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DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

COUNTRY

CLIMATE-RESILIENT COASTAL MANAGEMENT AND INFRASTRUCTURE PROGRAM

(BH-L1043)

PROJECT PROFILE

This document was prepared by the project team consisting of: Michele Lemay (CSD/RND) Project Team Leader. MEMBERS: Kelsey Schueler, Tsuneki Hori, Roberto Guerrero, Melanie Argimon and Elizabeth Chavez (CSD/RND); Gerard Alleng (CSD/CCS); Pilar Jimenez de Arechaga (LEG/SGO); Rene Herrera (FMP/CJA); Mario Castaneda (FMP/CBH) and Syreta Roberts (CCB/CBH).

PROJECT PROFILE

THE BAHAMAS

I. BASIC DATA

Project Name:	Climate-resilient Coastal Management and Infrastructure Program	
Project Number:	BH-L1043	
Project Team:	Michele Lemay (CSD/RND), Project Team Leader; Kelsey Schueler, Tsuneki Hori, Roberto Guerrero, Melanie Argimon and Elizabeth Chavez (CSD/RND); Gerard Alleng (CSD/CCS); Pilar Jimenez de Arechaga (LEG/SGO); Rene Herrera (FMP/CJA); Mario Castaneda (FMP/CBH) and Syreta Roberts (CCB/CBH).	
Borrower:	The Commonwealth of The Bahamas (GBH)	
Executing Agency:	Ministry of Works and Urban Development (MoWUD)	
Financial Plan:	IDB (OC):	US$26 million
	Total:	US$26 million
Safeguards:	Policies triggered:	OP-102, OP-703 (B.1, B.2, B.3, B.4, B.5, B.6, B.7, B.11, B.17),OP-704 and OP-710
	Classification:	B

II. GENERAL JUSTIFICATION AND OBJECTIVES

2.1 **Background.** The archipelago of The Bahamas consists of 700 low-lying islands and 2,500 cays, with 80% of land less than one meter above sea level[1]. The maritime territory is also vast, extending 2,000 km and covering approximately 668,600 km[2]. The coastal and marine environment not only dominates the landscape of The Bahamas, it is also a critical component of the economy and Bahamian identity. It was recognized as a pillar of the Vision 2040: National Development Plan (NDP) of The Bahamas[3].

2.2 The coastal and marine environment's economic impact is most apparent in the tourism sector, on which The Bahamas' economy is heavily dependent. A tropical climate, sandy beaches, fringing reefs and other coastal and marine ecosystems provide ideal conditions for tourism activities. Nassau, a major port of call, received over 4.7 million passengers in 2015, many attracted by the coast's scenic quality and recreational attractions[4]. An estimated US$1.8 billion of direct tourist revenues were generated in 2015, with a total economic impact of US$4.1 billion (46.9% of GDP). Tourism accounted for 55,500 jobs directly in 2015 (28.9% of total employment)[5]. The tourism

1 The Bahamas Environment, Science and Technology Commission (BEST). "First National Communication on Climate Change." (Nassau: BEST, 2001).

2 Maritime Limits and Boundaries Services (MLBS) Ltd. "Desktop Study Report prepared by MLBS Ltd for the Commonwealth Secretariat" (London: BNGIS Centre, 2015).

3 National Development Plan Secretariat. "State of the Nation Report." (v.2, Nassau: NDP, 2016)

4 The Central Bank of The Bahamas. Annual Report and Statement of Accounts for the Year Ended 31 December, 2015.

5 World Travel and Tourism Council (WTTC). "Travel and Tourism Economic Impact 2016: Bahamas." (London: WTTC, 2016).

sector's potential future growth rests predominately on the uniqueness and health of the archipelago's coastal resources.

2.3 Beyond tourism's economic impact, The Bahamas' coastal and marine ecosystems provide other benefits that have value to human well-being (ecosystem services) but are not easily monetized, such as coastal protection, carbon sequestration and cultural values. Coastal protection benefits in particular, including the natural buffering of coral reefs and mangroves against beach erosion and other coastal hazards, are now recognized throughout the Caribbean as natural capital[6], which should be considered in development decisions[7]. For example, in a study by the Natural Capital Project in Belize, coastal habitats were found to prevent erosion over an estimated 300 km of shoreline, atolls and cays resulting in annual avoided damages of US$2.5 billion in average. Benefits increased over 50% in a scenario where conservation of natural capital was blended with coastal development[8]. A similar study in Andros (BH-T1040) found that implementation of a plan leveraging ecosystem services to fill development gaps could reduce the length of shoreline at risk from erosion and flooding by 20%[9].

2.4 **The problem.** The Bahamas is highly vulnerable to natural hazards, including hurricanes which put at risk both economic activities and associated public infrastructure concentrated along the coast of New Providence and several of the Family Islands. From 1990 to 2015, the country experienced 15 major hurricanes, affecting 27,000 citizens[10]. These events are usually accompanied by severe coastal erosion and flooding, including in densely populated areas where the buffering effect of coastal habitats has been lost. Hurricane Sandy (2012), although low intensity, had a total economic cost of US$702.8 million (9% of GDP)[11]. Recently, Hurricane Joaquin (2015), which passed through southern islands comprising only 1.5% of the total population, destroyed large segments of five islands with total damage estimated at US$104.8 million[12]. Damages are exacerbated by inadequately designed infrastructure non-compliant to building codes.

2.5 The loss of natural capital in the coastal zone exacerbates the archipelago's overall environmental and socio-economic vulnerability. While information on The Bahamas' natural capital is limited, there is evidence of declining trends and increasing threats. For example, Bahamian reefs have less live coral cover on average than other Caribbean island reefs[13]. Mangrove wetlands of the Bahamas threatened by land conversion for development and because they are not fully protected by law. Data on beach stability

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6 Natural capital is defined as the stock of natural resources that provide people with goods and services. Those goods and services provided by nature are ecosystem services.

7 Wealth Accounting and the Valuation of Ecosystem Services Partnership. "Managing Coasts with Natural Solutions: Guidelines for Measuring and Valuing the Coastal Protection Services of Mangroves and Coral reefs, eds". Michael Beck and Glenn-Marie Lange (Washington, D.C: World Bank, 2016).

8 Katie Arkema et al., "Embedding ecosystem services in coastal planning leads to better outcomes for people and nature," *Proceedings of the National Academy of Sciences* 112, no.24 (2015)

9 Natural Capital Project. "Andros Phase 1 Final Report." (IDB, 2016).

10 "Emergency Events Database (EM-DAT)" *Centre for Research on the Epidemiology of Disasters,* accessed August 3, 2016 http://www.emdat.be/

11 Figure cited in BH-T1032.

12 ECLAC and IDB. "Assessment of the Effects and Impacts Caused by Hurricane Joaquin: The Bahamas" (IDB, to be published).

13 Craig Dahlgren et al. "Bahamas Coral Reef Report Card Volume I: 2011-2013." (Nassau: Atlantis Blue Project, 2016).

are collected sporadically and not reliable[14]. Country-wide, main threats to coastal ecosystems include land-based pollution, habitat conversion, invasive species, disease outbreaks and other coastal risks such as natural disasters and climate change[15].

2.6 **Climate change.** These trends are likely to worsen as a result of climate change. The Bahamas is highly vulnerable to Sea Level Rise (SLR) and storm surge associated with increasing intensity of extreme weather events. Likely impacts include coastal flooding and erosion, mangrove retreat, decreased seagrass bed productivity, and saltwater intrusion into the small lenses of fresh groundwater[16]. A recent IDB study indicates that the probable flood exposed area in Nassau will expand 8% by 2050 due to the increasing precipitation caused by climate change[17]. Nationally, one meter SLR would place 36% of major tourism properties, 38% of airports, 14% of road networks and 90% of sea ports at risk[18]. There are various estimates of economic costs associated with these climate change impacts. For example, under a low impact scenario, the projected annual costs would be US$0.24 billion by 2025 (4.2% of 2004 GDP) and US$0.31 billion by 2050 (5.3% of 2004 GDP). Costs double under a high impact scenario[19].

2.7 There is growing international experience demonstrating that an integrated and resilience-based approach to managing coasts is an effective response to these issues[20]. Lessons learned from countries such as Belize, Barbados and Trinidad and Tobago that have embarked on Integrated Coastal Zone Management (ICZM) Programs, including with Bank support, are showing that viable solutions must combine: (i) reliable quantitative information on coastal risks and processes; (ii) sustainable, science-based coastal protection infrastructure that takes advantage of the natural buffering effect of coastal ecosystems; and (iii) strengthened planning and management capacity.

2.8 ICZM in The Bahamas would help address the following challenges to the country's future resilience: (a) **Need for sustainable coastal protection infrastructure achieved through science-based analysis and design** [21] as an essential element of preparedness and adaptation. Evidence from The Bahamas and internationally suggests that engineering solutions that are not designed based on analysis of site-specific coastal processes and potential climate change impacts are less than effective and short-lived[22]. Effective solutions should also leverage natural capital (i.e., mangroves and coral reefs) for innovative natural infrastructure that is more adaptive and often less

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[14] Ministry of the Environment (MEH). "The Fourth National Biodiversity Report of The Bahamas to the UNCBD" (Nassau: MEH, 2011).

[15] Ibid.

[16] Murray Simpson et al., "CARIBSAVE Climate Change Risk Atlas - The Bahamas." (Barbados: DFID, AusAID and CARIBSAVE, 2012).

[17] ERM. "CE-2 Hazards and Risks: Sustainable Nassau Action Plan" (IDB, 2016).

[18] Murray Simpson et al. "Quantification and Magnitude of Losses and Damages Resulting from the Impacts of Climate Change: Modelling the Transformational Impacts and Costs of SLR in the Caribbean." (Barbados: UNDP, 2010).

[19] Bueno et al., "The Caribbean and Climate Change: The Cost of Inaction." (Stockholm Environment Institute and Tufts University, 2008).

[20] Banerjee et al "A Retrospective Stated Preference Approach to Assessment of Coastal Infrastructure Investments: An application to Barbados" (IDB, 2016).

[21] Refers to the full range of structural and non-structural measures (i.e. breakwaters, groynes, seawalls, revetments) that control beach erosion, coastal flooding and other coastal hazards.

[22] Mott Macdonald "Second Interim Report" (IDB, 2016).

costly[23], particularly on those islands rich in biodiversity such as Andros. (b) **Gaps in reliable, long-term coastal risk data** limit understanding coastal risks and processes, including for example island-specific coastal erosion information to project beach retreat rates and determine coastal infrastructure setbacks. (c) Limited **cross-sectoral planning, coordination and technical capacity** in the absence of an integrated governance and policy approach. Existing mandates for coastal management are fragmented, with no existing coordination mechanism for planning and development of the coast.[24] The Andros Sustainable Development Master Plan (ASDMP) (BH-T1040) and Emerging and Sustainable Cities Initiative Sustainable Nassau (BH-T1045) projects demonstrate efficiency gains from innovative technology platforms for risk assessment and cross-sectoral planning, but local capacities need to be developed.

2.9 **Objective.** To address these challenges, a Climate-resilient Coastal Management and Infrastructure Program financed through a Specific Investment Loan (SIL) is proposed that is tailored to the specific characteristics of the archipelago, recognizes immediate and medium-term priorities for coastal protection infrastructure and builds national capacity for ICZM. 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[25]. The program consists of three components: **(1) Sustainable coastal protection infrastructure (US$20 M)** - diagnostics, design and construction of science-based engineering solutions for shoreline stabilization and coastal flooding control, coupled with reconstruction of critical public infrastructure at four priority sites (Nassau, New Providence; Glass Window Bridge, Eleuthera; Central Long Island and East Grand Bahama)[26]. **(2) Natural infrastructure for hazard resilience in Andros (US$3 M)** - a priority investment to demonstrate the effectiveness of natural infrastructure for shoreline stabilization and restoration from the ASDMP (to be finalized in October 2016), which identifies opportunities for sustainable development for both people and nature and was developed using an ecosystem-based, participatory approach. **(3) Institutional strengthening for coastal risk management (US$3 M)** - activities related to governance, planning, information management, capacity building, stakeholder consultations, private sector engagement, and financial sustainability, including a mechanism for inter-agency coordination.

2.10 **Bank's strategy.** The program is consistent with the Update to the Institutional Strategy 2010-2020 (GN-2788-5) which identifies climate change and adaptation and mitigation as one of the two cross-cutting issues and is aligned with the development challenge of productivity and innovation by the Country Development Results (CDR) indicators: (i) beneficiaries of improved management and sustainable use of natural capital and (ii) government agencies benefited by projects that strengthen technological and managerial tools to improve public service delivery. The program is also aligned with the cross-cutting themes of: (i) climate change and environmental sustainability; and

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[23] Siddharth Narayan et al., "The Effectiveness, Costs and Coastal Protection Benefits of Natural and Nature-Based Defenses," *PLOS One* 11, no 5 (2016).

[24] Mott Mac Donald, Second Interim Report.

[25] Potential beneficiaries include all coastal residents, including households at the four proposed sites and Andros.

[26] Selection criteria: (i) Geographic locations in both New Providence and the Family Islands; (ii) existing or planned development at high risk to natural disasters, climate change, and/or SLR, or subject to frequent disruptions due to storm surges, inundation and flooding; (iii) opportunities to reduce beach erosion, coastal flooding and habitat degradation or improve public coastal access; (iv) priorities for investment and/or is consistent with the NDP; (v) high ecosystem services value; (vi) potential for the use of natural infrastructure.

(ii) institutional capacity and rule of law by the aforementioned CDR indicators. The program will contribute to the Corporate Results Framework 2016-2019 (GN-2727-4) by the aforementioned CDR indicators and the Auxiliary Indicators: (i) households protected from flood risk; (ii) terrestrial and marine areas with improved management; (iii) countries that have improved disaster risk management. The approach is consistent with the IDB Country Strategy with The Bahamas 2013-2017 (GN-2731), which identified coastal risk management and climate change adaptation as priority areas for support. In addition, it is consistent with the Environment and Biodiversity Sector Framework Document (GN-2827), the Integrated Strategy for Climate Change Adaptation and Mitigation, and Sustainable and Renewable Energy (GN-2609-1) and the IDB Infrastructure Strategy (GN-2710-5).

III. TECHNICAL ISSUES AND SECTOR KNOWLEDGE

3.1 **Institutional capacity and executing agency**. The Ministry of Works and Urban Development (MoWUD) will be the Executing Agency for the program. The MoWUD's capacity for financial management is demonstrated by the New Providence Transportation Program (LOs 1320/OC-BH, 1988/OC-BH and 2773/OC-BH) and MOWUD is responsible for the implementation of public coastal protection infrastructure. An institutional assessment of the MoWUD will be conducted as part of program preparation. The Ministry of The Environment and Housing as a participating agency will provide technical leadership for key activities under Component Two. The possibility of involvement of other line Ministries as participating agencies will be further examined during preparation.

3.2 **Sector knowledge.** Completed and on-going sector work financed by BH-T1029/BH-T1038 includes: (i) Hurricane Joaquin Economic Impact Assessment, which quantified estimates of hurricane impact for five islands, including Long Island; (ii) pre-feasibility study of coastal protection infrastructure at the sites mentioned in Para 2.9; (iii) an analysis of ICZM policy options and capacity assessment needs; and (iv) country-wide coastal hazard modeling. In addition, BH-T1045 has collated the best available, site-specific data for Nassau, including coastal flooding, salt water intrusion, SLR, etc. Upstream work includes a national study to estimate probable maximum/annual loss and damage due to hurricanes, incorporating additional climate change risk scenarios (RG-T2759; ATN/MD-15800-RG).

IV. ENVIRONMENTAL SAFEGUARDS AND FIDUCIARY SCREENING

4.1 In accordance with the Bank's Environmental and Social Safeguards Compliance Policy (OP-703), this Program was classified "B". Thus, an Environmental and Social Analysis will be completed. An additional disaster risk assessment may be necessary. Directives triggered include OP-102, OP-703, OP-704 and OP-710. A fiduciary risk assessment will be undertaken to determine fiduciary risks and define project management modalities. The program is expected to have positive social impacts in terms of increased resilience to climate change and coastal hazards. Positive environmental benefits are expected via improved management of the coastal zone.

V. RESOURCES AND TIMETABLE

5.1 The Proposal for Operation Development is expected to be completed on December 6, 2016 and the Loan Proposal would be considered by the Board of Executive Directors on 22 February, 2017. An estimated US$91,860 from the Bank's administrative budget will be needed for program preparation (consulting services

and three missions). The feasibility study, policy development and capacity assessment are being financed by the TC ATN/OC-14250-BH; ATN/OC-14251-BH at a cost of US$795,000.

CONFIDENTIAL

[1] The information contained in this Annex is confidential and will not be disclosed. This is in accordance with the "Deliberative Information" exception referred to in paragraph 4.1 (g) of the Access to Information Policy (GN-1831-28) at the Inter-American Development Bank.

Safeguard Policy Filter Report

Operation Information

Operation		
BH-L1043 Climate Resilient Coastal Mangement and Infrastructure Program		
Environmental and Social Impact Category	High Risk Rating	
B	{Not Set}	
Country	Executing Agency	
BAHAMAS	{Not Set}	
Organizational Unit	IDB Sector/Subsector	
Caribbean Group	COASTAL ZONE MANAGEMENT	
Team Leader	ESG Lead Specialist	
MICHELE H. LEMAY	{Not Set}	
Type of Operation	Original IDB Amount	% Disbursed
Loan Operation	$0	0.000 %
Assessment Date	Author	
18 Oct 2016	kelseys Team Member	
Operation Cycle Stage	Completion Date	
ERM (Estimated)	7 Oct 2016	
QRR (Estimated)	6 Dec 2016	
Board Approval (Estimated)	{Not Set}	
Safeguard Performance Rating		
{Not Set}		
Rationale		
{Not Set}		

Potential Safeguard Policy Items

[No potential issues identified]

Safeguard Policy Items Identified

B.1 Bank Policies (Access to Information Policy– OP-102)

The Bank will make the relevant project documents available to the public.

B.1 Bank Policies (Disaster Risk Management Policy– OP-704)

The operation is in a geographical area exposed to natural hazards (Type 1 Disaster Risk Scenario). Climate change may increase the frequency and/or intensity of some hazards.

B.1 Bank Policies (Disaster Risk Management Policy– OP-704)

The sector of the operation is vulnerable to natural hazards. Climate change may increase the frequency and/or intensity of some hazards.

B.1 Bank Policies (Disaster Risk Management Policy– OP-704)

The specific objective of the operation is climate change adaptation

B.1 Bank Policies (Resettlement Policy– OP-710)

The operation has the potential to disrupt the livelihoods of people living in the project area of influence (not limited to involuntary displacement, see also Resettlement Policy)

B.2 Country Laws and Regulations

The operation is expected to be in compliance with laws and regulations of the country regarding specific women's rights, the environment, gender and indigenous peoples (including national obligations established under ratified multilateral environmental agreements).

B.3 Screening and Classification

The operation (including associated facilities) is screened and classified according to its potential environmental impacts.

B.4 Other Risk Factors

The operation is specifically designed to increase the ability of society and ecological systems to adapt to a changing climate.

B.4 Other Risk Factors

The operation includes activities to close current “adaptation deficits” or to increase the ability of society and ecological systems to adapt to a changing climate.

B.5 Environmental Assessment Requirements

An environmental assessment is required.

B.6 Consultations

Consultations with affected parties will be performed equitably and inclusively with the views of all stakeholders taken into account, including in particular: (a) equal participation by women and men, (b) socio-culturally appropriate participation of indigenous peoples and (c) mechanisms for equitable participation by vulnerable groups.

B.7 Supervision and Compliance

The Bank is expected to monitor the executing agency/borrower's compliance with all safeguard requirements stipulated in the loan agreement and project operating or credit regulations.

B.11. Pollution Prevention and Abatement

The operation has the potential to pollute the environment (e.g. air, soil, water, greenhouse gases).

B.17. Procurement

Suitable safeguard provisions for the procurement of goods and services in Bank financed operation will be incorporated into project-specific loan agreements, operating regulations and bidding documents, as appropriate, to ensure environmentally responsible procurement.

Recommended Actions

{Not Set}

Additional Comments

[No additional comments]

Safeguard Screening Form

Operation Information

Operation		
BH-L1043 Climate Resilient Coastal Mangement and Infrastructure Program		
Environmental and Social Impact Category	High Risk Rating	
B	{Not Set}	
Country	Executing Agency	
BAHAMAS	{Not Set}	
Organizational Unit	IDB Sector/Subsector	
Caribbean Group	COASTAL ZONE MANAGEMENT	
Team Leader	ESG Lead Specialist	
MICHELE H. LEMAY	{Not Set}	
Type of Operation	Original IDB Amount	% Disbursed
Loan Operation	$0	0.000 %
Assessment Date	Author	
18 Oct 2016	kelseys Team Member	
Operation Cycle Stage	Completion Date	
ERM (Estimated)	7 Oct 2016	
QRR (Estimated)	6 Dec 2016	
Board Approval (Estimated)	{Not Set}	
Safeguard Performance Rating		
{Not Set}		
Rationale		
{Not Set}		

Operation Classification Summary

Overriden Rating	Overriden Justification
Comments	

Conditions / Recommendations

Category "B" operations require an environmental analysis (see Environment Policy Guideline: Directive B.5 for Environmental Analysis requirements)

The Project Team must send to ESR the PP (or equivalent) containing the Environmental and Social Strategy (the requirements for an ESS are described in the Environment Policy Guideline: Directive B.3) as well as the Safeguard Policy Filter and Safeguard Screening Form Reports. These operations will normally require an environmental and/or social impact analysis, according to, and focusing on, the specific issues identified in the screening process, and an environmental and social management plan (ESMP). However, these operations should also establish safeguard, or monitoring requirements to address environmental and other risks (social, disaster, cultural, health and safety etc.) where necessary.

Summary of Impacts / Risks and Potential Solutions

A natural hazard is likely to occur or be exacerbated due to climate-related changes and the likely severity of the impacts to the project is moderate.

A Disaster Risk Assessment, that includes a Disaster Risk Management Plan (DRMP) may be necessary, depending on the complexity of the project and in cases where the vulnerability of a specific project component may compromise the whole operation. The DRMP should propose measures to manage or mitigate these risks to an acceptable level. The measures should consider both the risks to the project, and the potential for the project itself to exacerbate risks to people and the environment during construction and operation. The measures should include risk reduction (siting and engineering options), disaster risk preparedness and response (contingency planning, etc.), as well as financial protection (risk transfer, retention) for the project. They should also take into account the country's disaster alert and prevention system, general design standards and other related regulations. For details see the DRM policy guidelines.

Project construction activities are likely to lead to localized and temporary impacts (such as dust, noise, traffic etc) that will affect local communities and workers but these are minor to moderate in nature.

Construction: The borrower should demonstrate how the construction impacts will be mitigated. Appropriate management plans and procedures should be incorporated into the ESMP. Review of implementation as well as reporting on the plan should be part of the legal documentation (covenants, conditions of disbursement, etc).

The project is located in an area prone to coastal flooding from storm surge, high wave activity, or erosion and the likely severity of the impacts to the project is moderate.

A Disaster Risk Assessment, that includes a Disaster Risk Management Plan (DRMP), may be necessary, depending on the complexity of the project and in cases where the vulnerability of a specific project component may compromise the whole operation. The DRMP should propose measures to manage or mitigate these risks to an acceptable level. The measures should include risk reduction (siting and engineering options), disaster risk preparedness and response (contingency planning, etc.), as well as financial protection (risk transfer, retention) for the project. They should also take into account the country's disaster alert and prevention system, general design standards, coastal retreat and other land use regulations and civil defense recommendations in coastal areas.

The project is located in an area prone to hurricanes or other tropical storms and the likely severity of the impacts to the project is moderate.

A Disaster Risk Assessment, that includes a Disaster Risk Management Plan (DRMP), may be necessary, depending on the complexity of the project and in cases where the vulnerability of a specific project component may compromise the whole operation. The DRMP should propose measures to manage or mitigate these risks to an acceptable level. The measures should consider both the risks to the project, and the potential for the project itself to exacerbate risks to people and the environment during construction and operation. The measures should include risk reduction (siting and engineering options), disaster risk preparedness and response (contingency planning, etc.), as well as financial protection (risk transfer, retention) for the project. They should also take into account the country's disaster alert and prevention system, general design standards and other related regulations.

The project is located in an area prone to inland flooding and the likely severity of the impacts to the project is moderate.

A Disaster Risk Assessment, that includes a Disaster Risk Management Plan (DRMP), may be necessary, depending on the complexity of the project and in cases where the vulnerability of a specific project component may compromise the whole operation. The DRMP should propose measures to manage or mitigate these risks to an acceptable level. This must take into consideration changes in the frequency and intensity of intensive rainfall and in the patterns of snowmelt that could occur with climate change. The DRMP includes risk reduction measures (siting and engineering options), disaster risk preparedness and response (contingency planning, etc.), as well as the financial protection (risk transfer, retention) of the project. The DRM Plan takes into account existing vulnerability levels and coping capacities, the area's disaster alert and prevention system, general design standards, land use regulations and civil defense recommendations in flood prone areas. However, the options and solutions are sector- and even case-specific and are selected based on a cost analysis of equivalent alternatives.

The project is located in an area prone to sea level rise and the likely severity of the impacts to the project is moderate.

A Disaster Risk Assessment, that includes a Disaster Risk Management Plan (DRMP), may be necessary, depending on the complexity of the project and in cases where the vulnerability of a specific project component may compromise the whole operation. The DRMP should propose measures to manage or mitigate these risks to an acceptable level. The measures should consider both the risks to the project, and the potential for the project itself to exacerbate risks to people and the environment during construction and operation. The measures should include risk reduction (siting and engineering options), disaster risk preparedness and response (contingency planning, etc.), as well as financial protection (risk transfer, retention) for the project. They should also take into account the country's disaster alert and prevention system, general design standards and other related regulations.

Disaster Risk Summary

Disaster Risk Level

Moderate

Disaster / Recommendations

The reports of the Safeguard Screening Form (i.e., of the Safeguards Policy Filter and the Safeguard Classification) constitute the Disaster Risk Profile to be included in the Environmental and Social Strategy (ESS). The Project Team must send the PP (or equivalent) containing the ESS to the ESR.<br/ ><br/ >
The Borrower prepares a Disaster Risk Management Summary, based on pertinent information, focusing on the specific moderate disaster and climate risks associated with the project and the proposed risk management measures. Operations classified to involve moderate disaster risk do not require a full Disaster Risk Assessment (see Directive A-2 of the DRM Policy OP-704).<br/ ><br/ >
The Project Team examines and adopts the DRM summary. The team remits the project risk reduction proposals from the DRMP to the engineering review by the sector expert or the independent engineer during project analysis or due diligence, and the financial protection proposals to the insurance review (if this is performed). The potential exacerbation of risks for the environment and population and the proposed risk preparedness or mitigation measures are included in the Environmental and Social Management Report (ESMR), and are reviewed by the ESG expert or environmental consultant. The results of these analyses are reflected in the general risk analysis for the project. Regarding the project implementation, monitoring and evaluation phases, the project team identifies and supervises the DRM approaches being applied by the project executing agency.<br/ ><br/ >
Climate change adaptation specialists in INE/CCS may be consulted for information regarding the influence of climate change on existing and new natural hazard risks. If the project requires modification or adjustments to increase its resilience to climate change, consider (i) the possibility of classification as an adaptation project and (ii) additional financing options. Please consult the INE/CCS adaptation group for guidance.

Disaster Summary

Details

The project is classified as moderate disaster risk because of the likely impact of at least one of the natural hazards is average.

Actions

Operation has triggered 1 or more Policy Directives; please refer to appropriate Directive(s). Complete Project Classification Tool. Submit Safeguard Policy Filter Report, PP (or equivalent) and Safeguard Screening Form to ESR.

ENVIRONMENTAL AND SOCIAL STRATEGY

I. BASIC DATA

Name: The Climate-Resilient Coastal Infrastructure and Management Program (BH-L1043)
Amount: US$26 million
Beneficiary: The Commonwealth of The Bahamas,
Executing Agency: Ministry of Works and Urban Development (MoWUD).
Responsible Division: CSD/RND
Environmental and Social Safeguards Classification: "B".

II. PROJECT

2.1 The Program is aimed at increasing resilience to coastal risks, including those associated with climate change, through enhanced coastal protection infrastructure and integrated management of the coast. This will be done with a view to building resilience through science-based decision-making that leverages natural capital for coastal protection. The Program consists of three components, all with explicit environmental dimensions.

2.2 **Component 1: Sustainable Coastal Protection Infrastructure.** This component envisions investments in coastal protection infrastructure on four different islands in The Bahamas (Glass Window Bridge, Eleuthera; Nassau, New Providence; Central Long Island and East Grand Bahamas). The sites were selected based on screening against a variety of social, ecological and economic criteria during the development of pre-feasibility studies conducted under the technical cooperation BH-T1029; BH-T1038. While the specific geographic scope and design of interventions is still pending, the pre-feasibility studies primarily identified opportunities for repair and reconstruction of existing infrastructure.

2.3 **Component 2: Natural infrastructure for hazard resilience in Andros.** This component will deliver a priority investment from the Sustainable Development Master Plan for Andros, which is being financed by BH-T1040 and will be finalized in October 2016. The Sustainable Development Master Plan was produced through an iterative and participatory process that sought to fill development gaps along the way towards a sustainable, nature-based economy.

2.4 **Component 3: Institutional Strengthening for Coastal Risk Management.** This component includes support to national ICZM governance and planning processes and institutional strengthening. The aim of these activities is to improve inter-institutional coordination on issues related to coastal development and management. It would also seek to improve specific regulatory instruments for implementing ICZM (i.e., building codes). In addition, this component will finance the establishment of a web-based national coastal risk information and monitoring platform and provision of equipment and software with complementary technical capacity building. Finally, this component will finance implementation of a culturally appropriate and targeted communications strategy related to ICZM. The specific design of activities will be based on a variety of ongoing analyses to be completed under BH-T1029; BH-T1038 (see Para 6.2), as well as an analysis of data availability and gaps.

2.5 To date the precise geographic scope and design of works and upgrades for coastal protection infrastructure (Components 1 and 2) is undefined. This decision will be made during the Bank's due diligence process and as an outcome of the data collection and

strategic studies that will be financed as a part of this Program. Component 1 will finance detailed data collection and analysis at the local level to define coastal dynamics and vulnerabilities with a view to developing Shoreline Management Plans for at least two of the islands. This information will serve as a critical input to the design process and will identify opportunities for natural and hybrid infrastructure. Under Component 3, the Program is expected to finance the collection and consolidation of priority baseline data, which will provide information on oceanographic conditions, geomorphology, marine and coastal ecosystems, coastal erosion and flood potential, and vulnerability to climate change.

III. INSTITUTIONAL AND REGULATORY CONTEXT

3.1 The Ministry of Works and Urban Development (MoWUD) will be the Executing Agency for this Program. MoWUD has executed several Bank operations, including The New Providence Transportation Program. As a part of the pre-feasibility studies under BH-T1038; BH-T1029, a capacity and needs assessment and institutional assessment related to ICZM were conducted for relevant agencies. In addition, an institutional assessment of the MoWUD would be carried out as part of Program preparation. These inputs will provide guidance on the implementation and inter-institutional coordination mechanisms required for successful execution.

3.2 The Bahamas has relevant environmental legislation in place. However the implementation of the regulatory framework for environmental impact assessment and ensuring sustainability of public works is limited, including policies related to consultation and access to information. The Program will comply with all local and national legislation and norms, as well as all Bank policies and procedures. As such, certain developments contemplated under this operation may need to undergo detailed Environmental and Social Impact Assessments; this will be determined in consultation with The Bahamas Environment, Science and Technology Commission. In addition, certain developments may require building permits; this will be determined in consultation with MoWUD. It is important to note that this Program will finance institutional strengthening activities to support national ICZM governance and planning (see Para. 2.4).

3.3 The Program will comply with the applicable Bank directives. The Program will comply with the Bank's Access to Information Policy (OP-102), including Directive B.1 to make relevant project documents available to the public; the Environment and Safeguards Compliance Policy OP-703, including Directives B.1 and B.2 for compliance with Bank policies and in-country regulations, project screening and classification in accordance with Directive B.3, Directive B.4 for identification and mitigation of other risks as a part of project preparation, the Environmental Assessment requirements of Directive B.5 (see Para 6.3) and the requirements for consultation with affected parties of Directive B.6 (see Para 5.2). The Program will not contribute to the significant conversion or degradation of critical natural habitat or damage critical cultural sites as in accordance with the requirements of Directive B.9. Appropriate pollution prevention and abatement measures (see Para. 5.1) will be applied in accordance with Directive B.11. Also, the Program has intrinsically incorporated the Disaster Risk Management Policy (OP-704) and its directives into its strategy, design and implementation, having a component aimed at strengthening resiliency and reducing vulnerabilities to natural disasters, climate change, and environmental management, including collection and access to data related disaster risk management. Finally, the Program will comply with the Bank's Resettlement Policy (OP-710), as no involuntary resettlement will result from this project. Proposed works will be contained to land in the public domain and/or abutting or adjoining public infrastructure.

3.4 In addition, in compliance with the Bank's Gender Equality in Development Policy (OP-761), this Program will build off best practice and lessons learned from the Andros Master Plan process, in order to make sure that women and youth are involved in relevant stakeholder meetings. Awareness programs will also be more specifically targeted and designed to ensure these considerations are taken into account. Finally, some of the proposed activities identified under Component 2, for instance possible mangrove restoration projects, will be designed to facilitate women involvement.

IV. ENVIRONMENTAL AND SOCIAL CONTEXT

4.1 Information on the environmental and social context presented in this section reflects the Program's national scope. Additional information on the site specific environmental and social will be known during preparation as a part of the Bank's due diligence.

4.2 The archipelago of The Bahamas consists of low-lying islands and cays, with 80% of land less than one meter above sea level. As such the majority of The Bahamas' terrestrial area can be considered coastal. Coastal areas are typically dynamic and complex systems. The coastal zone is also of social, economic and ecological importance. Infrastructure, people and tourist assets are often concentrated in the coastal zone.

4.3 The Bahamian territory is also vast, extending 2,000 km from Grand Bahama in the North to Inagua in the South and covering approximately 668,600 km^2. With over 700 islands and 2,500 cays, the geographic scope of this Program is large and diverse. This includes variations in the environmental and social setting across islands.

4.4 The Bahamas coastal zone is highly vulnerable to climate change and natural disasters. From 1990 to 2015, the country experienced 15 major hurricanes, affecting 27,000 citizens. These events are usually accompanied by severe coastal erosion and flooding, including in densely populated areas where the buffering effect of coastal habitats has been lost. The Bahamas is highly vulnerable to Sea Level Rise (SLR) and storm surge associated with increasing intensity of extreme weather events. A recent IDB study indicates that the probable flood exposed area in Nassau will expand 8% by 2050 due to the increasing precipitation caused by climate change. Nationally, one meter SLR would place 36% of major tourism properties, 38% of airports, 14% of road networks and 90% of sea ports at risk.

V. IMPACTS RISKS AND CONTROL MEASURES

5.1 Potential negative environmental impacts are expected to be temporary and localized, possibly associated with the construction of the shoreline stabilization works (i.e., sediment runoff, some terrestrial disturbances and local increase in turbidity of coastal waters), for which effective mitigation measures are readily available. Construction activities will comply with the corresponding environmental impact analysis and the execution of preventive and mitigation measures will be incorporated in the bidding documents.

5.2 The social risks would also be temporary and localized, with the potential to disrupt livelihoods and communities during construction. These risks will be mitigated by consultation with affected parties as per Bank policies. Additional mitigation measures to be undertaken by contractors will be incorporated into operational guidelines in order to further reduce any impacts. Indirect or induced impacts could relate to changes in community interaction with ecosystems as a result of restoration or conservation activities, which will be analyzed and mitigated through a comprehensive communications strategy implemented as part of the Program (see Para. 2.4).

5.3 The Program does not encompass any large-scale investments in infrastructure, the conversion or degradation of critical habitat, or any resettlement, and, as such, does not present significant potential negative environmental or social impacts.

VI. ENVIRONMENTAL STRATEGY FOR DUE DILIGENCE

6.1 Given the nature of the Project's activities and the expected impacts and benefits, the operation has been classified as Category "B", in accordance with OP-703.

6.2 The Project team's proposed environmental and social strategy comprises the following elements, which are being completed by consultants under BH-T1029; BH-T1029: (1) an environmental and social diagnostic of an ICZM program for The Bahamas; (2) a report on stakeholder engagement during preparation of pre-feasibility studies; (3) an institutional strengthening and capacity building needs review for Ministries and other key institutions relevant to ICZM; (4) technical briefs on governance and planning, policy and the environment as they relate to ICZM; (5) a public awareness strategy and (6) and public consultation strategy. A multi-stakeholder Technical Advisory Committee was consulted on all elements developed under BH-T1029; BH-T1038.

6.3 **Environmental and Social Analysis (ESA):** An ESA will be developed during Program preparation and in close coordination with the design of the components. The expected scope of the ESA will be the five sites identified in Para. 2.2 and 2.4. The ESA will examine the socio-economic conditions of the existing population in the destination, land-use and other factors. It will provide an assessment of project compliance status with the applicable country environmental, social, and health and safety regulatory requirements and any applicable Bank environmental and social policy or guideline. In addition, aspects of disaster risk management will feature predominately in the ESA, given the Program's focus on climate change and disaster risk reduction. An Environmental and Social Management Plan will be prepared which will include: the procedures for environmental and social impact evaluation and mitigation applicable to the Program; a plan to improve the environmental management of the coastal protection infrastructure in an integrated manner; preventive and mitigation measures for the infrastructure to be financed and a monitoring plan including environmental indicators.

6.4 **Collaboration with Climate Change and Sustainability (CCS)**: Given the Program's objective to address climate change, the project team will include expertise from a CCS specialist.

6.5 **Consultation Activities:** The overall Program strategy and ESA and ESMP will be presented to relevant parties during Program preparation. A broader communication strategy will be implemented under Component 3 (see Para. 2.4) to raise public awareness of ICZM.

6.6 Several activities with environmental and social considerations will be financed as part of the investment program. Please see Para. 2.5 for additional details on relevant activities to be undertaken during Program execution.

INDEX OF COMPLETED AND PROPOSED SECTOR WORK

Topic	Description	Expected date	References & hyper links to Technical files
Technical options and design aspects	Indicators of Disaster Risk and Risk Management: The Bahamas (IDB Technical Note IDB-TN-790). IDB. 2011	Completed	IDB Technical Note 790
	The Bahamas: Disaster Risk Management / Coastal Risk Management (IDB Sector Note). IDB. 2012	Completed	IDB Docs #40436519
	BH-T1040 Ecosystem-based Development for Andros Island, The Bahamas. The Natural Capital Project and The Nature Conservancy. 2016	Completed	IDB Docs #40436504
	Assessment of the Effects and Impacts Caused by Hurricane Joaquin: The Bahamas. ECLAC and IDB. (Final draft, to be published)	Completed	IDB Docs #40426430
	The Impact of Coastal Infrastructure Improvements on Economic Growth: Evidence from Barbados (IDB Working Paper IDB-WP-729). IDB. 2016	Completed	IDB Working Paper 729
	Status of Incorporation of Disaster Risk Management and Climate Change Adaptation in National Public Investment Systems: Results for The Bahamas, Guyana and Jamaica and Comparative Analysis for Five Caribbean Countries (IDB Technical Note IDB-TN-965). IDB. 2016	Completed	IDB Technical Note 965
	Downscaling Climate Change Scenarios for Four Islands of The Bahamas. Climate Change Studies Group, Mona, University of West Indies. 2016	December 2016	To be completed
	Consulting Services to Prepare a National ICZM Policy Framework for The Bahamas and Phase 1 Dissemination, Final Report. Caribbean Coastal Services. 2016.	Completed	IDB Docs #40752932
	Hazard and Risk Study: Sustainable Nassau Action Plan. ERM. 2016	December 2016	To be completed
	Urban Growth Study: Sustainable Nassau Action Plan. ERM. 2016	December 2016	To be completed
	ICZM Capacity Assessment and Plan for Capacity Building. Caribbean Coastal Services. 2016.	Completed	IDB Docs #40752939
	Design and Feasibility Analysis of Risk-Resilient ICZM in The Bahamas, Final Report. Mott MacDonald. 2016.	Completed	IDB Docs #40752927

	Index of Governance and Public Policy in Disaster Risk Management (iGOPP): The Bahamas National Report. IDB. TBD	TBD	To be completed
	Disaster Risk Profile for The Bahamas: Hurricanes and Floods. IDB. TBD	TBD	To be completed
Cost analysis and economic viability of the Program	Ex-ante evaluation of the Program	January 2016	To be completed
Financial management and fiduciary issues	Annex 3 of the POD	January 2016	To be completed
Data collection and analysis for report the results	Monitoring and impact evaluation plan	January 2016	To be completed
Environmental and Social Safeguards	Environmental and Social Analysis	January 2016	To be completed

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[1] The information contained in this Annex is confidential and will not be disclosed. This is in accordance with the "Deliberative Information" exception referred to in paragraph 4.1 (g) of the Access to Information Policy (GN-1831-28) at the Inter-American Development Bank.