions of the existing research permitting system managed by the DEPP.

Within **Category 3- Identifying Adaptation Opportunities and Protecting Investment:**

(3C) Formally designate an MDA with responsibility for the development of a program for the periodic monitoring and maintenance of existing built (grey) and natural (green) coastal protective infrastructure, and the evaluation of protective effectiveness with respect to climate and hydrometeorological threats.

Within **Category 4 - Financing ICZM:**

(4A) The formulation of dedicated ICZM policy and legislation incorporates arrangements for the sustainable financing of an ICZM enabling framework and institutional arrangements. Sustainable financing arrangements for ICZM include, inter alia, provisions for annual government subventions to cover operational costs of MDAs responsible for implementing ICZM, dedicated fee mechanisms, **(4C)** tax and non-tax incentives.

5. Discussion

The resilient-ICZM framework, on which this study is based, was developed by the IDB in response to the question, of whether the general concept of ICZM public policy used in the wider world can be applied directly to countries in the Caribbean region. The importance of this question can be appreciated when one considers both, the characteristics of small island developing states (SIDS), and the nature of ICZM as a “*wicked problem*”.

In his assessment of the economic vulnerabilities of SIDS Briguglio defined the unique combination of bio-geophysical and economic characteristics that captured the special circumstances of these countries (Box 1). Briguglio (1995) elaborated a unique combination of sixteen (16) characteristic disadvantages, under five thematic headings including, small size, insularity and remoteness, proneness to natural disasters, and environmental factors⁹⁶.

⁹⁶ Briguglio, L. (1995) Small Island Developing States and Their Economic Vulnerabilities. World Development. Vol. 3, No. 9. Pp. 1615 -1632. Source URL: <https://www.semanticscholar.org/paper/Small-island-developing-states-and-their-economic-Briguglio/5e946015972858bf4e2e8b9a600b07bf57491cc2> and <https://www.um.edu.mt/library/oar/bitstream/123456789/18180/1/OA%20-%20Small%20Island%20Developing%20States%20and%20Their%20Economic%20Vulnerabilities.pdf>.

Of significance to the findings of this assessment is the disadvantage of small size as it relates “*Problems of Public Administration*”. The small physical size of SIDS and their characteristically small populations, translate to small human resource bases from which to draw expertise and experience to provide sufficient, and efficient technical and administrative public sector capability. Many government functions tend to be expensive on a per capita basis when the population is small, because certain expense are not divisible in proportion to the number of users (Briguglio, 1995). A small human resource base often means that SIDS have to rely on larger SIDS, regional⁹⁷ and international organisations, and development partners, for certain specialised technical aspects of public administration, such as research, monitoring and evaluation, data generation and data management.

Partnerships with extra-national NGOs and research institutions help to address the challenges that some of the smaller SIDS may face in terms of limited specialist human resource capacity, limited technical capacity, and limited funding, for ICZM. These types of partnership, if effectively coordinated by the GoBH, can provide research and assessment findings, data, and information, to inform and guide the dialogue and decision making, required to deliver the priority development outcomes as defined in The National Development Plan of The Bahamas⁹⁸. In the absence of effective coordination by the GoBH, research and national development initiatives led or fancied by extra-national organizations and development partners, will be project-driven, and disjointed, rather than programmatic and strategic.

If project-activities are coordinated to contribute to a programmatic national development framework for resilient and sustainable national development, the arrangement will offer a number of benefits.

Coordination offers the possibility of commissioning successive projects to build on, or expand on, earlier pilot-and assessment- projects. It also offers the opportunity harnessing the data and information from earlier assessment studies to serve as baselines for the development of time-series data sets through future projects. This will help The Bahamas move away from ad hoc project interventions that only generate marginally related, information and data snapshot.

SIDS are not unique in being exposed to extreme climatic and geophysical events. However, the impact of extreme-hydrometeorological events

BOX 1: Characteristics of Small Island Developing States (SIDS).

For SIDS, the Exclusive Economic Zone (EEZ)—the ocean under their control—is, on average, 28 times the country’s land mass. Thus, for many SIDS the majority of the natural resources they have access to comes from the ocean. Factors like small population size, remoteness from international markets, high transportation costs, vulnerability to exogenous economic shocks and fragile land and marine ecosystems make SIDS particularly vulnerable to biodiversity loss and climate change because they lack economic alternatives.

Source: About Small Island Developing States.
<https://www.un.org/ohrrls/content/about-small-island->

⁹⁷ Barbados Today (2021). “The UWI, OECS sign development agreement. “*The principal explained that the key objective of the MoU was to facilitate diverse forms of cooperation between the two parties and focus on several key areas including but not limited to: technical support, collaborative research, joint teaching, workshops, seminars and summer institutes, combined public outreach and exchange of interns and visiting fellows, mutual access to libraries and resource centers and collective strategies to promote Caribbean regionalism.*” Source URL: <https://barbadostoday.bb/2021/06/30/the-uwi-oecs-sign-development-agreement/>.

⁹⁸ The National Development Plan of the Bahamas (GoBH, 2016). Source URL: [https://www.vision2040bahamas.org/media/uploads/Draft_National_Development_Plan_01.12.2016_for_public_rel ease.pdf](https://www.vision2040bahamas.org/media/uploads/Draft_National_Development_Plan_01.12.2016_for_public_release.pdf).

on an island economy, population, and natural resource base, is expected to be comparatively larger in terms of damage per-unit-area, and cost-per-capita, due to the small size of the country. Disaster response, recovery, and restoration, is made difficult because of the insularity and remoteness of SIDS.

The Environmental Factors that characterise SIDS are both potential sources of disadvantage and vulnerability (very fragile ecosystems susceptible to the pressures arising from economic development and climate change) as well as being the basis of national economic and social wellbeing. The need to strike the balance between the benefit streams provided by the healthy natural resources and ecosystems of The Bahamas, and the loss and degradation of the resources and ecosystems that unsustainable exploitation causes, makes the implementation of an appropriate and effective ICZM enabling framework of critical importance to The Bahamas’ resilient development.

ICZM is management approach that by nature and definition attempts to addresses a “wicked problem” (Fig. 4). Over the long term, ICZM seeks to “... **balance the benefits from economic development and human uses of the coastal zone, the benefits from protecting, preserving, and restoring Coastal Zones, the benefits from minimizing loss of human life and property, and the benefits from public access to and enjoyment of the Coastal Zone, all within the limits set by natural dynamics and carrying capacity**” (Schernewski, 2016).

Recognising that the issues and challenges that resilient-ICZM must manage in order to achieve its desired development outcomes, constitute a wicked (policy) problem (Fig. 4) is significant. Successfully solving or managing wicked policy problems requires a reassessment of some of the traditional ways of working and solving problems. This is because wicked problems, by their nature, challenging the governance structures, organisational capacity, and skills bases normally focused on national policy and resource management⁹⁹. Given the present and evolving nature of climate variability and climate change it is particularly important for mainstreaming climate resilience in addition to the usual ICZM public policy considerations.

It is in this vein that the IDB found it necessary to ask whether the general concept of ICZM public policy used in the wider world can be applied directly to countries in the Caribbean region. The resulting assessment framework took into consideration the SIDS characteristics that define the national social, economic, and environmental circumstances of Caribbean states, in an attempt to design and implement effective policy solutions to solve or manage wicked resilient-ICZM problems.

The assessment is intended to assist the GoBH in the formulation of a public policy framework and legal structure that will effectively balance and reconcile the interests of public, private, non-governmental, and civil society parties (Schernewski, 2016), that use coastal spaces and resources, and as a result are involved in the complex web of relationships, interactions,

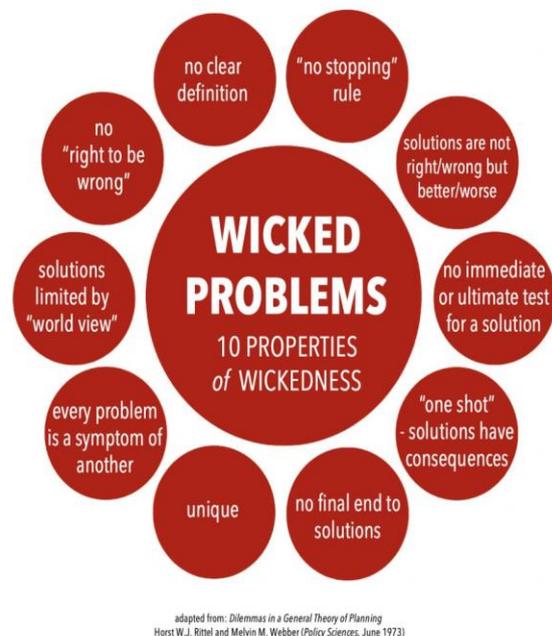


Figure 4: Characteristics of a Wicked (Policy) Problem.

⁹⁹ Commonwealth of Australia (2007). Tackling Wicked Problems. A Public Policy Perspective. Pgs. 38. Source URL: <https://www.enablingchange.com.au/wickedproblems.pdf>.

conflicts, synergies, and trade-offs, that characterise coastal resource use¹⁰⁰. The desired outcome to be achieved is the long-term climate resilience and sustainable development of the Bahamas.

Given the population of the Bahamas and the limited human resource base (population 355,608) on which it can draw, it may be necessary for the Government of the Bahamas to continue to call on regional and extra-regional organisations and development partners for assistance with specific aspects of environmental research, monitoring and evaluation, reporting, and the generation of information and data products. It is important that this reliance on extra-national technical expertise be explicitly recognised and strategically coordinated, so that project-driven data and information production initiatives, and research conducted are reviewed, and rationalised so that they addresses the identified sustainable development needs and priorities of the Bahamas.

Studies undertaken by international partners (international institutions and academic organisations) must be designed to foster and facilitate ownership by, and benefit to, the Government of the Bahamas. Indicators of the successful implementation of these measures might include; number of GoBH-staff secondments to project teams; number of academic degrees attained by GoBH personal through participation in academic research or development projects¹⁰¹; number of active partnerships between University of the Bahamas and extra-national research organisations undertaking studies in the Bahamas; number of papers published by extra-national research organizations with Bahamian co-authors; the number of research or assessment studies undertaken by development partners, international institutions, or extra-national research organisations, that are fully referenced in public policy planning and implementation by the GoBH; original (raw) research data, processed data and information generated in studies conducted by international organizations and extra-national research organizations, deposited with the BNGIS, displayed on the BNGIS platform, or co-hosted with the BNGIS; data and information sharing agreements between international organizations and extra-national research organizations and the BNGIS.

One mechanism which might be used to design, formalise, mediate, track, and monitor, these collaborative arrangements for coordinated research and data sharing might be *The Commonwealth of the Bahamas Research and Permitting System*¹⁰² administered by the Department of Environmental Planning and Protection (DEPP). This would also provide an opportunity for the implementation of a mechanism for the independent monitoring of ICZM-project implementation, ex-post technical performance evaluations, and reporting of project monitoring results to an ICZM authority (Indicator 1E: *Institutional Responsibility for Monitoring and Evaluation of ICZM Activities and Projects*).

The effectiveness of measures taken establish and strengthen strategic partnerships between, the GoBH and extra-national institutions and academic organisations, for the purpose of conducting

¹⁰⁰ The majority of development in the Bahamas takes place in coastal areas. This leads to situations in which large number of stakeholders are crowded into limited areas (e.g., the Nassau International Port area). At the same time, this creates a situation where one development activity can positively or negatively impact another. For example, the breakwater developed by MOPU may benefit (or negatively impact) Arawak Port Development and Nassau Cruise Port. In addition, there are tourism facilities in the area that utilize, and impact, natural resources, such as the Junkanoo Beach. A public policy framework and legal structure is needed to effectively reconcile the interests of these complex situations, resolving conflicts, identifying, and facilitating synergies, and rationalising trade-offs at the public policy level to achieve long-term climate resilience and sustainable development.

¹⁰¹ Features of the Government of Barbados environmental strategy have included the incorporation of academic M.Sc.- and PhD. - into project agreements, and the reliance on the local University of the West Indies (UWI) Centre for Resource management and Environmental Studies (CERES) for long-term coastal ecosystem monitoring and assessment support. This has resulted in the development of highly capable, expert capacity on both the Coastal Zone Management Unit and CERMES.

¹⁰² DEPP web page for research permit applications. Source URL: <https://www.depp.gov.bs/research-permits/>.

assessments, studies, and research relevant to ICZM would be reflected in the indicator scores and subordinate criteria for,

- **Indicator 1C-5:** Will assist in the definition of critical priority areas for coastal management.
- **Indicator 1D-3:** provisions for technical information sharing mechanism necessary for ICZM development planning decision making.
- **Indicator 1E- 1 to 3:** Intuitional Responsibility for M&E of ICZM Activates and Projects.
- **Indicator 2Ai- 1 to 11:** Spatial Extent and Density of Coverage of Monitoring for Environmental and Ecological Variables
- **Indicator 2Aii- 1 to 11:** Temporal Frequency of Mentoring for Environmental and Ecological Variables.
- **Indicator 2B- 1 to 17:** Shared Information Platform
- **Indicator 2C- 1 to 7:** Climate variability and Risk Assessment
- **Indicator 2D- 1 to 6:** Timeliness of Data Assessments
- **Indicator 3A- 1 to 3:** Identifying ICZM-related Responses to Climate Change
- **Indicator 3B- 1 to 5:** Skills and Experience Developing and Evaluating Adaptation
- **Indicator 1C-5:** Will assist in the definition of critical priority areas for coastal management.
- **Indicator 3C- 4 and 5:** Evaluating the effectiveness of built (grey) and natural (green) coastal protection investment.

If properly designed, a national mechanism for collaborative environmental research, monitoring and evaluation, reporting, and data and information sharing, provides the greatest potential return on investment directed towards strengthening The Bahamas resilient-ICZM capacities and capabilities. This is because the enabling institutional arrangements and capabilities are already in place, requiring only incremental changes and enhancements.

It would appear that the design and implementation of this collaborative mechanism would not be dependent on the immediate, formal, designation of an ICZM-lead agency, as the nucleus of the nascent mechanism already resides within the DEPP's mandated institutional arrangements for monitoring, research, data management, and research approvals; the data management mandate, capabilities and technologies already reside within the BNGIS, and the Bahamas national Statistical Institute in relation to its mandate to establish a national statistical strategy with related standards¹⁰³.

6. Recommendations for The Bahamas

Following the discussion through the previous section, this section proposes the Bahamas Roadmap to a Resilient ICZM Enabling Framework. The Roadmap provides a comprehensive plan, to address, the gaps, weaknesses, threats, and opportunities, identified in, the Baseline Assessment, the Resilient ICZM Performance Indicators Framework assessment, and implement the guidance and recommendations provided by stakeholders during the review and validation processes. The Roadmap also provides an ordered sequence of detailed activities for the design, development, approval, and implementation, of a national climate resilient ICZM governance and institutional mechanism. The Roadmap represents a comprehensive plan, proposed to accomplish The Bahamas' national R-ICZM goals.

The Roadmap will facilitate an inclusive, participatory, inter-ministerial, cross-sectoral, dialogue that will produce a consensus vision and implementation pathway for the climate resilient ICZM in the Bahamas that is coherent with the Bahamas' vision for resilient and sustainable development, and the

¹⁰³ GoBH (2021). Statistical Act, 2021 (short title). Source URL: http://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/2021/2021-0009/StatisticsAct2021_1.pdf.

national policy landscape. The inclusive and participatory approach to implement, monitor and evaluate the Roadmap, and the course of action proposed in the Roadmap, is intended to enhance the prospects for an effective climate resilient-ICZM policy and legislation by also delivering sound governance and institutional arrangements.

The stakeholders play an essential role in the process of implementing, monitoring, evaluating and modifying the Roadmap, as well as to draft the enabling climate resilient ICZM-related legislative, institutional, and resourcing arrangements. The resulting enabling arrangement will provide oversight, coordination, and management of the activities, resources, and services, in the coastal and ocean spaces of The Bahamas.

The ICZM Policy will provide the approved guiding principles for decision making in pursuit of the stated climate resilient ICZM goals and intended outcomes, supporting resilient and sustainable national development. The Draft ICZM Policy Framework document provides a robust point-of departure for this exercise, as it outlines the principles, goals, objectives, and strategies that can guide the Government of The Bahamas (GOBH) in designing and implementing its ICZM National Policy and Program. It is suggested that the development of the ICZM policy, precedes the drafting of dedicated ICZM legislation, and the institutional arrangements required to implement the ICZM policy and legislation. It is also suggested that the legislation be developed to enforce the course of action set out in the ICZM policy, once the course of policy action has been defined, developed, and validated by stakeholders and approved by the GoBH.

The Bahamas Roadmap to a Resilient ICZM Enabling Framework

The **Bahamas Roadmap to a Resilient ICZM Enabling Framework** is a plan that shows how the Bahama’s Resilient ICZM enabling framework and institutional mechanisms might be developed and established, by Bahamian ICZM stakeholders, over time. The goal of the Road Map is to clearly describe what is to be achieved and the steps that need to be taken to achieve the desired outcomes.

The draft **Bahamas Roadmap to a Resilient ICZM Enabling Framework**, proposes a comprehensive plan, to address, the gaps, weaknesses, threats, and opportunities, identified in, the Baseline Assessment, the *Resilient ICZM Performance Indicators Framework* assessment, and implement the guidance and recommendations provided by stakeholders during the review and validation processes. The Roadmap not intended to be exhaustive, as many decisions and activities in support of Resilient-ICZM must be determined and approved through consultative process.

The Roadmap will be developed and refined by ICZM stakeholders in the Bahamas through a programme of stakeholder consultations. The role of stakeholders in this process will be to design an enabling framework consisting of, an ICZM policy, and supporting ICZM legislative, institutional arrangements, and resourcing arrangements. The purpose of the resulting enabling arrangement will be to support and facilitate arrangements for the collaborative oversight and coordinated management of activities and opportunities, resources, and services, provided the coastal and ocean areas of The Bahamas.

The ICZM Policy that will be delivered under the proposed plan of action will provide the principles and guidance for what should be done to achieve approved Resilient-ICZM goals, in support of resilient and sustainable national development.

The Draft ICZM Policy Framework document provides a point-of departure for this exercise, as it outlines the principles, goals, objectives, and strategies that can guide the Government of The Bahamas (GOBH) in designing and implementing its ICZM National Policy and Program.

Establish and formalise an interagency coordination mechanism of entities relevant to ICZM, DRM and Climate Change.

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Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Comments and Assumptions
1. Legal and Institutional Framework for ICZM and Climate Preparedness	Enabling ICZM policy and legislation to provide support the promulgation of a broad framework of, regulations, permits, environmental assessment requirements, and development planning requirements, and administrative processes, for managing and coordinating uses of coastal resources.	1.1. Establish and formalise an interagency coordination mechanism of entities relevant to ICZM, DRM and Climate Change.	1.1.1. Formal designation of lead ICZM ministry/agency. 1.1.2. Formal designation of secretariate to proposed R-ICZM Committee 1.1.3. Promulgation of TOR for committee members 1.1.4. Invitations to committee members (agencies/ministries) 1.1.5. Ministry level MOUs prepared and signed. 1.1.6. Formal appointment of coordination group and appointment of chair. 1.1.7. Formal convening of R-ICZM Committee	<ul style="list-style-type: none"> Designation of lead ICZM ministry/agency Designation of Secretariat to the R-ICZM Committee Appointment of chair TOR for R-ICZM Committee approved. First meeting of R-ICZM Committee convened. 	Institutional arrangements for Resilient- ICZM reflected in ICZM legislation.	Ministry of Public Works and Utilities (MOPU) Bahamas Environmental Science and Technology (BEST) Commission Department of Environmental Planning and Protection (DEPP) Cabinet Office		High-level government agreement on need for a harmonised relationship between the existing National Maritime Policy and the proposed R-ICZM policy (Action 1.3.3.). High-level government endorsement of lead R-ICZM ministry/MDA. The selection of a lead R-ICZM ministry does not conflict with, or duplicate,

Phases 2 & 3: Development and Approval								
Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Comments and Assumptions
								the functions of the lead ministry for the National Maritime Policy
		1.2 Review and finalise draft national Resilient ICZM Policy	1.2.1. Establish multi-sectoral, participatory, Resilient ICZM policy steering committee (Annexes I and II)	Scheduled Resilient ICZM policy steering committee meetings	Terms of Reference MOUs Letters of acceptance Minutes of meetings	<ul style="list-style-type: none"> Ministry of Public Works and Utilities (MOPU) R-ICZM Committee R-ICZM Committee secretariat PIU/R-ICZM Unit. 		<p>Priority: Inter-ministerial consensus on the need for a coordinated, cross-government approach to the governance and management of the nation's coastal and ocean resources.</p> <p>Would this build on, complement, replace, or expand the Inter-Departmental Maritime Coordination Group (MCG) (Pg. 34), of the</p> <p><i>"The National Maritime Policy Implementation Committee (NMPIC)" -</i> https://mofa.gov.bs/report-on-</p>

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Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Comments and Assumptions
								national-maritime-policy-implementation-committee-roundtable-september-24-2020/?
			1.2.2. Stakeholder analysis and identification	Stakeholder Engagement Strategy	Approved Stakeholder Engagement Strategy	Ministry of Public Works and Utilities (MOPU) BH-L1043 PIU R-ICZM Committee		Technical and material resources to undertake stakeholder analysis and prepare a Stakeholder Engagement Strategy.
			1.2.3. Implement approved Stakeholder Engagement Strategy.	Structured stakeholder consultations completed	Stakeholder consultations reports.	Ministry of Public Works and Utilities (MOPU) BH-L1043 PIU		
			1.2.4. Structured stakeholder consultations for Inclusive, participatory policy drafting process	Stakeholder consultations convened	Minutes of stakeholder consultations. Documented stakeholder comments feedback on policy drafts and roadmap.	Ministry of Public Works and Utilities (MOPU) BH-L1043 PIU		
			1.2.5. Green Paper	Green Paper submitted to Cabinet for approval	Cabinet approved Green Paper	Ministry of Public Works and Utilities (MOPU)		Action 1.3.3: Develop recommendations for the rationalisation and harmonisation of national policy and legislation. To be addressed in the Draft Resilient ICZM Policy and in the Green Paper.

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Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Comments and Assumptions
			1.2.6. White Paper	White Paper submitted to Cabinet for approval	Cabinet approved White Paper	Ministry of Public Works and Utilities (MOPU)		
			1.2.7. Cabinet Approved R-ICZM Policy	Cabinet approval for Resilient-ICZM Policy	Cabinet approval for Resilient-ICZM Policy Gazetted	Cabinet, GOBH		
			1.2.8. Resilient ICZM Policy Promulgated	R-ICZM Policy published and publicly accessible.	Email/Postal list of stakeholders to whom copies of the R-ICZM Policy were sent. Stakeholder' confirmations of receipt of official R-ICZM Policy.	Ministry of Public Works and Utilities (MOPU) BH-L1043 PIU		
		1.3. Prepare draft enabling ICZM legislation to support the promulgation of a broad framework of, regulations, permits, environmental assessment requirements, and development planning requirements, and administrative processes, for managing and coordinating uses of coastal resources.	1.3.1. Establish intersectoral Resilient-ICZM legislative steering committee (Annexes I and II)	Scheduled Resilient ICZM legislation steering committee meetings	Terms of Reference MOUs Letters of acceptance Minutes of meetings	Ministry of Public Works and Utilities (MOPU) Bahamas Environmental Science and Technology (BEST) Commission Department of Environmental Planning and Protection (DEPP) Cabinet Office		High-level government endorsement of process to promulgate dedicated R-ICZM legislation.
			1.3.2. Prepare draft proposal for R-ICZM legislation and regulations: <ul style="list-style-type: none"> • Scope and purpose 	<ul style="list-style-type: none"> • Drafting instructions to legislative drafter • Bill drafted. • Consultations 	<ul style="list-style-type: none"> • Drafting instructions to legislative drafter 	Ministry of Public Works and Utilities (MOPU)		Action 1.3.4: Promulgation of Resilient-ICZM legislation

Phases 2 & 3: Development and Approval

Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Comments and Assumptions
			<ul style="list-style-type: none"> • Bill required (long medium or short) • Characterisation of relative urgency and priority. • Status of Cabinet approval • Drafting instructions to Chief Parliamentary Council • Status of Draft Bill (settlement, circulation for comment) • Submission to Legislation Committee • Remarks to legislation Committee 	<ul style="list-style-type: none"> • Bill re-drafted • Cabinet approves introduction. • Bill published with Explanatory Note or Memorandum • Bill to legislature • Bill amended if necessary. • Bill enacted. • Assent, publication, commencement 	<ul style="list-style-type: none"> • Draft Bill • Minutes and reports of stakeholder consultations • Published Bill with explanatory notes. • Guidance from legislature on Bill • Reading and passing of the Bill • Bill Gazetted 	<p>R-ICZM Legislation Steering Committee Lead Ministry</p> <p>Cabinet Legislation Committee</p> <p>Chief Parliamentary Council</p> <p>Office of the Parliamentary Council Attorney General Cabinet</p>		<ul style="list-style-type: none"> • ICZM-specific or inclusive legislation has been approved, which designates a lead agency. • Legislation designates/confirms sectoral competencies, including an agency responsible for environment, planning, public works, and fisheries. • Legislation establishes collaboration with the agency responsible for climate change adaptation. • Legislation establishes a process for public participation, review, and comment on the ICZM planning process and on the approval of coastal development public-investment projects. • Regulations establish a system of penalties to public and private entities when ICZM-related regulations are violated. • A system for reporting violations of ICZM or related regulations is in place. • Regulations have been officially published to

Phases 2 & 3: Development and Approval								
Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Comments and Assumptions
								implement the Resilient ICZM Plan(s). <ul style="list-style-type: none"> Legislation provides for the definition of priority areas for coastal management. Action 1.5: Legislation makes provision for independent public or academic entity or a third party to undertake (a) independent monitoring during implementation of ICZM-related projects, and (b) independent technical performance evaluations at the end of ICZM-related projects and present the results to the ICZM authority at regular intervals.
			1.3.3. Develop recommendations for the rationalisation and harmonisation of national policy and legislation	To be addressed in the “Pre-Development” phase; by the R-ICZM Committee following Action 1.1., and; in the, and as part of “Action 1.2.5. Green Paper”.	National Resilient ICZM Policy, Action Plan, and Strategy.	Ministry of Public Works and Utilities (MOPU) R-ICZM Legislation Steering Committee		
			1.3.4. Promulgate Resilient ICZM Legislation	<ul style="list-style-type: none"> ICZM-specific or inclusive legislation has been approved, which designates a lead agency. Legislation designates/confirms sectoral competencies, including an agency responsible for 	Resilient ICZM Legislation Gazetted	Ministry of Public Works and Utilities (MOPU) R-ICZM Legislation Steering Committee Lead Ministry		

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Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Comments and Assumptions
				<p>environment, planning, public works, and fisheries.</p> <ul style="list-style-type: none"> • Legislation establishes collaboration with the agency responsible for climate change adaptation. • Legislation establishes a process for public participation, review, and comment on the ICZM planning process and on the approval of coastal development public-investment projects. • Regulations establish a system of penalties to public and private entities when ICZM-related regulations are violated. • A system for reporting violations of ICZM or related regulations is in place. • Regulations have been officially published to implement the Resilient ICZM Plan(s). • Legislation provides for the definition of priority areas for coastal management. 		<p>Cabinet Legislation Committee</p> <p>Chief Parliamentary Council</p> <p>Office of the Parliamentary Council</p> <p>Attorney General</p> <p>Cabinet</p>		
		1.4. Prepare and publish Resilient ICZM Management Plan and complementary/nested	Participatory preparation of Draft Resilient ICZM Management Plan	<ul style="list-style-type: none"> • Resilient ICZM Management Plan approved. 	Stakeholders providing feedback	Ministry of Public Works and Utilities (MOPU)		

Phases 2 & 3: Development and Approval								
Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Comments and Assumptions
		management plans for individual family islands	<p>Stakeholder review and revision of Resilient ICZM Management Plan</p> <p>Updating and review of Draft Resilient ICZM Management Plan</p> <p>Stakeholder review and validation of Draft Resilient ICZM Management Plan</p> <p>Finalisation and approval of Resilient ICZM Management Plan</p>	<ul style="list-style-type: none"> A national Resilient ICZM Plan, and individual Family Island Resilient ICZM Plans officially published. 	<p>on Draft Resilient ICZM Plan.</p> <p>Report on stakeholder consultations and review and validation process.</p> <p>Resilient ICZM Management Plans</p>	<p>PIU</p> <p>Resilient -ICZM Policy Steering Committee</p>		
		1.5. Prepare and Publish ICZM Action Plan and Strategic Plan	<p>Participatory preparation of Draft ICZM Action Plan and Strategic Plan</p> <p>Stakeholder review and revision of Draft ICZM Action Plan and Strategic Plan</p> <p>Updating and review of Draft ICZM Action Plan and Strategic Plan</p> <p>Stakeholder review and validation of Draft ICZM Action Plan and Strategic Plan</p> <p>Finalisation and approval of ICZM Action Plan and Strategic Plan</p>	<p>Establish process and team to undertake the drafting, stakeholder review and validation, of the ICZM Action Plan and Strategic Plan for final approval.</p>	<p>Stakeholder comments and feedback on Draft ICZM Action Plan and Strategic Plan.</p> <p>Stakeholder validated Final ICZM Action Plan and Strategic Plan.</p> <p>Draft ICZM Action Plan and Strategic Plan</p> <p>Final ICZM Action Plan and Strategic Plan officially published.</p>	<p>Ministry of Public Works and Utilities (MOPU)</p> <p>PIU</p> <p>Resilient -ICZM Policy Steering Committee</p>		<p>Legislation will require the periodic preparation, submission, and evaluation of a national ICZM Management Plan</p>

Phases 2 & 3: Development and Approval								
Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Comments and Assumptions
		1.6. Assign responsibility to a public or academic entity or a third party to undertake independent monitoring during implementation of ICZM-related projects.	To be addressed under Actions 1.2.(Review and finalize Resilient-ICZM Policy) and 1.3 (Prepare enabling Resilient-ICZM legislation).	MOU between MOPU and the independent entity. TOR for monitoring services. Contract between MOPU and the independent M&E entity.	MOU M&E arrangement reflected in Resilient-ICZM legislation, Plan and Strategy, documents. Signed contract between MOPU and the independent M&E entity.	Ministry of Public Works and Utilities (MOPU) R-ICZM Legislation Steering Committee Lead Ministry Cabinet Legislation Committee Chief Parliamentary Council		Monitoring capacity can be developed at the University of the Bahamas. Legislation makes provision for independent public or academic entity or a third party to undertake (a) independent monitoring during implementation of ICZM-related projects, and (b) independent technical performance evaluations at the end of ICZM-related projects and present the results to the ICZM authority at regular intervals.
2. Assessing Climate Risk in the Coastal Zone	Enhance understanding status and trends of ecosystems, as well as current and potential future climate-related hazards and risk in coastal areas, essential to planning actions to reduce risk and build coastal resilience.	2. Enhance national policy and legislation to: (a) enable national planning and management for climate and disaster preparedness, (b) in coordination with key sectoral agencies.	National Regulatory Framework on Climate Change Adaptation and Disaster Risk Management promulgated.	<i>This action lies outside of the MOPU's scope of authority.</i>	National legislation to implement comprehensive DRM has been officially published.			
					National regulations on DRM coordinate with related standards on climate change adaptation, integrated water resources management, and land use planning			

Phases 2 & 3: Development and Approval								
Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Comments and Assumptions
					National policy / legislation on both DRM and climate change adaptation establishes a process for public participation, review, and comment in the development of disaster risk management and / or climate adaptation plans.			
				Promulgate integrated CCA/DRM legislation and policy. <ul style="list-style-type: none"> National regulations on DRM coordinate with related standards on climate change adaptation, integrated water resources management, and land use planning. National policy / legislation on both DRM and climate change adaptation establishes a process for public participation, review, and comment in the development of disaster risk management and / or 	National legislation to implement DRM has been officially published. National legislation enabling implementation of DRM promulgated.			

Phases 2 & 3: Development and Approval								
Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Comments and Assumptions
				climate adaptation plans.				
		2.1. Regulatory Environment for Coastal Development enhanced	<p>Discuss - R-ICZM Committee</p> <p>To be addressed:</p> <p>(a) Through the establishment and possibly, the formalisation an interagency coordination mechanism of entities relevant to ICZM, DRM and Climate Change (Action 1.1.), and</p> <p>(b) under Actions 1.2.(Review and finalize Resilient-ICZM Policy) and 1.3 (Prepare enabling Resilient-ICZM legislation).</p>	Committee Brief on recommendations for enhancing Regulatory Environment for Coastal Development.	<p>Recommendations for enhancement Regulatory Environment for Coastal Development formally submitted to Cabinet for review and approval e.g., coastal adaptation criteria, priority, or critical areas for coastal management, and “at-risk zones”.</p> <p>Length of protected and defended coastline.</p> <p>Length of Dynamic coastline</p> <p>Number of people living in “at-risk zones”.</p> <p>Area of protected sites within “at-risk zones”</p>	<p>Ministry of Public Works and Utilities (MOPU)</p> <p>Resilient-ICZM Policy Steering Committee</p>		Regulatory environment for coastal development will be updated in parallel with the development and promulgation of R-ICZM Legislation, which will complement coastal development legislation.

Phases 2 & 3: Development and Approval								
Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Comments and Assumptions
					Value of economic assets within "at-risk zones"			
		2.2. Interagency Coordination of Entities Relevant to ICZM, DRM and Climate Change enhanced and formalised	<p>To be addressed:</p> <p>(a) Through the establishment and possibly, the formalisation an interagency coordination mechanism of entities relevant to ICZM, DRM and Climate Change (Action 1.1.), and</p> <p>(b) under Actions 1.2.(Review and finalize Resilient-ICZM Policy) and 1.3 (Prepare enabling Resilient-ICZM legislation).).</p>	<p>An inter-institutional framework for ICZM officially established and includes agencies responsible for DRM, CCA, and climate mitigation.</p> <p>MDA members of the inter-institutional framework develop joint multi-year work plans to coordinate and collaborate on assessing and addressing climate-related risks in coastal areas.</p>	<p>Officially documents establishing inter-institutional framework for ICZM.</p> <p>Joint multi-year work plans (include an integrated data collection and management plan for ICZM and VRA, with data collection and updating schedule and)</p> <p>Minutes of meetings of R-ICZM Steering Committee.</p> <p>Number of R-ICZM Steering Committee meetings per year.</p> <p>Enhanced coordination goals achieved.</p> <p>Number and type of coordinated Resilient-ICZM interventions implemented each year.</p>	<p>Ministry of Public Works and Utilities (MOPU)</p> <p>Resilient -ICZM policy Steering Committee</p>		<p>The framework includes provisions for a technical information sharing mechanism necessary for ICZM development planning decision making, and relevant agencies/entities share data for this purpose.</p> <p>Relevant agencies/entities meet regularly (at least twice per year) to discuss and make joint planning decisions or development monitoring plans on climate related ICZM.</p> <p>The inter-agency coordination mechanism established to guide the development and approval of R-ICZM policy and legislation will be formalised to address this governance arrangement.</p>

Phases 2 & 3: Development and Approval								
Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Comments and Assumptions
2. Assessing Climate Risk in the Coastal Zone	Enhance understanding status and trends of ecosystems, as well as current and potential future climate-related hazards and risk in coastal areas, essential to planning actions to reduce risk and build coastal resilience.	2.3. Institutional Responsibility for Monitoring and Evaluation of ICZM Activities and Projects delegated/assigned	<p>2.3.1. Review and update <i>The Commonwealth of the Bahamas Research and Permitting System</i>.</p> <p>2.3.2. Review and harmonize institutional mandates for the collection, storage, retrieval, analysis, synthesis, and publication, of ICZM-related data.</p> <p>2.3.3. Identify data and information sets critical to effective decision making for ICZM in support of resilient and sustainable coastal development.</p> <p>2.3.4. BNGIS data holdings updated to include all the 18 data themes mandated in (Bahamas Spatial Data Infrastructure Act, 2014 (No. 9 of 2014)) that are relevant to resilient -ICZM¹⁰⁴, and the 9 data themes relevant to DRM and CCA¹⁰⁵.</p>	<p>Collaborative agreement for data collection, management, analysis, synthesis, and reporting of Resilient-ICZM related data and information established among:</p> <ul style="list-style-type: none"> • Bahamas Environment Science and Technology Commission (BEST) • University of The Bahamas, The Bahamas National Geographic Information Systems (BNGIS) Centre • Department of Environmental Planning and Protection (DEPP) • National Emergency Management Agency (NEMA) • Ministry of Public Works and Utilities • PIU 	<p>An integrated information sharing platform established supporting the management of coastal areas.</p> <p>BNGIS data holdings include all mandated data sets relevant to effective ICZM.</p> <p>BNGIS functions as the GoBH technical focal point for the collection and management of geospatial data on</p>	<p>Ministry of Public Works and Utilities (MOPU)</p> <p>R-ICZM Steering Committee</p> <p>Department of Environmental Planning and Protection (DEPP).</p> <p>Bahamas National Geographic Information Systems (BNGIS) Centre</p> <p>Statistics (Nassau), Department of National Emergency Management Agency (NEMA)</p>		<p>It is assumed that the integrated information sharing platform supporting the integrated management of coastal areas will (a) be established by the BNGIS, and that (b) establishment can be achieved by securing and managing the thematic coverages mandated in the Bahamas Spatial Data Infrastructure Act, 2014 (No. 9 of 2014). This would form the foundation for the Resilient-ICZM data platform, which could be further developed and elaborated over time.</p> <p>The review and update <i>The Commonwealth of the Bahamas Research and Permitting System</i> will ensure that all ICZM relevant data and</p>

¹⁰⁴ Spatial Date Themes Relevant to ICZM include: biological resources, coastal and marine sensitivity mapping, elevation, bathymetric and terrestrial, hydrography, shoreline, transportation network (marine), vegetation, watershed boundaries, wetlands, offshore mineral reserves, land ownership status, international boundaries, land use (existing and proposed and zoning), scientific research, agriculture and aquaculture facilities, oceanographic geographic features, protected areas (marine and terrestrial), and biogeographic regions.

¹⁰⁵ Spatial Date Themes Relevant to DRM and CCA include buildings and facilities, climate & meteorological geographical features, elevation bathymetric & terrestrial, flood hazard and natural risk zones, addresses, electoral boundaries, housing, transport networks (terrestrial, air, and marine), aviation infrastructure, public health, census, and statistical units (demographic and population distribution, and socio-economic statistics), energy resources.

Phases 2 & 3: Development and Approval								
Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Comments and Assumptions
					The Bahamas that is relevant to Resilient-ICZM decision making.			<p>information generated in the Bahamas through research, surveys, assessments, etc. is trackable and accessible through the BNGIS integrated information sharing platform established supporting the management of coastal areas.</p> <p>Review The Commonwealth of the Bahamas Research and Permitting System administered by the Department of Environmental Planning and Protection (DEPP) as the basis of a national system to track, monitor, evaluate and report, all coastal research, monitoring, surveying, and assessment initiatives, and apply requirements for data and information access and sharing.</p>
		2.4. Designate MDA or MDAs responsible for collection and updating of Resilient-ICZM critical data and information stored in the BNGIS integrated information sharing platform for Resilient-ICZM (See Action 2.3.	<p>2.4.1. Conduct an audit of ICZM and DRR/CCA related information required to effectively manage the Bahamas coastal spaces and resources in support of resilient and sustainable national development.</p> <p>2.4.2. Assign responsibilities and resources among designated entities for</p>	<p>Consensus National Resilient-ICZM Data Strategy reviewed, validated, and approved.</p> <p>MOUs signed among entities collaborating in the collection and</p>	<p>National Resilient-ICZM Data Strategy</p> <p>The BNGIS integrated information platform for Resilient-ICZM is</p>	<p>Ministry of Public Works and Utilities (MOPU)</p> <p>Resilient -ICZM policy Steering Committee</p>		Sufficient resourcing is in place for purchase, maintenance, and replacement of survey and data collection equipment and systems, data purchases and updates, and assessments, surveys, and valuations.

Phases 2 & 3: Development and Approval

Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Comments and Assumptions
			the collection and management of ICZM and DRR/CCA related data and information for effective coastal management.	management of ICZM and DRR/CCA related data and information.	<p>established and operational, with the 19 ICZM-relevant data themes and 9 DRR/CCA-relevant data themes are fully represented (consistent with the Bahamas Spatial Data Infrastructure Act, 2014 (No. 9 of 2014).</p> <p>Resilient-ICZM and VRA are updated periodically in compliance with the National Resilient-ICZM Data Strategy.</p>			

Phase 4 (a): Implementation								
Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Assumptions
3. Identifying Adaptation Opportunities and Protecting Investments	Identifying ICZM-related Responses to Climate Change	3.1. Identify and implement specific actions for responding to climate-related risks in the coastal zone and mainstream into ICZM Plan.	3.1.1. Coordinate the identification and planning for the implementation of ICZM-related climate change responses (adaptation) with the ministries responsible for the development of national development plans, National Adaptation Program of Actions, National Adaptation Plan or Nationally Determined Contributions.	Specific, prioritised, location specific, hard, and soft adaptation actions for responding to and reducing climate-related risks in the coastal zone have been evaluated and adopted in the Resilient- ICZM Plan and Strategy.	Approved responses to climate-related risks in the coastal zone are reflected in national socio-economic development plans, national physical/spatial development plans, and plans submitted to the UNFCCC (e.g., NDCs, NAPs, and national communications) CCA measures, process and targets reflected in the R-ICZM Plan and Strategy	MOPU PIU Working in coordination with: Agriculture, Marine Resources and Family Island Affairs, Ministry of The Environment, Ministry of National Security, Ministry of Social Services & Urban Development, Ministry of Tourism, Investments and Aviation, Ministry of Environmental Services, Department of Marine Resources, Department of Meteorology, Department of Bahamas National Geographic Information Systems (BNGIS) Centre		The multi-sectoral, participatory, Resilient-ICZM policy steering committee (Annex I) established as a coordination mechanism established through Action 1.2.1. is formalised and given standing in law to make decisions in the interest of the Bahamas, in the context of the institutional arrangements established under the new Resilient-ICZM legislation (Annex I).

Phase 4 (a): Implementation								
Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Assumptions
						National Emergency Management Agency (NEMA) Port Department Statistics (Nassau), Department of Lands and Surveys, Department of Physical Planning, Department of Bahamas Environment Science and Technology Commission (BEST) Bahamas Maritime Authority University of The Bahamas, The Water & Sewerage Corporation		
	Optimizing the Available Skills and Experience for Developing and Evaluating Adaptation Solutions	3.2. Conduct an ICZM-specific, and ICZM -	3.2.1. The multi-sectoral, participatory, Resilient-ICZM Policy Steering Committee (Annex I) established as a coordination mechanism established through Action 1.2.1 oversees the development of the	A phased cross sectoral Resilient-ICZM Human Resources Development Strategy published as an	A phased cross sectoral Resilient-ICZM Human Resources	Ministry of Public Works and Utilities (MOPU) PIU		Ministries and non-governmental stallholders have agreed to collaborate to deliver resilient and

Phase 4 (a): Implementation								
Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Assumptions
		related ¹⁰⁶ skills audit and prepare a capacity development plan as part of the process for developing Resilient ICZM policy, legislation, and plans.	terms of reference and procurement package for the development, delivery, review, and approval of this service.	annex to the National ICZM Plan. Resilient-ICZM Human Resources Development Audit Report submitted to the Resilient ICZM Policy Steering Committee for review and approval.	Development Strategy. Resilient-ICZM Human Resources Development Audit Report	Ministry of the Environment (MoE) Department of Environmental Planning and Protection (DEPP)		sustainable coastal development. Roles and responsibilities have been formally identified, agreed, and delegated in line with the Resilient-ICZM Plan and strategy.
	Monitoring and Protecting Investments in Infrastructure	3.3. Review and enhance standards and metrics that are used to monitor and evaluate the integrity of coastal infrastructure and operations and for upgrades or decommissioning.	3.3.1. The Resilient-ICZM Policy Steering Committee oversees the development of the terms of reference and procurement package for the development, delivery, review, and approval of this service.	Standards and metrics for monitoring and evaluating the integrity of coastal infrastructure and operations and for upgrades or decommissioning approved by Cabinet. Publication of manual of standards and metrics for monitoring and evaluating the integrity of coastal infrastructure and operations and for upgrades or decommissioning.	Approval decision Gazetted Published manual of coastal infrastructure monitoring standards and metrics.	Ministry of Public Works and Utilities (MOPU), in collaboration with Bahamas Bureau of Standards and Quality (BBSQ) Bahamas Environment Science and Technology Commission (BEST) University of The Bahamas, The Ministry of the Environment (MoE) Department of Environmental		

¹⁰⁶ E.g., Conducting or evaluating environmental impact assessments; conducting or evaluating reports on ecosystem service valuation; conducting or evaluating cost-benefit analysis; conducting or evaluating studies on effectiveness of natural infrastructure; conducting or evaluating analyses of coastal processes / dynamics.

Phase 4 (a): Implementation								
Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Assumptions
						Planning and Protection (DEPP) Bahamas National Geographic Information Systems (BNGIS) Centre National Emergency Management Agency (NEMA) .		
		3.4. The national entity responsible for ICZM undertakes periodic monitoring and maintenance work of existing conventional and green coastal infrastructure. (Monitoring at least every three years).	To be detailed and codified in the national ICZM Action Plan and Strategy	National ICZM legislation mandates the national entity responsible for ICZM with the responsibility for undertakes monitoring and maintenance work of existing conventional coastal infrastructure at clearly defined time intervals (monitoring at least every three years).	Schedule of monitoring and maintenance work to be undertaken on of existing conventional and green coastal infrastructure. Budget for monitoring and maintenance work to be undertaken on of existing conventional and green coastal infrastructure. Reports on completed monitoring and	Works and Utilities (MOPU), in collaboration with Bahamas Bureau of Standards and Quality (BBSQ) Bahamas Environment Science and Technology Commission (BEST) University of The Bahamas, The Ministry of the Environment (MoE) Department of Environmental		Manual of coastal infrastructure monitoring standards and metrics approved and published (Action 3.3.).

Phase 4 (a): Implementation								
Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Assumptions
					<p>maintenance work to conventional and green coastal infrastructure.</p> <p>Number of reported recommendations that lead to planned action.</p>	<p>Planning and Protection (DEPP)</p> <p>Bahamas National Geographic Information Systems (BNGIS) Centre</p> <p>National Emergency Management Agency (NEMA)</p>		
		3.5. The national entity responsible for ICZM conducts periodic ex-post evaluation of the effectiveness of built and green coastal protection investments.	To be detailed and codified in the national ICZM Action Plan and Strategy	National ICZM legislation mandates the national entity responsible for ICZM with the responsibility for conducting ex-post evaluation of the effectiveness of built coastal protection investments at clearly defined time intervals (monitoring at least every three years).	<p>Schedule of periodic ex-post evaluation of the effectiveness of built and green coastal protection investments to be undertaken.</p> <p>Budget for periodic ex-post evaluation of the effectiveness of built and green coastal protection investments to be undertaken.</p> <p>Reports on completed periodic ex-post evaluation of the effectiveness of built and green</p>	<p>Works and Utilities (MOPU), in collaboration with Bahamas Bureau of Standards and Quality (BBSQ)</p> <p>Bahamas Environment Science and Technology Commission (BEST)</p> <p>University of The Bahamas, The</p> <p>Ministry of the Environment (MoE) Department of Environmental</p>		Manual of coastal infrastructure monitoring standards and metrics approved and published.

Phase 4 (a): Implementation

Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Assumptions
					coastal protection investments to be undertaken. Number of reported recommendations that lead to planned action.	Planning and Protection (DEPP) Bahamas National Geographic Information Systems (BNGIS) Centre National Emergency Management Agency (NEMA)		

Phase 4 (b): Implementation								
Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Assumptions
4. Financing ICZM	Sustainable Funding for ICZM Operations	4.1. Prepare a Resource Mobilisation Strategy (RMS) to inform and guide the sustainable financing of the CZMU and the implementation of the R-ICZM Policy and enforcement of the R-ICZM legislation.	4.1.1. Conduct a strategic review of the current funding status for all R-ICZM related undertakings, alignment of current funding with planned R-ICZM activities (precursors: R-ICZM Policy and Action and Strategic Plan Plan) activities and the strategic programmes to identify funding gaps, challenges, in funding and potential sources of funding.	Resource Mobilisation Strategy and supporting: <ul style="list-style-type: none"> Acton Plan with timeline to access funding. Findings of a capacity needs assessment of the PIU-CMU/GoBH in support of the effective mobilisation of funds for R-ICZM and maintain partnerships, reviewed, validated, and approved. Approved capacity development strategy to ensure institutional capacity is in place to implement the Resource Mobilisation Strategy. 	Stakeholder review and validation process for RMS implemented. Draft Resource Mobilisation Strategy (RMS) Stakeholder feedback on, and validation of, RMS Final Resource Mobilisation Strategy (RMS) Funding Source Matrix (Annex III)	MOPU PMU working with the R-ICZM Steering Committee		Resource Mobilisation Strategy: <ul style="list-style-type: none"> Funding challenges identified in the National ICZM Strategy and Action Plan Alignment of prospective resource partners with National ICZM priorities and activities as defined in the National ICZM Strategy and Action Plan. Proposed Options for Funding Strategy Proposed Options for Mobilising Resource Partners.
			4.1.2. Research and document sources of funding linked to the Resilient -ICZM Action Plan and Strategic Plan	Resilient ICZM annual budget and three-year budget projection.	Approved annual Resilient ICZM budget. Approved Resilient ICZM three-year budget projection.	MOPU PMU working with the R-ICZM Steering Committee		Resilient -ICZM Action Plan and Strategic Plan approved.

Phase 4 (b): Implementation								
Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Assumptions
			4.1.3. Funding Strategy to overcome challenges to securing funding (draw from Bahamian and Caribbean experiences).	Funding Strategy approved. Implementation of the Funding Strategy	Approved Funding Strategy	MOPU and PIU working with the: <ul style="list-style-type: none"> R-ICZM Steering Committee Ministry of Finance 		Funding Strategy makes operational the information, guidance and recommendations set out in the Resource Mobilisation Strategy, and implements the Action Plan to the RMS.
			4.1.4. Implementation of capacity development strategy.	TOR for each resource mobilisation position Procurement plan for recruiting the human resources required to implement the RMS.	Number of key resource mobilisation functions being effectively performed by trained staff.	MOPU and PIU working with the: <ul style="list-style-type: none"> R-ICZM Steering Committee Ministry of Finance 		
			4.1.7. Initiate Resource Mobilization Activities (Annex III)	International Development Finance mechanisms successfully accessed	Resource mobilisations reports. Number of resource partners engaged per month. Number of agreements signed. Value of resourcing commitments secured. Annual government budget includes	MOPU and PIU working with the: <ul style="list-style-type: none"> R-ICZM Steering Committee Ministry of Finance 		

Phase 4 (b): Implementation								
Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Assumptions
					dedicated line item to support operating costs for government entities responsible for implementing or actively facilitating Resilient-ICZM			
			4.1.8. Access to International Development Finance		<p>Government implements user-fee system to raises funds for Resilient-ICZM.</p> <p>Funding agreements</p> <p>Contracts</p> <p>Year on year growth in income stream.</p> <p>Favourable income levels relative to budget projections.</p>	<p>MOPU and PIU working with the:</p> <ul style="list-style-type: none"> R-ICZM Steering Committee Ministry of Finance 		
			4.1.9. Financial Incentives and Schemes to Incentivize Private Action	.	<p>Approved schedule of incentives and incentives.</p> <p>Number of new stakeholders participating in incentivised</p>	<p>MOPU and PIU working with the:</p> <ul style="list-style-type: none"> R-ICZM Steering Committee Ministry of Finance 		

Phase 4 (b): Implementation								
Category	Objectives	Actions	Sub-actions	Milestone	Means of Verification / Indicators	Responsible Actors	Time Frame (duration)	Assumptions
					activities in support of Resilient-ICZM.			

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Appendix A. Indicator Tables and Criteria Details

Appendix A. Indicator Tables and Criteria Details

<p>1. ICZM-specific or inclusive legislation has been approved, which designates a lead agency.</p>	<p>No</p>	<p>0</p>	<p>An ICZM legal instrument should provide a broad framework for coordinating uses of coastal resources, including regulations, permits, environmental assessment, and development planning, operating through administrative process. This determined that there is no ICZM-specific or inclusive legislation. In the course of the assessment, it was also determined that there no approved ICZM-specific policy.</p> <p>Supporting legislation is required, because ICZM legal instrument will provide support the promulgation of a broad framework of, regulations, permits, environmental assessment requirements, and development planning requirements, and administrative processes, for managing and coordinating uses of coastal resources (IDB 2020).</p> <p>The draft Bahamas National Maritime Policy (2015)¹⁰⁷ proposes a vision for the ocean policy framework and governance arrangements for coordinating the use of ocean resources. The policy was approved in 2022. However, it was not possible to secure a copy of the approved policy to inform this assessment.</p> <p>The need for an ICZM implementing mechanism and enabling framework has been clearly stated in several national development reports¹⁰⁸.</p>
<p>2. Legislation designates sectoral competencies, including at least 75% of the following agencies listed - an agency responsible for environment, planning, public works, and fisheries.</p>	<p>Yes</p>	<p>1</p>	<p>To determine whether existing Bahamian legislation designates sufficient sectoral responsibility for four (4) critically important, ICZM-related portfolios (environment, planning, public works, and fisheries), the relevant legislation was reviewed to identify and assess the laws that cover each sector, the institutional roles and responsibilities defined therein.</p> <p>Environment:</p> <p>There are at least twenty-six pieces of legislation that can be classified as making provision for the management, conservation, or protection of the environment. The following were considered to be the main, high-level, overarching or umbrella legislation governing the environment. They establish ministerial and institutional responsibility for the environment, the functions and responsibilities of these actors, and the procedures, tools, and mechanisms that will be employed to manage and conserve the environmental resources of the Bahamas.</p> <ul style="list-style-type: none"> • The Ministry of Environment Act No. 39 of 2019. establishes the Ministry of the Environment to oversee the integrity of the environment of the Bahamas, to make the Minister responsible therefor a corporation sole, to establish the Environmental Administration Fund and the Environmental Trust Fund and for related matters. • The Environmental Planning and Protection Act No. 40 of 2019. Seeks to establish an integrated, participatory, management system to protect the environment and maintaining social and economic welfare. It establishes and defines the responsibilities of the Minister regarding the oversight of the administration and enforcement of the Act, and the establishment, functions,

¹⁰⁷ GoBH (2015). National Maritime Policy. Source URL: <https://www.bahamas.gov.bs/wps/wcm/connect/36f9a2ff-17fd-4b59-8484-a68c6c83611d/Bahamas+NMP+Revised+February+2017.pdf?MOD=AJPERES>.

¹⁰⁸ Formal recognition of the need for an ICZM enabling framework for SD and CCA:

- The Bahamas National Climate Change Policy (2005)
- The Bahamas Second National Communication (2015)
- The Draft National Development Plan for the Bahamas (2016)
- Fisheries Policy (Directive No. 8)

		<p>and structure of the Department of Environmental Planning and Protection. The Act also speaks to Environmental Policy, Environmental Management Plans, Environmental Impact Assessments, a national Environmental Data Registry, and the development of a robust climate change regime that applies adaptation and mitigation technologies to address vulnerabilities.</p> <ul style="list-style-type: none"> • The Conservation and Protection of the Physical Landscape of The Bahamas Act, 1997 (Cap. 260) charges the Minister with the responsibility of regulating excavation, landfill operations, quarrying, mining, and harvesting of protected trees in The Bahamas, for the purpose of providing for and ensuring the conservation and maintenance of the environment. • The Bahamas National Wetland Policy was established to conserve, restore, and manage wetlands in conjunction with the sustainable development practices. • The National Policy for the Adaptation to Climate Change is a national policy with a multi-sectoral approach. The goal of the Policy is to avoid, minimize, adapt to, or mitigate, the negative impacts of climate change on environment, economy, human health, and well-being, through institutional capacity building, research and development, technology transfer and public and private sector investments. <p>The existing legislation and the related institutional arrangements provide an adequate enabling framework within which to manage the country's terrestrial and coastal resources.</p> <p>Planning: The main pieces of legislation governing development planning, approvals, management of lands and their conservation and protection, are the:</p> <ul style="list-style-type: none"> • Coast Protection Act, 1968 (Cap. 204). Date of text: 30 December 1986 • Reclamation and Drainage Act (Cap. 259) Date of original text: 18 January 1937 (1987) • Conservation and Protection of the Physical Landscape of The Bahamas Regulations, 1997 (Cap. 260). Date of text: 27 May 1997 • Planning and Subdivision Act, 2010 (No. 4 of 2010). • Town Planning (Extension to Out Islands) Order (Cap. 255). Date of original text: 27 March 1965 (2001) • Department of Physical Planning Regulations, 2011 (S.I. No. 4 of 2011). Date of text: 04 January 2011. <ul style="list-style-type: none"> • The Coastal Protection Act (1968) makes provision for the protection of the coast against erosion and encroachment by the sea and for purposes connected therewith. The Act grants the power to the Minister responsible for ports and harbours to carry out construction of coast protection works as deemed urgently necessary and to apportion costs of such works on the owners of any land who benefit from such works. • The Reclamation and Drainage Act grants regulation-making powers for purposes of the Act, to the Minister, and makes provision for the Minister to declare parts of the Bahamas a reclamation area to be dried and reclaimed. • Under the Conservation and Protection of the Physical Landscape of the Bahamas Act (1997) the Minister is charged with the responsibility of regulating excavation, landfill operation, quarrying, mining, and harvesting of protected trees in the Bahamas for the purpose of providing for and ensuring the conservation and maintenance of the environment.
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			<p>divisionsOutIslandsAct_1.pdf An Act to make provision for the formation of Local Improvement Associations in order to establish, maintain and operate improvement associations for the benefit of lot owners in sub-divisions.</p> <ul style="list-style-type: none"> • Reclamation And Drainage Act 1937 (Chapter 259)- http://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/1937/1937-0001/ReclamationandDrainageAct_1.pdf An Act to provide for reclamation and drainage of swampy areas. • Conservation And Protection Of The Physical Landscape Of The Bahamas Act 1997 (Chapter 260)- http://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/1997/1997-0012/ConservationandProtectionofthePhysicalLandscapeofTheBahamasAct_1.pdf An Act to make provision for the conservation and protection of the physical landscape of The Bahamas. • Abutments Act 1883 (Chapter 270)- http://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/1997/1997-0012/ConservationandProtectionofthePhysicalLandscapeofTheBahamasAct_1.pdf An Act to improve the Harbour of Nassau and to afford greater facilities for repairing vessels that have sustained damage and for other purposes. • Abutments (Out Islands) Act 1883 (Chapter 271)- http://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/1883/1883-0021/AbutmentsOutIslandsAct_1.pdf An Act to authorize the building of wharves or abutments in the ports and harbours in the Out Islands. • Hatchet Bay Harbour Control Act 1927 (chapter 272) An Act relating to the proposed harbour at Hatchet Bay, Eleuthera. <p>Fisheries: There are over twenty-seven pieces of legislation dedicated to fisheries issues.</p> <p>Generally, the Fisheries Resource Act and seven related amendments make provision for the conservation and management of the fishery resources of the Bahamas and extends the limits of the jurisdiction of the Bahamas over national fishery resources and related matters.</p> <ul style="list-style-type: none"> • The Fisheries Resources (Jurisdiction and Conservation) Act, 1977 (Cap. 244) establishes the Bahamas' exclusive fisher zone whose outer limits correspond to the boundaries of the EEZ of the Bahamas. • The Agriculture and Fisheries Act (Cap. 242) provides for the supervision and development of agriculture and fisheries in The Bahamas, through the appointment by the governor of a Minister responsible for agriculture and fisheries and an Agriculture and Fisheries Board. The Minister has the authority to make rules governing fisheries activities, fishing gear, the sale of marine projects, licensing, and enforcement. • The <i>Fisheries Resources (Jurisdiction and Conservation) (Declaration of Protected Area) Order (S.I. No. 115 of 2013)</i> declares the exclusive economic zone of The Bahamas to be a protected area and prohibits fishing for Nassau Grouper within that area in a specified period. Other subsequently promulgated Fisheries Resource regulations confer upon specific areas of, or islands in the Bahamas archipelago and/or specific species, protected status.
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			The existing fisheries legislation and the related institutional arrangements provide an adequate enabling framework within which to manage the country's fishable resources, exploitive activities, technologies, and practices, and the coastal and marine habitats in which they reside.
3. Legislation establishes collaboration with the agency responsible for climate change adaptation.	No	0	There is no legislation that establishes (a) a designated coastal zone management entity, and (b) collaboration between a designated coastal zone management entity and the agency responsible for climate change adaptation.
4. Legislation establishes a process for public participation, review, and comment on the ICZM planning process and on the approval of coastal development public-investment projects ("Public" includes citizens, community groups, as well as stakeholders with vested economic interests).	No	0	<p>There is no legislation that establishes (a) a designated coastal zone management entity, or (b) an "ICZM Planning Process." The response to this question is therefore, "No" and the score is "0."</p> <p>However, provision for public participation, review, and comment on the approval of public investment projects, prior to approval, is made under general environmental legislation with a broad and inclusive focus or scope, which would capture coastal development without being ICZM specific:</p> <p>The enabling environment that The Bahamas has established to facilitate management of the environment, is centred on the Environmental Planning and Protection Act (2019) considers the entire environment, terrestrial, coastal, and marine. The Act has as one of its ten objectives, the establishment of a mechanism for effective public participation in decision making and the formulation of environmental policy.</p> <p>Under the Environmental Planning and Protection Act (2019) provision is made for the Director of the Department of Environmental Planning and Protection to invite the public to comment on the Environmental Policy Framework (Section 16(5)).</p> <p>The EIA Regulations Act (2020) mandates that public consultation be done as a part of the Certificate of Environmental Clearance (CEC) process.</p>
5. A coastal zone management plan has been officially published.	No	0	<p>In the absence of approved ICZM programme, policy and legislation, there is no formal coastal zone management plan. The response to this question is therefore, "No" and the score is "0".</p> <p>The Bahamas National Maritime Policy (2015) proposed a vision for the ocean, policy framework and governance arrangements for coordinating the use of coastal resources. The Policy was approved in 2022. However, a legal framework has not been developed and formally adopted to define the institutional roles and responsibilities, powers, and authorities, that would give rise to planning outputs.</p>
6. Regulations have been officially published to implement the ICZM plan.	No	0	In the absence of approved ICZM primary legislation, there are no subordinate ICZM regulations under which ICZM plans would be developed and promulgated. The response to this question is therefore, "No" and the score is "0".
7. Regulations establish a system of penalties to public and private entities when ICZM-related regulations are violated.	Yes	1	<p>In the absence of approved ICZM primary legislation, there are no subordinate ICZM regulations that establish a system of penalties for violation of ICZM-related regulations.</p> <p>However, there is ICZM-related legislation and regulations that have been promulgated for environment, planning, public works, and fisheries, provide for oversight of activities in The Bahamas ocean and coastal spaces and the reporting of violations of regulations, these regulations having bearing or being relevant to, effective ICZM. These regulations establish a system of penalties to public and private entities.</p> <p>There are regulations under various pieces of legislation (Annex I) that speak to penalties for violating regulations related to coastal, spaces, resources, or activities. However, these regulations are thematically or sectorally focused (siloes), and do not represent a coherent, or</p>

			<p>intentional, “system” of penalties.</p> <p>The Environmental Planning and Protection Act (2019), Part VIII Section 55 of the EPPA - Offences and Penalties, defines the penalties for damage to the "environment". Source URL: https://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/2019/2019-0040/EnvironmentalPlanningandProtectionAct2019_1.pdf .</p> <p>The Department of Environmental Planning and Protection (DEPP) is also responsible for enforcement of environmental regulation related to coastal developments. Within the DEPP Act 2019, Part III section 11 speaks to No Work Without Clearance granted (Certificate of Environmental Clearance) and anybody who violates this order can be fined up to \$10,000.00 or 3 years in prison or both. In the EIA regulations 2020, the CEC is granted with particular stipulation that have to be adhered. Failure in compliance to the CEC can result in decommissioning, demolition and removal of structures, restoration of the natural environment to a state similar to the original before the commencement of the project, or anything else required by the DEPP. The Fines fees and penalties associated with the breach of the act can be found in section 63 and 65. Source URL: https://www.depp.gov.bs/wp-content/uploads/2020/02/Department-of-Environmental-Protection-Planning-Act-2019.pdf.</p>
8. A system for reporting violations of ICZM or related regulations is in place	Yes	1	<p>There is no approved ICZM programme, policy, and legislation, and therefore, no ICZM-specific regulations or system for reporting violations.</p> <p>However, there are regulations under various pieces of environmental legislation that define the systems for reporting violations as they relate to coastal, spaces, resources, activities, or uses. The response to this question, through the option provided by the conjunction “or,” is therefore, “Yes” and the score is “1”.</p> <p>The Environmental Planning and Protection Act (2019). Under, Sub-section (2), Section 4 Responsibilities of Minister of Part I – Administration, of the Act, the Minister is charged with the responsibility of “<i>encouraging and facilitating the participation of all persons, non-governmental organizations, and local communities in matters relating to environmental planning and protection.</i>” This is for the purpose of administering and enforcing the Act. Under Section (12) Principles of Accountability, of the First Schedule (Section 3(2)) Principles of Environmental Protection, it is stipulated that “<i>The public should ...be given opportunities to participate in policy and programme development.</i>”</p>

Table A- 1B: Findings for Indicator 1B - Status of National Regulatory Framework on Climate Change Adaptation and Disaster Risk Management

Ranking Criteria	Response	Score	Main Finding Supporting Response
<p>1. National legislation to implement DRM has been officially published (not only for an emergency preparedness. See the definition of DRM).</p>	<p>No</p>	<p>0</p>	<p>National legislation for disaster risk management has been published.</p> <p>The description of the Disaster Preparedness and Response Act (Cap. 34 A) refers to the mitigation of, preparedness for, response to and recovery from emergencies and disasters in The Bahamas.</p> <p>However, review of the legislation in its entirety reveals that it is focused on emergency preparedness and does not address the full disaster management cycle as defined by the Caribbean Disaster and Emergency Management Agency (CDEMA) as Comprehensive Disaster Management ¹⁰⁹(CDM) and by the IDB in the Coastal Resilience Integrated Coastal Zone Management Performance Indicators framework.¹¹⁰</p> <p>It is, therefore, questionable whether this law is consistent with Disaster Risk Management (DRM). The response to this question is therefore “No” and the score is “0”.</p> <p>Disaster risk management is the application of disaster risk reduction policies and strategies to prevent new disaster risk, reduce existing disaster risk and manage residual risk, contributing to the strengthening of resilience and reduction of disaster losses. The definition speaks to the need for an integrated approach to disaster management that effectively addresses all phases of the disaster cycle through, prevention, mitigation, preparedness, response, recovery, and rehabilitation.</p> <p>While the Disaster Preparedness and Response Act (Cap. 34A) certainly includes risk mitigation in its description, a reading of the law as a whole, reveals that its context is focused on emergency on only one of the seven areas of effective DRM: preparedness (e.g., governance arrangements, shelter designation and operation, designation, and management of especially vulnerable areas).</p> <p>Source : https://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/2006/2006-0004/DisasterPreparednessandResponseAct_1.pdf</p> <p>It is anticipated that proposed legislation will require a reassessment of this criterion in the near- to medium-term. On</p>

¹⁰⁹ DM is defined as the management of all hazards through all phases of the disaster management cycle – prevention and mitigation, preparedness, response, recovery, and rehabilitation - by all peoples- public and private sectors, all segments of civil society and the general population in hazard prone areas. CDM involves risk reduction & management and integration of vulnerability assessment into the development planning process.” (CDERA 2001, 2006).

¹¹⁰ Disaster Risk Management* – Processes to design, apply and evaluate strategies, policies and measures aimed at: improving the understanding of disaster risks, fostering risk reduction and financial protection from disaster risks, and promoting the continuous improvement of preparedness, response, and recovery practices, with the explicit objective of increasing human security, well-being, quality of life, resilience, and sustainable development. Disaster Risk Management is not only for emergency preparedness but, as indicated clearly in the definition, has a broader perspective to incorporate it in socioeconomic development planning and process both at the national and the local/community level.

Ranking Criteria	Response	Score	Main Finding Supporting Response
			<p>9th December 2022, the Disaster Risk Reduction Management Act (Short Title) was enacted. The Act provides for a more effective and <i>comprehensive Disaster Risk Management Policy and Framework through the establishment of the Disaster Risk Management Authority and for Connected Matters</i>. (The Act's Long Title.). The Act promotes and implements an approach to disaster risk management that is holistic, comprehensive, integrated, and proactive in lessening the socio-economic and environmental impacts of disasters including climate change. It focuses on reducing risk, including the risk of loss of life, health, physical integrity, economic disruption and damage to the environment and property, especially to those members of the population who are most vulnerable by reason of age, disability, poverty, lack of resources, physical displacement, or gender. The Act also promotes the involvement and participation of all relevant sectors and stakeholders, at all levels of the society.</p>
<p>2. There is also an officially published national policy or legislation focused on climate change adaptation.</p>	<p>Yes</p>	<p>1</p>	<p>The National Policy for the Adaptation to Climate Change (2005) was prepared by the National Climate Change Committee and the Bahamas Environmental Science and Technology (BEST) Commission.</p> <p>The Ministry of Environment and Natural Resources is responsible for climate related issues.</p> <p>The goal of the Policy is to avoid, minimize, adapt to, or mitigate, the negative impacts of climate change on environment, economy, human health, and well-being, through institutional capacity building, research and development, technology transfer and public and private sector investments.</p> <p>Source: https://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/2006/2006-0004/DisasterPreparednessandResponseAct_1.pdf</p>
<p>3. National regulations on DRM coordinate with related standards on climate change adaptation, integrated water resources management, and land use planning.</p>	<p>No</p>	<p>0</p>	<p>The Disaster Preparedness and Response Act (2008) does not mention climate change or CCA. Water is not mentioned in the explicit contexts of either Integrated Water Resource Management (IWRM).</p> <p>Under article 13 (Undertaking of Participating States) the government agency responsible disaster management is mandated to:</p> <p>(j) ... identify and map areas with special problems like flood prone and landslide prone areas.</p> <p>(n) to develop strategies for loss reduction in the public and private sectors focusing on vital economic activities and life-line activities like water supply.</p> <p>Source : https://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/2006/2006-0004/DisasterPreparednessandResponseAct_1.pdf</p>

Ranking Criteria	Response	Score	Main Finding Supporting Response
4. National policy / legislation on both DRM and climate change adaptation establishes a process for public participation, review, and comment in the development of disaster risk management and / or climate adaptation plans.	No	0	<p>Neither the Disaster Preparedness and Response Act (2008) or The Bahamas National Climate Change Policy (2005) makes provision for public participation, review, and comment in the development of disaster risk management and / or climate adaptation <i>plans</i>.</p> <p>The Disaster Preparedness and Response Act (2008) Section 17, makes provisions to invite submissions from the public relating to the contents of a draft special-area precautionary plan and their revision (Section 19).</p> <p>The Bahamas National Climate Change Policy stipulates that “<i>On the fifth anniversary of the date of this policy, the NCCC shall conduct a public review of this policy to determine its effectiveness in achieving its goals and objectives.</i>” (BNCCP, 2005). Page 34, Monitoring and Review section.</p>

Table A-1C: Findings for Indicator 1C- Regulatory Environment for Coastal Development

Ranking Criteria	Response	Score	Main Finding Supporting Response
1. The regulations that standardize the conducting of environmental impact assessments (or equivalent process) integrates climate-hazard analysis ¹¹¹ .	Yes	1	<p>The current EIA defines an EIA as a study identifying and evaluating, <i>inter alia</i>, “...the potential means of mitigating and accessing the likely climate related impacts of the proposed project”¹¹².</p> <p>The Bahamas has Environmental Impact Assessment (EIA) Regulations that call for addressing environmental, social, and economic impacts of projects. Part III, Section 12, of the Environmental Planning and Protection Act (2019)¹¹³ sets out the procedures for Environmental Impact Assessments (EIAs). Regulations made under the Act provide for any aspect of the EIA.</p> <p>The conditions for EIAs are binding on all government entities (Section 14) as no approval or documentary authorization shall be granted under any enactment in respect of a project that has the potential to have an adverse effect on the environment.</p> <ul style="list-style-type: none"> • Environmental Planning and Protection Act (2019). Source : https://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/2019/2019-0040/EnvironmentalPlanningandProtectionAct2019_1.pdf • Environmental Impact Assessment Regulations (2020). Section 12 of the Environmental Planning and Protection Act (No. 40 of 2019). Source: EnvironmentalImpactAssessmentRegulations2020_1.pdf (bahamas.gov.bs)
2. The regulations that standardize the conducting of project impact assessments (or equivalent process) prior to project implementation requires evaluation of social and environmental impacts.	Yes	1	<p>The Environmental Impact Assessment Regulations (2020) standardize the conducting of EIAs prior to project implementation and require the evaluation of social and environmental impacts.</p> <p>Under the powers conferred by Section 12 of the EPPA, the Minister has issued the Environmental Impact Assessment Regulations (2020). The Ministry of the Environment and Housing has published supporting regulations.</p> <p>Source: https://laws.bahamas.gov.bs/cms/images/LEGISLATION/SUBORDINATE/2020/2020-0150/EnvironmentalImpactAssessmentRegulations2020_1.pdf</p>

¹¹¹ Caribbean Development Bank (2015). Updated Sourcebook – Integration of Natural Hazards into the EIA Process. Source URL: https://www.caribank.org/sites/default/files/publication-resources/Updated%20Sourcebook_Integration%20of%20Natural%20Hazards%20into%20EIA%20Process.pdf.

¹¹² Caribbean Development Bank (2015). Updated Sourcebook – Integration of Natural Hazards into the EIA Process. Source URL: https://www.caribank.org/sites/default/files/publication-resources/Updated%20Sourcebook_Integration%20of%20Natural%20Hazards%20into%20EIA%20Process.pdf.

¹¹³ GoBH (2019). The Environmental Planning and Protection Act, 2019. Source URL: <https://www.depp.gov.bs/wp-content/uploads/2020/02/Department-of-Environmental-Protection-Planning-Act-2019.pdf>.

Ranking Criteria	Response	Score	Main Finding Supporting Response
			Section 9 of the EIA Regulations require the project proponent to provide detailed information concerning the proposed project and the potential environmental, <u>social</u> , economic, and cultural affects, including adverse effects as defined in the Act.
3. The National Development Plan (or equivalent instrument) contains objectives, targets and / or indicators about climate risk reduction and / or climate resilience.	Yes	1	<p>The National Development Plan of the Bahamas (2016) contains objectives, targets and proposed actions for climate risk reduction and climate resilience.</p> <p>Strategy 11.1: Researching and Implementing Climate Change Adaptation and Mitigation Measures in the National Development Plan, speaks to climate change research, implementation of climate change mitigation and adaptation, changes to the National Policy for Adaptation to Climate Change¹¹⁴.</p> <p>Under Strategy 11.1 Research and Implementation of CCA and Mitigation Measures, The Government of the Bahamas plans to develop a national response to climate change adaptation and introduce appropriate legislation (Pg. 295). This would see legislation and regulatory instruments incorporating the National Policy for Adaptation to Climate Change into law (Pg. 296).</p>
4. Regulations establish a system of penalties to public and private entities when coastal development-related regulations are violated.	Yes	1	<p>The Environmental Planning and Protection Act (2019), Part VIII Section 55 of the EPPA - Offences and Penalties, defines the penalties for damage to the "environment". Source URL: https://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/2019/2019-0040/EnvironmentalPlanningandProtectionAct2019_1.pdf .</p> <p>The Department of Environmental Planning and Protection (DEPP) is also responsible for enforcement environmental regulation related to coastal developments. Within the EPP Act 2019, Part III section 11 speaks to No Work Without Clearance granted (Certificate of Environmental Clearance) and anybody who violates this order can be fined up to \$10,000.00 or 3 years in prison or both. In the EIA regulations 2020, the CEC is granted with particular stipulation that have to be adhered. Failure in compliance to the CEC can result in decommissioning, demolition and removal of structures, restoration of the natural environment to a state similar to the original before the commencement of the project, or anything else required by the DEPP. The Fines fees and penalties associated with the breach of the act can be found in section 63 and 65.</p>
5. The lead agency for ICZM has defined priority (or critical) areas for coastal management.	No	0	<p>There is no legislation that establishes (a) a designated coastal zone management entity, or (b) an "ICZM Planning Process." The response to this question is therefore, "No" and the score is "0".</p> <p>However, priority areas are defined under ICZM-related legislation and management plans.</p> <p>The Bahamas Disaster Preparedness and Emergency Response Act (2008) sets out provisions for delimiting Specially Vulnerable Areas (Part VI).</p>

¹¹⁴ GoBH (2017), Vision 2040 National Development Plan of the Bahamas. 2nd Working Draft. Source : https://www.vision2040bahamas.org/media/uploads/2nd_Working_Draft_of_the_NDP_website_30.11.17c.pdf

Ranking Criteria	Response	Score	Main Finding Supporting Response
			<p data-bbox="1083 237 2050 293"> https://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/2006/2006-0004/DisasterPreparednessandResponseAct_1.pdf </p> <p data-bbox="1083 326 2451 407"> The Bahamas Protected Areas Fund hosts a Protected Areas Register (https://bahamasprotected.com/protected-areas/register/) with 122 protected areas in thirteen categories, managed by five (5) MDAs. 10 "Marine" protected areas are not assigned to a management entity. </p>

Table A-1D - Findings for Indicator 1D- Interagency Coordination of Entities Relevant to ICZM, DRM and Climate Change Adaptation

Ranking Criteria	Response	Score	Main Finding Supporting Response
1. An inter-institutional framework for ICZM has been officially established.	No	0	<p>In the context of this assessment framework and its criteria, the study determined that there is no ICZM-specific legislation that defines the enabling mechanism in support of ICZM, within which an inter-institutional framework would be established. The response to this question is therefore “No” and the score given is “0”.</p> <p>The 2015 draft Bahamas National Marine Policy (BNMP) identifies the National Maritime Policy Steering Committee as the inter-institutional coordinating framework under the Ministry of Transport and Aviation. The Steering Committee is mandated to:</p> <ul style="list-style-type: none"> • Establish a clear coordinated institutional mechanism that will be established for integrated marine management across relevant sectors such as fisheries, tourism, transport, and environment. • Implementation of Multiple-use marine spatial planning and zoning mechanisms <p>Source: Bahamas National Maritime Policy (2015): http://faolex.fao.org/docs/pdf/bha183258.pdf</p> <p>Note: It is understood that the BNMP was approved in 2022. However, it was not possible to secure a copy of the approved policy for review under this assessment. As a result, details of an approved inter-institutional framework for ICZM in policy, could not be verified.</p>
2. The framework includes the agency(ies) responsible for DRM and climate change adaptation.	No	0	<p>There is no legislation that establishes (a) a designated coastal zone management entity, and (b) collaboration between a designated coastal zone management entity and the agency responsible for climate change adaptation.</p> <p>In the context of this assessment framework and its criteria, the study determined that there is no ICZM-specific legislation that addresses this specific area of resource management in the Bahamas, nor is there ICZM policy. The response is therefore “No” and the score “zero.”</p>
3. Actions of the framework includes provisions for technical information sharing mechanism necessary for ICZM development planning decision making, and relevant agencies/entities share data for this purpose.	No	0	<p>There is no legislation that establishes (a) a designated coastal zone management entity, and (b) collaboration between a designated coastal zone management entity and the agency responsible for climate change adaptation.</p> <p>In the context of this assessment framework and its criteria, the study determined that there is no ICZM-specific legislation that addresses this specific area of resource management in the Bahamas, nor is there ICZM policy. The response is therefore “No” and the score “zero.”</p> <p>The Bahamian government intends for MOWU to lead the ICZM policy. However, a formally constituted MOWU-led multi-agency coordination mechanism does not exist yet. Once the MOWU is formally mandated to lead, and implement, the ICZM Policy the relevant instruments and the ICZM policy should define the provisions for technical information sharing that take into consideration the BSDI and the role of the BNGIS Centre under the Bahamas</p>

Ranking Criteria	Response	Score	Main Finding Supporting Response
			<p>Spatial Infrastructure Act (2014), and MOWU membership of the GAC through representation by the MOWU Permanent Secretary on the Geospatial Advisory Board.</p> <p>Under the Bahamas Spatial Infrastructure Act (2014) the BNGIS Centre was established as the Government technical Focal Point for the collection and management of geospatial data on The Bahamas. The purpose of the BNGIS Center is set out under Part II, Section 4 of the Act. They include, inter alia:</p> <ul style="list-style-type: none"> • Coordinating cross-agency projects and data collection activities • Serving as a cataloguing center, clearing house, and non-exclusive distribution channel for non-sensitive geographic data • Establishing a BSDI library • Ensuring access, use, exchange, sharing and dissemination of non-confidential spatial information and spatial data services • Coordination and advisory and technical assistance on initiatives or projects that utilize spatial technologies. • develop linkages and the legal and technical mechanisms necessary to integrate land, marine, air and sub terrain administration and topographic mapping programs within the context of wider the national strategy for the Bahamas Spatial Data Infrastructure (BSDI) Program. <p>The first Schedule (Section 5(Q) of the Bahamas Spatial Infrastructure Act (2014) defines 45 Spatial Data Themes, eighteen of which are directly relevant to ICZM¹¹⁵. Nine (9) of these spatial data themes are relevant to DRM and CCA. In addition, there are another eleven (11) spatial data themes that are directly relevant to disaster risk management and climate change adaptation planning¹¹⁶. The existence and status of each of these coverages should be reviewed and confirmed.</p> <p>The Permanent Secretary (MOWU) is an <i>ex officio</i> member of the Geospatial Advisory Council.</p>

¹¹⁵ Spatial Date Themes Relevant to ICZM include: Biological resources, coastal and marine sensitivity mapping, elevation, bathymetric and terrestrial, hydrography, shoreline, transportation network (marine), vegetation, watershed boundaries, wetlands, offshore mineral reserves, land ownership status, international boundaries, land use (existing and proposed and zoning), scientific research, agriculture and aquaculture facilities, oceanographic geographic features, protected areas (marine and terrestrial), biogeographic regions

¹¹⁶ Buildings and facilities, climate & meteorological geographical features, elevation bathymetric & terrestrial, flood hazard and natural risk zones, addresses, electoral boundaries, housing, transport networks (terrestrial, air, and marine), aviation infrastructure, public health, census, and statistical units (demographic and population distribution, and socio-economic statistics), energy resources.

Ranking Criteria	Response	Score	Main Finding Supporting Response
<p>4. Relevant agencies/entities meet regularly (at least twice per year) to discuss and make joint planning decisions or development monitoring plans on climate-related ICZM.</p>	<p>No</p>	<p>0</p>	<p>There is no legislation that establishes (a) a designated coastal zone management entity, and (b) collaboration between a designated coastal zone management entity and the agency responsible for climate change adaptation.</p> <p>In the context of this assessment framework and its criteria, the study determined that there is not formally institutionalized ICZM-specific arrangement for regular meetings to discuss and make joint planning decisions or development monitoring plans on climate-related ICZM. The response is therefore “No” and the score “zero.”</p>
<p>5. The relevant agencies/entities develop joint multi-year work plans to coordinate and collaborate on assessing and addressing climate-related risks in coastal areas.</p>	<p>No</p>	<p>0</p>	<p>There is no legislation that establishes (a) a designated coastal zone management entity, and (b) collaboration between a designated coastal zone management entity and other MDAs for planning and coordination purposes.</p> <p>In the context of this assessment framework and its criteria, the study determined that there is no, formally institutionalized ICZM-specific arrangement for develop joint multi-year work plans to coordinate and collaborate on assessing and addressing climate-related risks in coastal areas. The response is therefore “No” and the score “zero.”</p>

Table A-1E - Findings for Indicator 1E - Institutional Responsibility for Monitoring and Evaluation of ICZM Activities and Projects

Ranking Criteria	Response	Score	Main Finding Supporting Response
1. Regulations assign a public or academic entity or a third party to undertake independent monitoring during implementation of ICZM-related projects.	No	0	<p>The Bahamas does not currently fulfil this criterion, as defined in the indicator's framework.</p> <p>A review of the legislation indicates that criteria as described are not in place, and that existing legislation does not assign a third-party entity to independently evaluate initiatives related to ICZM-related project and does not mandate that project monitoring results be used to inform the updating of management plans.</p> <p>There is no designated ICZM-authority to receive project monitoring results.</p>
2. Regulations assign a public or academic entity or a third party to undertake independent technical performance evaluations at the end of ICZM-related projects.	No	0	<p>The Bahamas does not currently fulfil this criterion, as defined in the indicator's framework.</p> <p>A review of the legislation indicates that criteria as described are not in place, and that existing legislation does not assign a third-party entity to independently evaluate initiatives related to ICZM-related project and does not mandate that project monitoring results be used to inform the updating of management plans.</p> <p>There is no designated ICZM-authority to receive project monitoring results.</p>
3. Regulations mandate the project monitoring results are presented to the ICZM authority at regular intervals (at least annually) and inform updates to management plans.	No	0	<p>There is no legislation that establishes (a) a designated coastal zone management entity or authority, and (b) collaboration between a designated coastal zone management entity an entity or entities responsible for monitoring ICZM-related project implementation or their completion. The response is therefore "No" and the score "zero."</p>

Tables for Category 2 - Assessing Climate Risks in the Coastal Zone

Table A-2Ai - Findings for Indicator 2A - Spatial extent (and density) of coverage of assessment

Environmental / Ecological Variable	Response	Score	Main Finding Supporting Response
a. Coral reef condition	(3) Monitored Across Country at Adequate Density	3	<p>The Ministry of Environment Act (MEA) establishes the Ministry of the Environment, and charges it with the responsibility setting standards for collecting, storing, retrieving, analysing, and publishing environmental data (Fig. 4). However, it appears that a wide range of actors are involved in the monitoring and reporting on the condition, status, and trends, of coastal ecosystems in the Bahamas¹¹⁷.</p> <p>The spatial coverage of various coral reef monitoring initiatives has been substantial, establishing a robust baseline against which to assess ongoing and future trends. Between 1997 and 2019, 775 AGRRA reef surveys were conducted.</p> <p>In July 2020, the new Bahamas Coral Reef Report Card was released by the Perry Institute. The Report Card was based on AGRRA data from >250 surveys over the past 5 years (2015 to 2019) and provides an overview on key health indicators such as coral cover, macroalgal overgrowth, and key fish species¹¹⁸. It also focused on recent impacts such as Hurricane Dorian and Stony Coral tissue Loss Disease ¹¹⁹.</p>
b. Mangrove extent	(3) Monitored Across Country at Adequate Density	3	<p>The extent, status and function of mangroves and seagrass beds have been assessed and documented under a range of studies and projects.^{120, 121,122} The FAO Global Forest Resources Assessment Report - Bahamas Country Profile (2005) provided data on trends in mangrove area extent for 1980, 1990, 1991, 2000, and 2005.¹²³ The FAO Global Forest Resources Assessment Report -The Bahamas (2020) provided data on total national mangrove cover (extent), characteristics, and changes, in 1990, 2000, 2010, 2015, 2020¹²⁴. These reports, along with the findings of localized studies, provide a reference baseline for future assessments.</p>
c. Sea grass extent	(3) Monitored Across Country at Adequate Density	3	<p>The extent, status and function of mangroves and seagrass beds have been assessed and documented under a range of</p>

¹¹⁷ Coral reef data collected over the period 2015 to 2019¹¹⁷ showed a shift from coral covered reefs, to reefs increasingly covered with sea weeds that rapidly take over when coral die, preventing corals from re-establishing colonies. Average coral cover on surveyed reefs was found to be 11%. Macroalgal cover was found to have increased on coral reefs in the Bahamas to levels of between approximately 24% (Long Island) and 57% (Abaco and Grand Bahama). The main stressors causing coral reef degradation were identified as, coral bleaching due to climate change, disease, hurricanes, and chemical and nutrient pollution.

¹¹⁸ Note : <https://www.agrra.org/coral-reef-monitoring/fish-indicator/>

¹¹⁹ Source : <https://www.agrra.org/country/bahamas/>

¹²⁰ NCP (2017). Economic Valuation of Ecosystem Services in Bahamian Marine Protected Areas. Pg. 87. <https://brief.org/wp-content/uploads/2020/02/Economic-Valuation-Report.pdf>.

¹²¹ AGRRA (2020). The Bahamas Coral Reef Report Card Volume 2: 2015 – 2019. Source URL: <https://www.agrra.org/wp-content/uploads/2020/08/Bahamas-Coral-Reef-Report-Card-2020.pdf>.

¹²² Gallagher, A. J. et al (2022). Tiger sharks support the characterization of the world's largest seagrass ecosystem. *Nat Commun* **13**, 6328 (2022). Source: <https://www.nature.com/articles/s41467-022-33926-1>.

¹²³ FAO (2005). Global Forest Resources Assessment 2005. Thematic Study on Mangroves. Bahamas Country Profile. Forestry Department. Food and Agricultural Organization of the United Nations. Source: <https://www.fao.org/forestry/9179-045cf77fac860abf017c6833a248e7843.pdf>.

¹²⁴ FAO (2020). Global Forest Resources Assessment 2020: Main report. Rome. <https://doi.org/10.4060/ca9825en>.

Environmental / Ecological Variable	Response	Score	Main Finding Supporting Response
			studies and projects. ^{125, 126,127}
d. Commercial fish stocks and condition (for at least 50% of commercial fish species)	(3) Monitored Across Country at Adequate Density	3	The status of The Bahamas fisheries and aquaculture sector has been characterised and assessed from a commercial perspective (production, landings, employment, exports). The FAO (2016) Fisheries and Aquaculture in the Bahamas – A Review report ¹²⁸ provides maps on, <i>inter alia</i> , seagrass distribution, conch habit, and designated fishing areas. The FAO (2018) Global Fish market Profile for the Bahamas ¹²⁹ provides production statistics for the top ten (10) fished species in Tonnes, as well as statistics for the top ten exported species.
e. Bycatch from fishing activities	(3) Monitored Across Country at Adequate Density	3	The status of The Bahamas fisheries and aquaculture sector has been characterised and assessed from a commercial perspective (production, landings, employment, exports). The FAO (2016) Fisheries and Aquaculture in the Bahamas – A Review report ¹³⁰ provides maps on, <i>inter alia</i> , seagrass distribution, conch habit, and designated fishing areas. The FAO (2018) Global Fish market Profile for the Bahamas ¹³¹ provides production statistics for the top ten (10) fished species in Tonnes, as well as statistics for the top ten exported species.
f. Coastal water quality – bacteria		0	TAC members advised that the Department of Marine Resources (DMR) has the capacity to undertake water testing but haven't sampled and tested recently. The DMR also has a microbiology laboratory. Status of data to be confirmed.
g. Coastal water quality – nutrients		0	TAC members advised that the Department of Marine Resources (DMR) has the capacity to undertake water testing but haven't sampled and tested recently. The DMR also has a microbiology laboratory. Status of data to be confirmed.
h. Physical shoreline change – coastal erosion / Beach profile change		2	Information held by Ministry of Public Works and Utilities. Specifics to be confirmed.

¹²⁵ NCP (2017). Economic Valuation of Ecosystem Services in Bahamian Marine Protected Areas. Pg. 87. <https://brief.org/wp-content/uploads/2020/02/Economic-Valuation-Report.pdf>.

¹²⁶ AGRRA (2020). The Bahamas Coral Reef Report Card Volume 2: 2015 – 2019. Source URL: <https://www.agrra.org/wp-content/uploads/2020/08/Bahamas-Coral-Reef-Report-Card-2020.pdf>

¹²⁷ Gallagher, A. J. et al (2022). Tiger sharks support the characterization of the world's largest seagrass ecosystem. *Nat Commun* **13**, 6328 (2022). Source: <https://www.nature.com/articles/s41467-022-33926-1>.

¹²⁸ The FAO (2016). Fisheries and Aquaculture in the Bahamas – A Review Report. Food and Agriculture Organization of the United Nations/Department of Marine Resources Nassau, The Bahamas. Source: <https://www.bahamas.gov.bs/wps/wcm/connect/e1d636dd-1a9b-4661-9e38-ba9bf546a534/FINAL+Bahamas+Fisheries+%26+Aquaculture+Sector+Review+17Nov16.pdf?MOD=AJPERES>

¹²⁹ The FAO (2018). Global Fish Market Profile for the Bahamas. Source. <https://www.fao.org/3/cc5515en/cc5515en.pdf>.

¹³⁰ The FAO (2016). Fisheries and Aquaculture in the Bahamas – A Review Report. Food and Agriculture Organization of the United Nations/Department of Marine Resources Nassau, The Bahamas. Source: <https://www.bahamas.gov.bs/wps/wcm/connect/e1d636dd-1a9b-4661-9e38-ba9bf546a534/FINAL+Bahamas+Fisheries+%26+Aquaculture+Sector+Review+17Nov16.pdf?MOD=AJPERES>.

¹³¹ The FAO (2018). Global Fish Market Profile for the Bahamas. Source. <https://www.fao.org/3/cc5515en/cc5515en.pdf>.

Environmental / Ecological Variable	Response	Score	Main Finding Supporting Response
i. Waves and surge – tides, wave height, storm surge	(3) Monitored Across Country at Adequate Density	3	<p>Tide data generated at the Settlement Point station, Grand Bahama (Lat 26.71, Long. -78.996667) is available for the period 1985 to 2001¹³². Wave data is monitored and report by the bay designated “Station 41047 - NE BAHAMAS - 350 NM ENE of Nassau, Bahamas” (27.465 N 71.452 W) and “Station 41046 - EAST BAHAMAS - 335 NM East of San Salvador Is, Bahamas” (23.822 N 68.384 W)¹³³.</p> <p>The Department of Meteorology has published mean and extreme values of climatic elements for the period 1991-2020, with data gathered at the Lynden Pindling international Airport¹³⁴.</p> <p>The Bahamas Department of Meteorology provides information and data for the entire archipelago (http://www.bahamasweather.org.bs/)</p>
j. Precipitation in coastal areas	(3) Monitored Across Country at Adequate Density	3	Rainfall data is available for the period 1991 to 2020 ¹³⁵ . The Caribbean institute of Meteorology and Hydrology (CIMH) makes available historical data and reports for the period 1971 to 2013 ¹³⁶
k. Water temperature	(3) Monitored Across Country at Adequate Density	3	Sea temperature information is available for the Bahamas Archipelago. Source URL: https://www.seatemperature.org/central-america/bahamas/ .

¹³² MOS - PSMSL (2023). National Oceanographic Centre, Permanent Service for Mean Sea Level. Settlement Point, The Bahamas. Source: <https://psmsl.org/data/obtaining/stations/1646.php> and <https://psmsl.org/data/obtaining/index.php>.

¹³³ NOAA (2023). National Data Bouy Centre. Station 41046 - EAST BAHAMAS - 335 NM East of San Salvador Is, Bahamas. Source: https://www.ndbc.noaa.gov/station_page.php?station=41046

¹³⁴ Department of Meteorology (2022). Source : <https://met.gov.bs/wp-content/uploads/2022/05/78073-MEANS-EXTREME-TABLE-OF-ELEMENTS-1991-2020.pdf>

¹³⁵ The World Bank (2023). Climate Change Knowledge Portal. Source: <https://climateknowledgeportal.worldbank.org/country/bahamas/climate-data-historical>

¹³⁶ CIMH. Source: <https://rcc.cimh.edu.bb/caribbean-climatology/stations/bahamas/>

Table A-2Aii - Findings for Indicator 2A- *Temporal frequency of assessment*

Environmental Ecological Variable	Response	Score	Main Finding Supporting Response
a. Coral reef condition	(2) Info available for multiple time periods	2	775 AGRRA reef surveys have been conducted between 1997-2019. AGGRA Bahamas Webpage: https://www.agrra.org/country/bahamas/
b. Mangrove extent	(2) Info available for multiple time periods	2	The FAO Global Forest Resources Assessment Report - Bahamas Country Profile (2005) provided data on trends in mangrove area extent for 1980, 1990, 1991, 2000, and 2005. ¹³⁷ The Bahamas Natural Hazard Viewer – Natural Habitats ¹³⁸ .
c. Sea grass extent	(2) Info available for multiple time periods	2	The extent, status and function of seagrass beds have been assessed and documented under a range of studies and projects. ^{139, 140,141}
d. Commercial fish stocks and condition (for at least 50% of commercial fish species)	(2) Info available for multiple time periods	2	The FAO (2016) Fisheries and Aquaculture in the Bahamas – A Review report ¹⁴² provides maps on, <i>inter alia</i> , seagrass distribution, conch habit, and designated fishing areas. The FAO (2018) Global Fish market Profile for the Bahamas ¹⁴³ provides production statistics for the top ten (10) fished species in Tonnes, as well as statistics for the top ten exported species. The report, Modelling and Mapping Fishing Impact and the Current Potential Standing Stock of coral reef Fishes in the Bahamas, assessed reef fish stocks across the Bahamas archipelago ¹⁴⁴ .

¹³⁷ FAO (2005). Source: <https://www.fao.org/forestry/9179-045cf77fac860abf017c6833a248e7843.pdf>.

¹³⁸ Bahamas-wide coverage of corals, seagrasses, wetlands, mangroves, and coastal forests. Source URL: <https://marineapps.naturalcapitalproject.org/bahamas/>

¹³⁹ NCP (2017). Economic Valuation of Ecosystem Services in Bahamian Marine Protected Areas. Pg. 87. <https://brief.org/wp-content/uploads/2020/02/Economic-Valuation-Report.pdf>.

¹⁴⁰ AGRRA (2020). The Bahamas Coral Reef Report Card Volume 2: 2015 – 2019. Source URL: <https://www.agrra.org/wp-content/uploads/2020/08/Bahamas-Coral-Reef-Report-Card-2020.pdf>

¹⁴¹ Gallagher, A. J. et al (2022). Tiger sharks support the characterization of the world’s largest seagrass ecosystem. *Nat Commun* **13**, 6328 (2022). Source: <https://www.nature.com/articles/s41467-022-33926-1>.

¹⁴² The FAO (2016). Fisheries and Aquaculture in the Bahamas – A Review Report. Food and Agriculture Organization of the United Nations/Department of Marine Resources Nassau, The Bahamas. Source: <https://www.bahamas.gov.bs/wps/wcm/connect/e1d636dd-1a9b-4661-9e38-ba9bf546a534/FINAL+Bahamas+Fisheries+%26+Aquaculture+Sector+Review+17Nov16.pdf?MOD=AJPERES>

¹⁴³ The FAO (2018). Global Fish Market Profile for the Bahamas. Source. <https://www.fao.org/3/cc5515en/cc5515en.pdf>.

¹⁴⁴ Florida International University (2017). Modelling and Mapping Fishing Impact and the Current and Potential Standing Stock of Coral-reef Fishes in the Bahamas. Supporting Marine Reserve Design. Source URL: <https://media.coastalresilience.org/MOW/TNC%20Bahamas%20final%20report%20v1.1.pdf>.

Environmental Ecological Variable /	Response	Score	Main Finding Supporting Response
e. Bycatch from fishing activities	(2) Info available for multiple time periods	2	The FAO (2016) Fisheries and Aquaculture in the Bahamas – A Review report ¹⁴⁵ provides maps on, <i>inter alia</i> , seagrass distribution, conch habit, and designated fishing areas. The FAO (2018) Global Fish market Profile for the Bahamas ¹⁴⁶ provides production statistics for the top ten (10) fished species in Tonnes, as well as statistics for the top ten exported species.
f. Coastal water quality – bacteria	Baseline available	1	TAC members advised that the Department of Marine Resources (DMR) has the capacity to undertake water testing but haven't sampled and tested recently. The DMR also has a microbiology laboratory.
g. Coastal water quality – nutrients	Baseline available	1	TAC members advised that the Department of Marine Resources (DMR) has the capacity to undertake water testing but haven't sampled and tested recently. The DMR also has a microbiology laboratory.
h. Physical shoreline change – coastal erosion / beach profile change	Baseline available	1	Lands and Surveys have land and sea-bed information (MN). Follow up required to confirm specific data sets.
i. Waves and surge – tides, wave height, storm surge	Baseline available	1	The Department of Meteorology has published mean and extreme values of climatic elements for the period 1991-2020, with data gathered at the Lynden Pindling international Airport ¹⁴⁷ .
j. Precipitation in coastal areas	2) Info available for multiple time periods	2	Rainfall data is available for the period 1991 to 2020 ¹⁴⁸ . Also, precipitation and temperature data are available for the period 1901 to 2020 on the World Banks Climate Knowledge Portal for The Bahamas ¹⁴⁹ .
k. Water temperature	2) Info available for multiple time periods	2	Sea temperature information is available for the Bahamas Archipelago. Source URL: https://www.seatemperature.org/central-america/bahamas/ .

¹⁴⁵ The FAO (2016). Fisheries and Aquaculture in the Bahamas – A Review Report. Food and Agriculture Organization of the United Nations/Department of Marine Resources Nassau, The Bahamas. Source: <https://www.bahamas.gov.bs/wps/wcm/connect/e1d636dd-1a9b-4661-9e38-ba9bf546a534/FINAL+Bahamas+Fisheries+%26+Aquaculture+Sector+Review+17Nov16.pdf?MOD=AJPERES>.

¹⁴⁶ The FAO (2018). Global Fish Market Profile for the Bahamas. Source: <https://www.fao.org/3/cc5515en/cc5515en.pdf>.

¹⁴⁷ Department of Meteorology (2022). Source: <https://met.gov.bs/wp-content/uploads/2022/05/78073-MEANS-EXTREME-TABLE-OF-ELEMENTS-1991-2020.pdf>

¹⁴⁸ The World Bank (2023). Climate Change Knowledge Portal. Source: <https://climateknowledgeportal.worldbank.org/country/bahamas/climate-data-historical>

¹⁴⁹ World Banks Climate Knowledge Portal for The Bahamas. Source URL: <https://climateknowledgeportal.worldbank.org/country/bahamas/climate-data-historical>

Table A-2B - Findings for Indicator 2B - *Shared Information Platform*

Ranking Criteria	Response	Score	Main Finding Supporting Response
<p>1. An information hub or integrated information sharing platform exists supporting the management of coastal areas. (See scoring note under justification.)</p>	<p>No</p>	<p>0</p>	<p>Based on feedback from a BNGIS stakeholder to the 21-SEP-22 TAC questionnaire, it was confirmed that there is “... <i>not a hub or integrated information sharing platform that exists specifically for the management of coastal areas</i>”.</p> <p><i>“There may be NGO’s that have hubs that house information that can support the management of coastal areas. There is also the BNGIS Portal which is slated to launch in the near future that may house some geospatial information that can support the management of coastal areas.”</i></p> <p>The Bahamas Spatial Data Infrastructure Act, 2014 (No. 9 of 2014) The Act governs the system of geospatial data collection and storage in the Bahamas. It establishes the Bahamas National Geographic Information Systems Centre as a department of government within article 127(c) of the Constitution; to:</p> <ul style="list-style-type: none"> • define the special purposes and functions of the department. • establish the Bahamas Spatial Data Infrastructure System and Program and the Geospatial Advisory Council. • define the functions and objectives of the system, the program, and the Council and for connected matters. <p>Under the Act, the National Geographic Information System Centre (the Centre) is designated to play a critical strategic function:</p> <ul style="list-style-type: none"> • Serving as the Government's technical focal point for the collection and management of geospatial data on The Bahamas, and • Ensuring that the Bahamas Spatial Data Infrastructure (BSDI) <i>assists policymaking in relation to policies and activities that may have a direct or indirect impact on the environment.</i> <p>The first Schedule (Section 5(Q) of the Bahamas Spatial Infrastructure Act (2014) defines 45 Spatial Data Themes, eighteen of which are directly relevant to ICZM¹⁵⁰. Nine (9) of these spatial data themes are relevant to DRM and CCA. In addition, there are another eleven (11) spatial data themes that are directly relevant to disaster risk management and climate change adaptation planning¹⁵¹.</p>

¹⁵⁰ Spatial Date Themes Relevant to ICZM include: biological resources, coastal and marine sensitivity mapping, elevation, bathymetric and terrestrial, hydrography, shoreline, transportation network (marine), vegetation, watershed boundaries, wetlands, offshore mineral reserves, land ownership status, international boundaries, land use (existing and proposed and zoning), scientific research, agriculture and aquaculture facilities, oceanographic geographic features, protected areas (marine and terrestrial), and biogeographic regions.

¹⁵¹ Spatial Date Themes Relevant to DRM and CCA include buildings and facilities, climate & meteorological geographical features, elevation bathymetric & terrestrial, flood hazard and natural risk zones, addresses, electoral boundaries, housing, transport networks (terrestrial, air, and marine), aviation infrastructure, public health, census, and statistical units (demographic and population distribution, and socio-economic statistics), and energy resources.

Ranking Criteria	Response	Score	Main Finding Supporting Response
			<p>Stakeholder responses to the TAC Meeting questionnaire: BNGIS holds the following ICZM-related data sets:</p> <ul style="list-style-type: none"> ○ Digital Terrain Models (DTM), coastlines, buildings (Note: These datasets are only available for New Providence, Bimini, Cat Island, Long Island, Eleuthera, Exuma). ○ Data sets specific to Andros: coastline, coastal features, coastal infrastructure, various flora, and fauna datasets (Note: Andro’s datasets were obtained from the Nature Conservancy, SEV consulting group, IDB National Capital Project and GEF-IWACAM). ○ The BNGIS was unable to say (<i>unknown</i>) whether there is an inventory of natural coastal resources (<i>ecosystems: coral reefs, sea grass beds, mangroves, offshore banks, beaches, etc.</i>). ○ The ability to develop and ICZM interface or hub within the BNGIS framework would be dependent on the needs and wants of the ICZM lead agency and stakeholders. Further details and discussions are necessary to accurately answer the question. ○ There are data/information holdings, relevant to ICZM held by MDAs other than BNGIS and NGOs. These are: <ul style="list-style-type: none"> - Perry Institute of Marine Science (PIMS) https://www.perryinstitute.org/ , - Bahamas Reef Environment Educational Foundation (BREEF) https://breef.org/, - BNT, - Coral gene bank, - Atlantis, - DMR, - DEPP, <p>The Bahamas Natural Hazard Viewer¹⁵² makes the results of the National Coastal Hazard and Social Vulnerability Analysis of the Bahamas accessible to the public and decision-makers through the online platform. Source:</p>
<p>The information hub or platform includes:</p>			
<p>2. information on ecosystem extent and condition - both mapped location and data on condition for each of the following ecosystems (if present in the country) – coral reefs, mangroves, sea grass, salt marsh, other wetlands, sandy beach</p>	<p>No</p>	<p>0</p>	<p>Based on feedback from the BNGIS representative on the 21-SEP-22 TAC Meeting questionnaire, BNGIS is not aware of inventories of coastal resources (<i>ecosystems: coral reefs, sea grass beds, mangroves, offshore banks, beaches, etc.</i>)? This is taken as indicating that the BNGIS does not hold such data coverages. The response is therefore “No” and the score “zero.”</p> <p>Information and data on coastal ecosystems etc. are held by a range of organizations, but the data and information holdings are separate and information on their nature and character of these coverages is not available.</p>

¹⁵² The Bahamas Natural Hazard Viewer. Source URL: <https://marineapps.naturalcapitalproject.org/bahamas/>.

Ranking Criteria	Response	Score	Main Finding Supporting Response
			<p>There are data and information holdings, relevant to ICZM held by GoBH ministries, departments, and agencies (MDAs) other than BNGIS and by research NGOs. These entities are:</p> <ul style="list-style-type: none"> • Perry Institute of Marine Science (PIMS) https://www.perryinstitute.org/ • Bahamas Reef Environment Educational Foundation (BREEF) https://breef.org/, • Bahamas National Trust – BNT (https://bnt.bs/), • The Coral Gene Bank, • GenBank (https://www.ncbi.nlm.nih.gov/nuccore/?term=Bahamas) • Atlantis, • The Nature Conservancy – TNC (https://www.nature.org/en-us/about-us/where-we-work/caribbean/bahamas/) • Department of Marine Resources – DMR¹⁵³ • Department of Environment Planning and Protection – DEPP (https://www.depp.gov.bs/).
3. information on monitoring of coastal waters – all of the following: water quality, tidal range / storm surge / wave heights	No	0	<p>Not held by BNGIS.</p> <p>Based on feedback from stakeholders that participated in the 21-SEP-22 TAC Meeting roundtable discussions the completion of the presented questionnaire, “No” and the score “zero”.</p> <p>Stakeholders advised that the Department of Marine Resources (DMR) has the capacity to undertake water testing but haven’t sampled and tested recently. The DMR also has a microbiology laboratory.</p> <p>It appears that the potential for these assessments exists. However, it was not possible to secure information on actual assessments being conducted and related data holdings.</p>
4. information on land use and the built environment – including all of the following - location of roads, public infrastructure and public/private housings, wastewater treatment facilities, and energy facilities (if present in area)	Yes	1	<p>Stakeholders confirmed that BNGIS holds the following ICZM-related data sets:</p> <p>Digital Terrain Models (DTM), coastlines, buildings for <u>only</u> <i>New Providence, Bimini, Cat Island, Long Island, Eleuthera, Exuma</i>.</p> <p>Data sets specific to <i>Andros</i> were identified as: coastline, coastal features, coastal infrastructure, various flora, and fauna datasets.</p>

¹⁵³ Department of Marine Resources (DMR) webpage URL: https://bahamas.gov.bs/wps/portal/public/marine/DOMR!/ut/p/b1/04_Sj9CPykyssy0xPLMnMz0vMAfGjzOIDnQwCg30sjR0NPN2MDTxDjAMNvS2MDf3NDYAKIoEKDHAARwNC-r30o9Jz8pOAVoXrR-FVHGQMVYDHMj-P_NxU_YLciMrggHRFADumAvw!/dl4/d5/L2dBISEvZ0FBIS9nQSEh/

Ranking Criteria	Response	Score	Main Finding Supporting Response
5. information on shoreline areas with built coastal protection infrastructure present (such as sea walls, jetty, breakwater, etc.), as well as information on the condition of the infrastructure	Yes	1	Stakeholders confirmed that BNGIS holds the following ICZM-related data sets: Digital Terrain Models (DTM), coastlines, buildings for <u>only</u> <i>New Providence, Bimini, Cat Island, Long Island, Eleuthera, Exuma</i> . Data sets specific to <i>Andros</i> were identified as: coastline, coastal features, coastal infrastructure, various flora, and fauna datasets
6. information on permits for infrastructure construction and operation	No	0	Not held by BNGIS. This information is held by the MOPW.
7. information on elevation in coastal areas	Yes	1	Stakeholders confirmed that BNGIS holds the following ICZM-related data sets on; Digital Terrain Models (DTM), coastlines, buildings for <u>only</u> <i>New Providence, Bimini, Cat Island, Long Island, Eleuthera, Exuma</i> .
8. projections of sea level rise	No	0	Not held by BNGIS
9. information on drainage system – both natural (rivers, creeks) and built (canals, culverts, etc.) if such features exist	No	0	Not held by BNGIS
10. information on land use zoning (for urbanized areas)	No	0	Not held by BNGIS. Land use zoning is regulated under the Planning and Subdivisions Act (2010) ¹⁵⁴ . The purpose of the Act, inter alia, is to provide for a land-use-planning based development-control system, led by policy, land use designations, and zoning. The act makes provisions for the division of land into zones, prescribing the purpose for which land, buildings, and structures in any zone may be used; prescribing the design standards allowed for development, and prohibition of the use of land, buildings, and structures for any other purpose. Land Use Plans are developed for each island of The Bahamas. All development, approvals, and zoning, shall be in conformity with the Land Use Plan for each island of the Bahamas. This type of information is held by the MOPW. Under Section 23 of the Environmental Planning and Protection Act (2019) the Minister may, by order, designate any area of land within The Bahamas to be an environmentally sensitive area. Under Section 24 of the Act, the Minister may, by order, a closed area.

¹⁵⁴ GoBH (2017b). Planning and Subdivision. Source URL: http://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/2010/2010-0004/PlanningandSubdivisionAct2010_1.pdf.

Ranking Criteria	Response	Score	Main Finding Supporting Response
11. information on marine zoning / marine protected areas / fisheries management areas	Yes	1	<p>The Archipelagic Waters and Maritime Jurisdiction Act (2001) defines the Bahamas': archipelagic waters, internal waters, archipelagic sea lanes, Territorial Sea, Exclusive Economic Zone (Section 8),</p> <p>The Bahamas Disaster Preparedness and Emergency Response Act (2008) sets out provisions for delimiting Specially Vulnerable Areas (Part VI). https://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/2006/2006-0004/DisasterPreparednessandResponseAct_1.pdf</p> <p>The Bahamas Protected Areas Fund hosts a Protected Areas Register (https://bahamasprotected.com/protected-areas/register/) with 122 protected areas in thirteen categories, managed by five (5) MDAs. 10 "Marine" protected areas are not assigned to management entity.</p> <p>Generally, the Fisheries Resource Act and seven related amendments make provision for the conservation and management of the fishery resources of the Bahamas and extends the limits of the jurisdiction of the Bahamas over national fishery resources and related matters.</p> <ul style="list-style-type: none"> • The Fisheries Resources (Jurisdiction and Conservation) Act, 1977 (Cap. 244) establishes the Bahamas' exclusive fisher zone whose outer limits correspond to the boundaries of the EEZ of the Bahamas. • The <i>Fisheries Resources (Jurisdiction and Conservation) (Declaration of Protected Area) Order (S.I. No. 115 of 2013)</i> declares the exclusive economic zone of The Bahamas to be a protected area and prohibits fishing for Nassau Grouper within that area in a specified period. Other subsequently promulgated Fisheries Resource regulations confer upon specific areas of, or islands in the Bahamas archipelago and/or specific species, protected status.
12. information on shoreline change – including all the following: coastal erosion; change in beach profile; shifting of the coastline	No	0	Not held by BNGIS. Information on the land and seafloor is held by the Lands and Surveys Department.
13. information on proposed coastal development (applications pending approval, including preliminary design information which contains type of development, proposed location, and building footprints)	No	0	Not held by BNGIS. This information is held by the MOPW.
14. information on past flooding in coastal areas (extent and date)	No	0	Not held by BNGIS.
15. information on estimates of damage from past storms (for at least one storm event)	Yes	1	<p>Although information on estimates of damage from past storms is available this information is not held by the BNGIS in data coverages.</p> <p>1. UN-ECLAC/ IDB (2020). Assessment of the Effects and Impacts of Hurricane Dorian in the Bahamas</p>

Ranking Criteria	Response	Score	Main Finding Supporting Response
			<p>(https://publications.iadb.org/publications/english/document/Assessment-of-the-Effects-and-Impacts-of-Hurricane-Dorian-in-the-Bahamas.pdf)</p> <p>2. UN-ECLAC/ IDB (2017). Assessment of the Effects and Impacts Caused by Hurricane Irma in the Bahamas (http://dx.doi.org/10.18235/0002617).</p> <p>3. IDB (2021). The Macro-Economic Effects of Hurricanes in The Bahamas (http://dx.doi.org/10.18235/0003602)</p>
16. information on ecological impacts in coastal areas (such as algal blooms, fish kills, marine mammal strandings)	No	0	Not held by the BNGIS
17. The system includes some projections related to climate change (at least one of the following - projections of temperature, changes in storm intensity, change in intensity and frequency of precipitations, or probabilities of loss due to future hazards)	No	0	<p>Not held by BNGIS</p> <p>However, this information is available in The Bahamas Second National Communication to the UNFCCC (2014)</p>

Table A-2C - Findings for Indicator 2C - Climate Vulnerability and Risk Assessment (VRA)

Ranking Criteria	Response	Score	Main Finding Supporting Response
1. At least one climate VRA is available for the country or pre-identified priority/critical area.	For the country of priority/critical areas	1	Climate VRA studies are available for <ul style="list-style-type: none"> • National¹⁵⁵ • New Providence • Grand Bahama • Long Island • Andros Island¹⁵⁶ • Grand Bahama, and • Abaco
2. Please indicate whether data from the following ecosystems (reflecting the protective role of ecosystems for ecosystem-based adaptation) were included in the climate VRA. (Ecosystems which were not included in the VRA can be marked "N/A" - "not applicable"):			
Map of Coral Reefs	Yes	1	Mapped information on coral reefs is available from a number of sources: <ul style="list-style-type: none"> • Advancing Coastal Risk Reduction: Science and Implementation by Accounting for Climate, Ecosystems, and People. Silver et al 2019. <i>Frontiers in Marine Science</i>. (https://www.frontiersin.org/articles/10.3389/fmars.2019.00556/full). • Natural Capital project (2019). A national Coastal Hazard and Social Vulnerability Analysis for the Bahamas. Source URL: https://marineapps.naturalcapitalproject.org/bahamas/docs/Bahamas. • National Capital Project. Innovations in Climate Resilient Coastal Zones (The Bahamas). Source URL: https://naturalcapitalproject.stanford.edu/projects/innovations-climate-resilient-coastal-zones-bahamas. • The Bahamas Natural Hazard Viewer – Natural Habitats¹⁵⁷.

¹⁵⁵ IDB (2020). Disaster Risk Profile of The Bahamas. Inter-American Development Bank, Technical Note No. IDB-TN-02018. Pg. 155. Source URL: <https://publications.iadb.org/publications/english/document/Disaster-Risk-Profile-for-The-Bahamas.pdf>. Pgs. 63 – 88.

¹⁵⁶ Wyatt, K. H. et al (2021). Integrated and Innovative Scenario Approaches for Sustainable Development in the Bahamas Source. *Ecology & Society*. Vol. 26, No. 4, Art. 23 URL: <https://www.ecologyandsociety.org/vol26/iss4/art23/>

¹⁵⁷ Bahamas-wide coverage of corals, seagrasses, wetlands, mangroves, and coastal forests. Source URL: <https://marineapps.naturalcapitalproject.org/bahamas/>

Ranking Criteria	Response	Score	Main Finding Supporting Response
Map of Mangroves	Yes	1	Advancing Coastal Risk Reduction: Science and Implementation by Accounting for Climate, Ecosystems, and People. Silver et al 2019. Frontiers in Marine Science. (https://www.frontiersin.org/articles/10.3389/fmars.2019.00556/full). The Bahamas Natural Hazard Viewer – Natural Habitats ¹⁵⁸ .
Map of salt marsh and / or wetlands	Yes	1	As reported for coral reefs above.
Map of sand dunes	Yes	1	As reported for coral reefs above.
3. Please indicate which of the following hazards have been evaluated in the VRA. (Hazards which are not relevant in the area can be marked "N/A" - "not applicable"):			
Coastal flooding (from tide / waves / storm surge)	Yes	1	Disaster Risk Profile of the Bahamas. Technical Note No. IDB-TN-02018. Source URL: https://publications.iadb.org/publications/english/viewer/Disaster-Risk-Profile-for-The-Bahamas.pdf
Flooding from rainfall and over-flowing rivers and drains	Yes	1	Disaster Risk Profile of the Bahamas. Technical Note No. IDB-TN-02018. Source URL: https://publications.iadb.org/publications/english/viewer/Disaster-Risk-Profile-for-The-Bahamas.pdf
Damage from winds	Yes	1	Disaster Risk Profile of the Bahamas. Technical Note No. IDB-TN-02018. Source URL: https://publications.iadb.org/publications/english/viewer/Disaster-Risk-Profile-for-The-Bahamas.pdf
Temperature-related hazards (stress to plants, coral bleaching, water quality impacts, etc.)	Yes	1	T.B.D Information / data source has yet to be identified.
Coastal erosion	Yes	1	Disaster Risk Profile of the Bahamas. Technical Note No. IDB-TN-02018. Source URL: https://publications.iadb.org/publications/english/viewer/Disaster-Risk-Profile-for-The-Bahamas.pdf
Coastal landslides	N/A	1	T.B.D Information / data source has yet to be identified.
4. Please indicate which of the following economic sectors have been evaluated for its climate-related vulnerability (sectors which are not relevant for the area can be marked "N/A" - "not applicable"):			
Coastal development (housing, roads, coastal protection)	Yes		IDB (2020). Disaster Risk Profile of The Bahamas. Inter-American Development Bank, Technical Note No. IDB-TN-02018. Pg. 155. Pg. 127. Source URL: https://publications.iadb.org/publications/english/document/Disaster-Risk-Profile-for-The-Bahamas.pdf GoBH (2014). Second National Communication of the Commonwealth of the Bahamas Under the United Nations Framework Convention on Climate Change. Chapter 4, Pg. 109 -153. Source URL: https://unfccc.int/sites/default/files/resource/bhsnc2.pdf

¹⁵⁸ Bahamas-wide coverage of corals, seagrasses, wetlands, mangroves, and coastal forests. Source URL: <https://marineapps.naturalcapitalproject.org/bahamas/>

Ranking Criteria	Response	Score	Main Finding Supporting Response
Tourism	Yes		IDB (2020). Disaster Risk Profile of The Bahamas. Inter-American Development Bank, Technical Note No. IDB-TN-02018. Pg. 155. Pg. 127. Source URL: https://publications.iadb.org/publications/english/document/Disaster-Risk-Profile-for-The-Bahamas.pdf
Agriculture	Yes		IDB (2021). The Macro-economic Effects of Hurricanes in the Bahamas. Source URL: https://publications.iadb.org/publications/english/viewer/The-Macro-Economic-Effects-of-Hurricanes-in-The-Bahamas-A-Case-Study-Using-Satellite-Night-Light-Luminosity.pdf . GoBH (2014). Second National Communication of the Commonwealth of the Bahamas Under the United Nations Framework Convention on Climate Change. Chapter 4, Pg. 109 -153. Source URL: https://unfccc.int/sites/default/files/resource/bhsnc2.pdf
Fisheries and aquaculture	Yes		GoBH (2014). Second National Communication of the Commonwealth of the Bahamas Under the United Nations Framework Convention on Climate Change. Chapter 4, Pg. 109 -153. Source URL: https://unfccc.int/sites/default/files/resource/bhsnc2.pdf
Energy	Yes		IDB (2021). The Macro-economic Effects of Hurricanes in the Bahamas. Source URL: https://publications.iadb.org/publications/english/viewer/The-Macro-Economic-Effects-of-Hurricanes-in-The-Bahamas-A-Case-Study-Using-Satellite-Night-Light-Luminosity.pdf GoBH (2014). Second National Communication of the Commonwealth of the Bahamas Under the United Nations Framework Convention on Climate Change. Chapter 4, Pg. 109 -153. Source URL: https://unfccc.int/sites/default/files/resource/bhsnc2.pdf
Water and wastewater	No		IDB (2021). The Macro-economic Effects of Hurricanes in the Bahamas. Source URL: https://publications.iadb.org/publications/english/viewer/The-Macro-Economic-Effects-of-Hurricanes-in-The-Bahamas-A-Case-Study-Using-Satellite-Night-Light-Luminosity.pdf GoBH (2014). Second National Communication of the Commonwealth of the Bahamas Under the United Nations Framework Convention on Climate Change. Chapter 4, Pg. 109 -153. Source URL: https://unfccc.int/sites/default/files/resource/bhsnc2.pdf
Cultural assets	No		GoBH (2014). Second National Communication of the Commonwealth of the Bahamas Under the United Nations Framework Convention on Climate Change. Chapter 4, Pg. 109 -153. Source URL: https://unfccc.int/sites/default/files/resource/bhsnc2.pdf
Marine transportation	Yes		IDB (2021). The Macro-economic Effects of Hurricanes in the Bahamas. Source URL: https://publications.iadb.org/publications/english/viewer/The-Macro-Economic-Effects-of-Hurricanes-in-The-Bahamas-A-Case-Study-Using-Satellite-Night-Light-Luminosity.pdf GoBH (2014). Second National Communication of the Commonwealth of the Bahamas Under the United Nations Framework Convention on Climate Change. Chapter 4, Pg. 109 -153. Source URL: https://unfccc.int/sites/default/files/resource/bhsnc2.pdf Island (2017)

Ranking Criteria	Response	Score	Main Finding Supporting Response
5. Please indicate which of the following factors relevant for climate vulnerability were evaluated in the VRA (factors which are not relevant can be marked "N/A" - "not applicable"):			
Economic factors (wealth and poverty levels)			
Environmental factors (ecosystems /natural capital)			A National Coastal Hazard and Social Vulnerability Analysis for The Bahamas was developed under the Natural Capital Project. The study predicted a tripling of storm-related damage if protective ecosystems such as coral reefs and mangrove forests are degraded or lost. The online viewer allows users to explore results from the coastal hazard and social vulnerability analysis for The Bahamas including the coastal hazard index and associated metrics (A). Several different overlays are included: demographic information (on the SOCIAL tab) (B), a map of existing natural habitats (D), and information about recent damage on New Providence during Hurricane Matthew (D). Resources and methodology are also included on the RESOURCES tab (C).
Demographic characteristics (age distribution, disability, gender, ethnicity)			A National Coastal Hazard and Social Vulnerability Analysis for The Bahamas was developed under the Natural Capital Project. The study predicted as tripling of storm-related damage if protective ecosystems such as coral reefs and mangrove forests are degraded or lost. The online viewer allows users to explore results from the coastal hazard and social vulnerability analysis for The Bahamas including the coastal hazard index and associated metrics (A). Several different overlays are included: demographic information (on the SOCIAL tab) (B), a map of existing natural habitats (D), and information about recent damages on New Providence during Hurricane Matthew (D). Resources and methodology are also included on the RESOURCES tab (C).
Social factors (education, literacy, phone ownership, access to internet)	No	0	
Public service provision (drinking water, trash-pickup, shelters, cooling centers)	Yes	1	IDB (2020). Disaster Risk Profile of The Bahamas. Inter-American Development Bank, Technical Note No. IDB-TN-02018. Pg. 155. Pg. 127. Source URL: https://publications.iadb.org/publications/english/document/Disaster-Risk-Profile-for-The-Bahamas.pdf
Construction materials	Yes	1	T.B.D Information / data source has yet to be identified.
6. Please indicate which of the following parameters were included in the VRA (if not relevant, mark "N/A" - "not applicable"):			
Projected change in temperature, including intensity and duration of extreme heat events	Yes	1	GoBH (2014). Second National Communication of the Commonwealth of the Bahamas Under the United Nations Framework Convention on Climate Change. Chapter 4, Pg. 109 -153.

Ranking Criteria	Response	Score	Main Finding Supporting Response
Projected change in precipitation and precipitation variability	Yes	1	GoBH (2014). Second National Communication of the Commonwealth of the Bahamas Under the United Nations Framework Convention on Climate Change. Chapter 4, Pg. 109 -153.
Projected change in frequency and intensity of storm events	Yes	1	GoBH (2014). Second National Communication of the Commonwealth of the Bahamas Under the United Nations Framework Convention on Climate Change. Chapter 4, Pg. 109 -153.
Exploration of thresholds – Examining past impacts in coastal areas (such as floods or coral bleaching) in conjunction with the temperature and precipitation conditions at the time	Yes	1	GoBH (2014). Second National Communication of the Commonwealth of the Bahamas Under the United Nations Framework Convention on Climate Change. Chapter 4, Pg. 109 -153.
7. The climate VRA evaluates different possible futures by doing the following:			
Using multiple climate projections (such as for multiple emissions scenarios, such as RCP4.5 and RCP8.5)	Yes	1	GoBH (2014). Second National Communication of the Commonwealth of the Bahamas Under the United Nations Framework Convention on Climate Change. Chapter 4, Pg. 115 -116. Final paragraph page 35, Andros Master Plan. "Many of the impacts of climate change have already begun to be realized in The Bahamas. Projections based on climate models indicate an increase in average atmospheric temperature; reduced annual rainfall; and increased Sea Surface Temperatures (SST) contributing to a potential increase in the intensity of tropical storms. The Bahamas on average is brushed or hit by a hurricane once every three years and is hit by a major hurricane once every 12 years."
Using projections from multiple models (either through comparing results from more than one climate model, or through using the mean value from an ensemble of models)	Yes	1	GoBH (2014). Second National Communication of the Commonwealth of the Bahamas Under the United Nations Framework Convention on Climate Change. Chapter 4, Pg. 115 -116.

Table A-2D - Findings for Indicator 2D - *Timeliness of Data and Assessments*

Ranking Criteria	Response	Score	Main Finding Supporting Response
1. The entity/ies responsible for data collection on coastal environmental condition maintain or replace equipment periodically (checked at least every two years).	Yes	1	Under Section 39 of the Environmental Planning and Protection Act (2019) provision is made for the collection of information related to the environment. Under section 40 of the Act, provision is made for the development and support of scientific, technical, and management research programmes on environmental issues.
2. Early warning systems for coastal flooding are in place and are checked at least annually by the responsible entity/ies.	Yes	1	Meteorological and tidal monitoring equipment, and early warning is monitored and maintained on regular basis by the National Meteorological Service. The Bahamas Department of Meteorology, through its website ¹⁵⁹ provides weather alerts, public and marine forecasts ¹⁶⁰ , temperature and rainfall outlooks, and tide tables. <ul style="list-style-type: none"> • Bahamas - EWS Survey (http://cidbimena.desastres.hn/docum/crid/AlertaPerspectiva/pdf/eng/DocsTmps/doctmp13.pdf). • Early Warning Systems in the Caribbean (https://dipecholac.net/docs/xfiles/1054-DESK%20REVIEW-OF-EARLY-WARNING-SYSTEMS-EWS-IN-THE-CARIBBEAN.pdf).
3. Satellite (or other data) are used to revise coastal ecosystem maps periodically (at least one habitat, such as coral reefs or mangroves updated within the past 5 years).	No	0	To the extent that much of the research conducted on the coastal resources of The Bahamas is project driven, the updating of satellite imagery for coastal ecosystem maps tends not to be scheduled by GoBH or periodic, but rather, by the owners of the platforms or hubs. Similar situation would maintain for coastal ecosystem economic valuation.
4. The responsible entities update climate VRA periodically (within the past five years) and make these publicly available.	No	0	To the extent that much of the research conducted on coastal VRAs in The Bahamas is project driven, the updating of VRAs, if it occurs, tends not to be scheduled by GoBH or periodic, but rather, by the owners of the platforms or hubs on which the VRA assessments reside, or by the availability of donor funding for subsequent assessments. The issue of data ownership arises if follow up studies are conducted, as the there is no way of building on previous assessments without access to the data from previous studies, and platform interoperability.
5. The responsible entities update coastal ecosystem assessments (such as a state of the coast report) periodically (within the past five years) and make these publicly available.	No	0	To the extent that much of the work on coastal assessments is conducted by extra national parties, the GoBH is not in a position to update these assessments without access to the original data.

¹⁵⁹ The Bahamas Department of Meteorology website at <https://met.gov.bs/>.

¹⁶⁰ Bahamas 3-day Marine Forecast: Source URL: <https://met.gov.bs/wp-content/uploads/2022/03/BAHAMAS-3-DAY-MARINE-FORECAST-FOR-12AM-21.11.22-AC.pdf>.

Ranking Criteria	Response	Score	Main Finding Supporting Response
6. The responsible entities update coastal ecosystem economic valuations periodically (within the past five years) and make these publicly available.	No	0	To the extent that much of the work on coastal ecosystem economic evaluations are conducted by extra national parties, the GoBH is not in a position to update these assessments without access to the original data.

Tables for Category 3 - Identifying Adaptation Opportunities and Protecting Investments

Table A-3A - Findings for Indicator 3A - Identifying ICZM-related Responses to Climate Change

Ranking Criteria	Response	Score	Main Finding Supporting Response
1. Specific actions for responding to climate-related risks in the coastal zone have been identified and listed in one or more national plan (e.g., in national development plans, ICZM plan, National Adaptation Program of Actions, National Adaptation Plan or Nationally Determined Contributions).	Yes	1	Actions to respond to climate-related risks are proposed in the Bahamas Second National Communication to the UNFCCC in the Section on Adaptation Measures, Strategies and Options ¹⁶¹ . The Draft National Development Plan of the Bahamas ¹⁶² systematically elaborates intended adaptation actions through goals, strategies, and supporting actions.
2. Potential actions to reduce climate-related risk have been prioritized with consideration of where climate impacts will be most severe (geographically) and who among the country's population is the most vulnerable, as identified in the climate VRA.	Yes	1	The Draft National Development Plan of the Bahamas prioritises and specifies adaptation actions, are defined through the intended outputs, outcomes, responsible agents, time frame and level of impact (Pages 291 – 299).
3. In developing actions to reduce climate-related risk in coastal areas, ecosystem-based adaptation options (e.g., restoration or protection of ecosystems providing natural infrastructure) have been evaluated (in at least one of the proposals in the last three years).	Yes	1	<p>The Bahamas has made good strides in establishing partnerships and collaborations for the purpose of evaluating risks driven by a range of climatic factors.</p> <p>A number of the assessments have considered the role of ecosystems in climate change risk reduction and ecosystems-based adaptation and considered the impact of climate change on these coastal ecosystems and the disaster risk reduction services that they provide.</p> <ol style="list-style-type: none"> Wyatt, K. H., K. K. Arkema, S. Wells-Moultrie, J. M. Silver, B. Lashley, A. Thomas, J. J. Kuiper, A. D. Guerry, and M. Ruckelshaus. 2021. Integrated and innovative scenario approaches for sustainable development planning in The Bahamas. <i>Ecology and Society</i> 26(4):23. URL: https://www.ecologyandsociety.org/vol26/iss4/art23/. Natural Capital project (2019). A national Coastal Hazard and Social Vulnerability Analysis for the Bahamas. Source URL: https://marineapps.naturalcapitalproject.org/bahamas/docs/Bahamas.

¹⁶¹ GoBH (2014). Second National Communication of the Commonwealth of the Bahamas Under the United Nations Framework Convention on Climate Change. Chapter 4, Section 4.6, Pg. 142-153. Thematic areas addressed were, water resources, forests, tourism; financial, technical, and human resources; coastal zones, agriculture, human health, settlements and infrastructure, and energy. Climate threats considered, included, sea level rise, ocean acidification, decreased rainfall, increased temperature, tropical storms and hurricanes, storm surges, and coastal erosion.

¹⁶² GoBH (2016). The Draft National Development Plan of the Bahamas. Pgs. 291.

Table A-3B - Findings for Indicator 3B - Skills and Experience Developing and Evaluating Adaptation

Ranking Criteria	Response	Score	Main Finding Supporting Response
1. Conducting or evaluating environmental impact assessments (based on the national standards /regulations, if such exist)	Yes	1	The DEPP has the required skills and experience to manage the process of conducting and evaluating environmental impact assessment studies, as mandated in the Environmental Planning and Protection Act (2019)
2. Conducting or evaluating reports on ecosystem service valuation	Yes	1	<p>The DEPP is also responsible for reviewing applications and issuing permits for academic research¹⁶³. As such the DEPP evaluates proposals and the research outcomes.</p> <ul style="list-style-type: none"> Economic Valuation of Ecosystem Services in Bahamian Marine Protected Areas (TNC-NCP, 2017). https://www.obapao.org/sites/default/files/2021-02/Economic-Valuation-Report.pdf. Natural Capital project. https://breef.org/wp-content/uploads/2020/02/Economic-Valuation-Slide-Deck.pdf.
3. Conducting or evaluating cost-benefit analysis (as a tool for comparison of options) - based on the national standards / regulations, if such exist	Yes	1	<p>The DEPP is responsible for reviewing applications and issuing permits for academic research. As such the DEPP evaluates proposals and the research outcomes.</p> <p>Miller, I., C. Russell, and M Danniels (2014). Cost Benefit Analysis of Casuarina Species Management on Eleuthera Island, The Bahamas - Governor's Harbour Airport: A Case Study. Ministry of the Environment and Housing, Forestry Unit. N-356, Nassau, The Bahamas. Presented at the Conference Policies Strategies and Best Practices for Managing Invasive Alien Species (IAS) in the Insular Caribbean. Source: https://bahamas.gov.bs/wps/wcm/connect/db7b3756-640e-4f4a-b001-9104d8bdf3bb/Cost+Benefit+Analysis+of+Casuarina+Species+Management+on+Eleuthera+Island+30-03-2014.pdf?MOD=AJPERES.</p> <p>Oxford Economics (2018). The Economic Impact of Disney Cruise Line in the Bahamas An Economic Impact Assessment and Cost-Benefit Analysis of the Lighthouse Point Development Project. Prepared for Disney Cruise Line. Source: https://lighthousepointbahamas.com/wp-content/uploads/2021/07/Lighthouse-Point-Economic-Impact-Study_May-2021.pdf.</p>

¹⁶³ DEPP. Academic research permits and permitting process: Source URL: <https://www.depp.gov.bs/research-permits/>.

Ranking Criteria	Response	Score	Main Finding Supporting Response
4. Conducting or evaluating studies on effectiveness of natural infrastructure (Green infrastructure solutions)	Yes	1	<p>The DEPP is responsible for reviewing applications and issuing permits for academic research. As such the DEPP evaluates proposals and the research outcomes.</p> <p>An assessment of the risk reduction provided by coral reefs, mangroves, and seagrass along the entire coast of The Bahamas, under current and future climate scenarios. Silver, J.M. et al (2019). Advancing coastal Risk Reduction Science and Implementation by Accounting for Climate, Ecosystems, and People. Front. Mar. Sci. Vol. 6. Source: https://www.frontiersin.org/articles/10.3389/fmars.2019.00556/full.</p>
5. Conducting or evaluating analyses of coastal processes / dynamics	Yes	1	<p>The legally mandated responsibilities of the DEPP are taken as a proxy for its capabilities. Under Part IV of the Environmental Planning and Protection Act (2019)¹⁶⁴ the DEPP is mandated with the responsibility for protecting the environment (coral reefs, non-protected wildlife, sensitive areas, and sensitive species, and the provision of environmental restoration guidelines. Under Part IX of the Act, the DEPP is responsible for submitting reports on the state of the environment.</p>

Table A-3C- Findings for Indicator 3C - Monitoring and Protecting Investments in Infrastructure

Ranking Criteria	Response	Score	Main Finding Supporting Response
1. Standards and metrics exist for monitoring and evaluating the integrity of coastal infrastructure and operations and for upgrades or decommissioning.	Yes	1	<p>The Ministry of Public Works and Utilities (MoPU) is the GoBH implementing agency for the <i>Climate Resilient Coastal Management and Infrastructure Program (BH-L1043)</i>.</p> <p>Under the program a comprehensive assessment and comparative analysis will be undertaken of the contents of both The Bahamas Building Code (BBC) 2003 and other global standards. This assessment will include the International Code Council's International Building Code (IBC) 2018, considering their major strengths and weakness,</p>

¹⁶⁴ GoBH (2019). The Environmental Planning and Protection Act, 2019. Source URL. Source URL: <https://www.depp.gov.bs/wp-content/uploads/2020/02/Department-of-Environmental-Protection-Planning-Act-2019.pdf>.

Ranking Criteria	Response	Score	Main Finding Supporting Response
			opportunities, international best practices, and current legislative policies to determine and produce the most practical and efficient form of standards for use within the Commonwealth of The Bahamas ¹⁶⁵ .
2. The national entity responsible for ICZM undertakes periodic monitoring and maintenance work of existing conventional coastal infrastructure. (Monitoring at least every three years).	No	0	There is no legislation that establishes (a) a designated coastal zone management entity, and (b) a mandate for ICZM activities such as the periodic monitoring and maintenance of existing conventional coastal infrastructure. The response is therefore “No” and the score “0”.
3. The national entity responsible for ICZM undertakes periodic monitoring of the natural (green) infrastructure which is or has been a subject of a coastal project to assess function and integrity. (Monitoring at least every three years).	No	0	There is no legislation that establishes (a) a designated coastal zone management entity, and (b) a mandate for ICZM activities such as the periodic monitoring and maintenance of existing conventional coastal infrastructure. The response is therefore “No” and the score “0”.
4. Evaluating the effectiveness of built coastal protection investments – temporal data on storm conditions and storm surge / water height are combined with information on coastal flooding to evaluate the effectiveness of built coastal protection structures. (Evaluation conducted within the past 5 years).	No	0	No information was accessed on structure or reach-specific assessments.
5. Evaluating the effectiveness of natural (green) coastal protection investments – temporal data on storm conditions and storm surge / water height are combined with information on coastal flooding to evaluate the effectiveness of investment in green infrastructure (such as mangroves,	No	0	No information was accessed on structure or reach-specific assessments.

¹⁶⁵ Bahamas Building Code Upgrade Incorporating Coastal Infrastructure Design Guidance. Source URL: <https://connectamericas.com/business-opportunity/bahamas-building-code-upgrade-incorporating-coastal-infrastructure-design>.

Ranking Criteria	Response	Score	Main Finding Supporting Response
coral reefs, sand dunes, etc.) (Evaluation conducted within the past 5 years).			

Tables for Category 4 - Financing ICZM

Table A-4A - Findings for Indicator 4A - Sustainable Funding for ICZM Operations

Ranking Criteria	Response	Score	Main Finding Supporting Response
<p>1. ICZM regulatory framework includes strategy or policy for financing ICZM including an estimation of financial needs for successful ICZM studies, planning, implementation /maintenance and M&E.</p>	<p>No</p>	<p>0</p>	<p>There is no ICZM legislation that supports the establishment of an enabling framework for ICZM or a formal ICZM regulatory framework for any aspect of ICZM including finance and resource allocation. The response to this question is therefore “No” and the allocated score “0”.</p> <p>There are mechanisms for financing ICZM-related activities, however they are siloed interventions and not integrated.</p> <p>How does the recent approval of the Bahamas National Maritime Policy (2015) affect this answer? Does it make provision for financing ICZM? Is there a budget or estimate of the cost of implementing the policy?</p> <ul style="list-style-type: none"> • As explained in XXX [insert hyperlink] the Bahamas has not established an ICZM regulatory framework per se, despite formal recognition of its need, and the development of draft ocean management policy in the form of the Bahamas National Maritime Policy (2015). • The Ministry of Environment Act No. 39 of 2019 establishes the Ministry of the Environment to oversee the integrity of the environment of the Bahamas, to make the Minister responsible therefor a corporation sole, to establish the Environmental Administration Fund and the Environmental Trust Fund and for related matters.. • The Bahamas Protected Areas Fund Act, 2014 (No. 28 of 2014) establishes the Bahamas Protected Areas Fund as a body corporate and defines its functions and powers and defines the system of protected areas in the Bahamas, and the maintenance of a Register of Protected Areas. • The general purpose of the Fund is to ensure sustainable financing into perpetuity for the management of Protected Areas in The Bahamas, including: <ul style="list-style-type: none"> ○ management activities under the Caribbean Challenge Initiative and the objectives of the Caribbean Biodiversity Fund related to any system of protected areas, ○ programs established for the management of any area required for biodiversity conservation, ○ the protection of any carbon sink under the Forestry Act, 2010, ○ the conservation and protection of water resources, wetlands, or blue holes, ○ degraded or threatened ecosystems, as defined under the United Nations Convention to Combat Desertification and ○ any area which may be designated for the purpose of giving effect to international climate change agreements. • The scope of the Act’s environmental conservation purpose is broad enough to encompass aspects of resource

Ranking Criteria	Response	Score	Main Finding Supporting Response
			management that would fall under ICZM, if an ICZM regulatory framework were to be established.
2. Annual government budget contains a dedicated (not discretionary) line item to support operating costs of government entities responsible for implementing ICZM.	No	0	<p>There is no, ICZM-specific legislation that supports the establishment of an enabling framework for ICZM, or formal ICZM regulatory framework for ICZM, or a formal designation of ICZM as a management approach, under or through which the explicit and intentional allocation of financial resources might take place. The response to this question is therefore “No” and the allocated score “0”.</p> <p>Government entities may be notionally responsible for implementing ICZM-related activities. However, in the absence of an ICZM policy or enabling framework, or a formal “ICZM specific” intention, these activities are not considered to be ICZM although they contribute to the goals of ICZM in an uncoordinated, siloed way.</p> <p>Although no specific mention of ICZM is made in the Ministry of the Environment Act, it does appear that the flexibility exists for funds collected and held in either the Environmental Administration Fund (EAF) Environmental Trust Fund (ETF) to be collected for, and allocated to, agencies responsible for ICZM and/or for funding ICZM activities.</p> <p>Section 14 of the Act makes the provision that “... Any monies deposited into the Trust Fund may be designated for a specific purpose or made subject to a specific condition, and any money so designated shall be preserved and utilised solely for the designated purpose”.</p>
3. In the most recent fiscal year, the government (e.g., ministry of finance) disbursed the annual budget allocation to support operating costs of government entities responsible for implementing ICZM.	No	0	There is no, ICZM-specific legislation that supports the establishment of an enabling framework for ICZM, or formal ICZM regulatory framework for ICZM, or a formal designation of ICZM as a management approach, under or through which the explicit and intentional allocation of financial resources might take place. The response to this question is therefore “No” and the allocated score “0”.
4. The government makes use of dedicated fees (e.g., for marine protected areas) to raise funding to support ICZM.	Yes	1	<p>It is the general case that, collected fees are remitted to the consolidated fund. Collected funds are not ring fenced.</p> <p>However, under Section 8 f. the Public Works Act, the use of certain fees is governed by the provision that “Where under any rules in force fees are levied in respect of the use of any public harbour, dock or wharf in any Out Island district, the Minister shall ensure that any sums so collected are expended on the maintenance of such harbour, dock or wharf”. (URL: https://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/1963/1963-0040/PublicWorksAct_1.pdf)</p>

Ranking Criteria	Response	Score	Main Finding Supporting Response
			Under Part III, Section 10 of the Act, the Environmental Trust Fund (ETF) is established for the purpose of providing "... <i>stable, adequate, secure and sustainable funding to finance the conservation and management of the environment of The Bahamas pursuant to the fulfilment of any international obligations</i> ".
5. The government disbursed more than 50% of the dedicated fees collected (described in 4.a.4) in direct financial support to marine protected areas (MPAs) or to the ICZM agency during the most recent fiscal year.	No	0	<p>Responses of stakeholders to TAC Roundtable Meeting (21-SEP-22) questionnaire:</p> <ul style="list-style-type: none"> All fees collected go to the consolidated fund. Collected funds are not ring fenced. They are therefore not redistributed in a targeted fashion for ICZM or PA specific activities.

Table A-4B - Findings for Indicator 4B - Access to International Development Finance

Ranking Criteria	Response	Score	Main Finding Supporting Response
1. The country has accessed public international finance (loans, grants, or other types of finance) for ICZM in the past (e.g., from multilateral development banks or bilateral aid agencies) within the last five years.	Yes	1	<p>The Bahamas has successfully accessed grant and loan funding with the assistance of development partners such as the Global Environmental Fund (GEF), the Inter-American Development Bank, and the Green Climate Fund¹⁶⁶.</p> <p>The new “Public Financial Management Act” requires all international funds entering the Bahamas fiscal space, to be routed through the Ministry of Finance (https://www.bahamas.gov.bs/wps/wcm/connect/da4d68f7-12d6-4258-b94b-bf26266af16c/PublicFinanceManagementAct%2C2021.pdf?MOD=AJPERES). Funds entering the country from outside of the Bahamas must be declared through the Central Bank. These arrangements create the potential for tracking extra-national ICZM and CCA finding.</p>
2. Country has accessed grant funding from private sources of finance for ICZM implementation (e.g., private foundations) in the last five years.	Yes	1	<p>Bahamas Protected Areas Fund Act, 2014 (No. 28 of 2014): This Act establishes the Bahamas Protected Areas Fund as a body corporate and defines its functions and powers.</p> <p>The general purpose of the Fund is to ensure sustainable financing into perpetuity for the management of Protected Areas in The Bahamas, including management activities under the Caribbean Challenge Initiative and the objectives of the Caribbean Biodiversity Fund related to any system of protected areas, programs established for the management of any area required for biodiversity conservation, the protection of any carbon sink under the Forestry Act, 2010, the conservation and protection of water resources, wetlands, or blue holes, degraded or threatened ecosystems, as defined under the United Nations Convention to Combat Desertification and any area which may be designated for the purpose of giving effect to international climate change agreements</p>
3. The country has accessed finance for coastal-zone activities from multilateral climate funds and has not reached its funding cap for any of the climate funds (e.g., the Adaptation Fund or LDCF).	Yes	1	<p>The IDB funded BH-L1043 project is developing national capacity in resilient coastal development.</p> <p>The Bahamas has successfully accessed grant and loan funding with the assistance of development partners such as the Global Environmental Fund (GEF), the Inter-American Development Bank, and the Green Climate Fund¹⁶⁷.</p>
4. The country has in place all relevant focal points/designated authorities and accredited entities for international funds, and these have knowledge of ICZM.	Yes	1	<p>The National Designated Authority for the Green Climate Fund is the Department of Environmental Planning and Protection (DPP) and serves as the operational focal point for the Global Environmental Facility (GEF). A National Implementing Entity (NIE) for the UNFCCC Adaptation Fund has not been designated¹⁶⁸. The GEF Operational Focal Point is the DEPP (https://www.thegef.org/projects-operations/country-profiles/bahamas).</p>

¹⁶⁶ GCF Bahamas Project Portal. Source URL: <https://www.greenclimate.fund/countries/bahamas#>.

¹⁶⁷ GCF Bahamas Project Portal. Source URL: <https://www.greenclimate.fund/countries/bahamas#>.

¹⁶⁸ Adaptation Fund (AF) National Implementing Entities. Source URL: <https://www.adaptation-fund.org/apply-funding/implementing-entities/national-implementing-entity/>.

Table A-4C: Findings for Indicator 4C - Financial Incentives and Schemes to Incentivize Private Action

Ranking Criteria	Response	Score	Main Finding Supporting Response
1. Tax incentives for actions that support resilient ICZM activities (e.g., restoration of mangroves or sand dunes).	No	0	<p>There is no, ICZM-specific legislation that supports the establishment of an enabling framework for ICZM, or formal ICZM regulatory framework for ICZM, or a formal designation of ICZM as a management approach, under or through which the explicit and intentional levying of taxes, or deployment of incentive or disincentives, specifically for ICZM, might take place. The response to this question is therefore “No” and the allocated score “0”.</p> <p>However, a suitable framework exists for ins support of general environmental considerations. The legislation and mechanisms are in place to support ICZM-related activities, and organizations with ICZM-related mandates. However, in the absence of a legally designated lead agency for ICZM, and an approved ICZM programme, it would not be expected that government taxes and grants would be earmarked for ICZM.</p> <p>There is an approved national mechanism for levying and collecting environmental taxes and fees. Under Part II, Section 8, of the Ministry of Environment Act (2019) an Environmental Administration Fund (EAF) to facilitate the collection and/or holding of developer’ bonds; funds to support the imposition and collection of taxes, charges, or fees, payable into the EAF; the payment of a fine or penalty into the EAF.</p> <p>The Act specifies that monies from the EAF shall be used, <i>inter alia</i>, for, environmental restoration; and incentive measures to reduce environmental pollution and conserve natural resources. The Act provides a degree of flexibility for what the EAF funds may be used for, stating that:</p> <p style="text-align: center;"><i>“Any monies in the Administration Fund may be designated for a specific purpose or made subject to a specific condition, and any money so designated shall be preserved and utilised solely for the designated purpose.”</i></p>
2. Government-supported grant programs to fund ICZM efforts.	No	0	No evidence was found of this type of mechanism.
3. Concessional finance (e.g., loans, equity) to support climate compatible ICZM investments by private actors.	Yes	1	The potential for concessional financing to support climate compatible ICZM investment in the private sector exists through the Bahamas Development Bank, Access Accelerator ¹⁶⁹ . The Bahamas Development Bank supports sustainable fisheries through targeted investment in the sector ¹⁷⁰ . and other actors like the Caribbean Climate Smart Accelerator.

¹⁶⁹ The Bahamas Development Bank, Access Accelerator. Source URL: <https://www.accessaccelerator.org/>.

¹⁷⁰ The Bahamas Development Bank Source URL: <https://bahamasdevelopmentbank.com/about-us/fisheries/>.