The Bahamas Updated NDC

Government of the
Commonwealth of The Bahamas

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List of Acronyms

ACE	Action for Climate Empowerment
AOSIS	Alliance of Small Island States
AML	Anti-Money Laundering
BAMSI	Bahamas Agriculture and Marine Science Institute
BBSQ	Bahamas Bureau of Standards and Quality
BaU	Business-as-Usual
BEST	Bahamas Environment Science and Technology
BCCEC	Bahamas Chamber of Commerce and Employers Confederation
BNT	Bahamas National Trust
BPL	Bahamas Power and Light
BPAF	Bahamas Protected Areas Fund
BREEF	Bahamas Reef Environment Educational Foundation
BTVI	Bahamas Technical and Vocational Institute
BUR	Biennial Update Report
CAAB	Civil Aviation Authority Bahamas
CBD	Convention on Biological Diversity
CCARR	Climate Change Adaptation and Resilience Research Centre
CCCCC	Caribbean Community Climate Change Centre
CFT	Countering the Financing of Terrorism
DEPP	Department of Environmental Planning and Protection
EbA	Ecosystem-based Adaptation
EE	Energy Efficiency
EEZ	Exclusive Economic Zone
ETF	Enhanced Transparency Framework
FNC	First National Communication
GBPA	Grand Bahama Port Authority
GBPC	Grand Bahama Power Company
GCF	Green Climate Fund
GDP	Gross Domestic Product
Gg CO_2 Eq	Gigagram of Carbon Dioxide Equivalent
GHG	Greenhouse Gases
HCFC	Hydrochlorofluorocarbon
HFC	Hydrofluorocarbon
IADB	Inter-American Development Bank
INDC	Intended Nationally Determined Contribution
IPCC	Intergovernmental Panel on Climate Change
IPPU	Industrial Processes and Produce Use
LULUCF	Land-Use, Land-Use Change and Forestry
MoENR	Ministry of Environment and Natural Resources
MRV	Monitoring, Reporting and Verification
NbS	Nature based Solutions
NBSAPs	National Biodiversity Strategies and Action Plans
NCCC	National Climate Change Committee
NCSA	National Capacity Needs Self Assessment
NDA	National Designated Authority
NDC	Nationally Determined Contribution
NELs	Non-Economic Losses
NEMA	National Emergency Management Agency
NEMAP	National Environmental Management and Action Plan
NEP	National Energy Policy
NGO	Non-Governmental Organization
NOU	National Ozone Unit
PSIP	Public Sector Investment Programme
RABL	Raising Awareness about The Bahamas Landfill
RCP	Representative Concentration Pathways

RE	Renewable Energy
RER	Renewable Energy Rider
RGS	Renewable Generation Systems
SDG	Sustainable Development Goals
SLR	Sea Level Rise
SNC	Second National Communication
SSP	Shared Socioeconomic Pathways
SSRG	Small scale Renewable Generation
SWOT	Strengths, Weaknesses, Opportunities and Threats
TACCC	Transparency, Accuracy, Comparability, Completeness and Consistency
TNC	Third National Communication
UNFCCC	United Nations Framework Convention on Climate Change
URCA	Utilities Regulations and Competition Authority
WSC	Water and Sewerage Corporation

Executive Summary

The Bahamas is an archipelago of more than 700 islands and cays in the western Atlantic Ocean covering approximately 100,000 square miles (mi^2), and the entire population lives within coastal zone. The Bahamas' Exclusive Economic Zone (EEZ) is estimated to be 242,970 mi^2 and includes a shelf area of some 41,800 mi^2, subject to successful negotiation of its boundaries with neighboring states (Commonwealth of The Bahamas, 2015). It is located in a hurricane hazard prone area which exposes over 390,000 people to the threat and destruction of hurricanes which cause significant loss and damage.

The Bahamas, though responsible for only 0.01% of global greenhouse gas emissions, is setting emission reduction targets. In 2016, it ratified the Paris Agreement and submitted its first Nationally Determined Contribution (NDC), committing to a 30% reduction in greenhouse gas emissions compared to its Business-as-Usual (BaU) scenario.

Financial, technical, and social constraints need to be addressed in order to realize the potential for mitigation. A thorough analysis of the five priority areas for mitigation action — Energy, Transportation, Industrial Processes and Produce Use (IPPU), Land-Use, Land-Use Change and Forestry (LULUCF), and Waste — showed that there is a need for consistency in dealing with trade-offs between development and climate action and a need for more resources to build capacity in the public and private sectors. There is also the need to safeguard against unintended consequences of mitigation measures such as unemployment. Effective implementation of mitigation measures also requires increased availability and accessibility of data across sectors.

The Bahamas has the benefit of national adaptation coverage in coastal areas, but there are still gaps in data and the need for updates to legislation and policies related to adaptation. Access to international funding has increased, helping The Bahamas to recover from climate-related disasters. Continued demand for natural resources and the lack of economic diversification needs to be addressed for adaptation measures to be successful.

In its contribution to reaching the international carbon neutrality goal by 2050, in 2030 The Bahamas aims to reduce its greenhouse gas emissions by 30%, have at least 30% renewable energy in its energy mix, and have 35% and 15% of vehicle purchases be electric and hybrid, respectively. Reaching these targets requires the promotion of energy efficiency, promotion of renewable generation and incentive mechanisms, and promoting the electrification of road transportation.

As climate change takes a toll on The Bahamas, as a small island nation, the country must also take action to prevent and minimize impacts. In this context, The Bahamas seeks to reduce its vulnerability and improve its ability to prepare and respond to climate change. This will be done by strengthening the national regulatory framework and leverage adaptation funding, protecting human health, ensuring food and clean water security, improving ecosystem management and conversation, and increasing resilience of energy infrastructure while diversifying the energy matrix with a focus on renewable energy.

This report details the situation of The Bahamas, including the factors that impact its ability to mitigate against and adapt to climate change, and the targets it has set by 2030 along with specific strategic components to meet them. It also links the targets and activities to the Sustainable Development Goals and names relevant sectors while acknowledging that they are interconnected. Implementation of this NDC will require the cooperation of national organizations, municipalities, universities and research centers, and private sector entities. The development of monitoring tools is critical to ensure progress is tracked and information is disseminated to to relevant stakeholders for decision-making. The Monitoring, Reporting and Verification (MRV) system currently being developed will ensure relevant information is recorded, reported, and used to advance the mitigation and adaptation efforts of The Bahamas.

1. Introduction

The Government of The Bahamas ratified the United Nations Framework Convention on Climate Change (UNFCCC) on 29 March 1994 to contribute to the stabilization of atmospheric greenhouse (GHG) gases. and respond to the threats of climate change based on the principle of common but differentiated responsibilities and in accordance with the respective national capabilities.

The Bahamas submitted its Intended Nationally Determined Contribution (INDC) in November 2016 to achieve the global targets set out in the UNFCCC's Paris Agreement. to pursue efforts to limit the average temperature increase to 1.5 °C compared to pre-industrial temperatures.

This document presents an update to The Bahamas Intended NDC, covering the period between 2020 to 2030 dependent on international financial support. The NDC update is aligned with other Small Island Developing States (SIDS) and members of the Alliance of Small Island States (AOSIS) by significantly enhancing ambition and increasing its mitigation contribution to be fully compatible with the objectives of the Paris Agreement, and in accordance with the Bahamas Government's Acts, Policies, Regulations, Vision and Strategies.

1.1. The Bahamas National Circumstances

1.1.1. Government

The Bahamas gained independence from England on July 10, 1973 and is now considered a small island state within the Commonwealth of Nations (formerly the British Empire). Head of State (Queen of England) is represented by the Governor-General and the Government comprises the Executive with the Prime Minister, the Attorney-General and at least seven other members. The other Cabinet Ministers and Ministers of State are responsible for running their Government ministries. The Legislature is a two-chamber system based on the Westminster model, with a House of Assembly and a Senate. Constituencies of The Bahamas are the electoral divisions for the Bahamas House of Assembly, the lower Parliamentary house. The Assembly currently has 39 single-member constituencies and uses the Westminster first past the post system. There are currently 24 constituencies in Nassau and 15 in the Family Islands totalling 39 House seats. Local Government is made up of 23 Local Government districts The Members of Parliament serve 5-year-terms. The last election was in 2021.

Local government in The Bahamas exists in two forms, namely second schedule and third-schedule district councils. There are a total of 32 local government districts: 13 second-schedule districts, which are further sub-divided into town areas, and 19 third-schedule districts, which are all unitary authorities. The second and third schedules together make up the first schedule. Local government policy is formulated and administered by the Department of Lands and Local Government through the Office of the Prime Minister. The day-to-day policy handling of the portfolio falls to the Minister of Local Government who also is empowered to create new local government areas from time to time based on demographics. The administrative and financial management is overseen by the ministry's permanent secretary.

1.1.2. Population Profile

According to the United Nations-World Population Prospects (United Nations, n.d.), the current population of The Bahamas in 2022 is 409,984, a 0.51% increase from 2021. The current life expectancy is 74.17 years, a 0.15% increase from 2021. Current population density is 29.54 people per square kilometer, a 0.51% increase from 2021. The urban population for 2021 was 330,887, a 1.08% increase from 2020. The unemployment rate for 2021 was 13.24% a 0.08% decline from 2020 gross domestic product (GDP) for 2021 was $11.21 Billion, a 15.56% increase from 2020. GDP per capita for 2021 was $28,239, a 14.49% increase from 2020.

1.1.3. Geography

The Bahamas is distributed along an archipelago of 700 islands and more than 2000 cays, islets, and rocks in the western Atlantic Ocean covering approximately 100,000 square miles (mi^2) of ocean between latitudes 21° and 27° North and longitudes 72° and 79° West, with a total land area of only 5,382 mi^2. It is one of the countries with the biggest ocean surface (Government of The Bahamas, 2014) that hosts five percent of the world's coral reefs and the world's third longest barrier reef (Simpson et al., 2009).

The Bahamas islands are low and flat with an average altitude of 1 meter above sea level for the majority of the islands (~80%). In addition, the country is located in a hurricane hazard prone area and historically has suffered major impacts from destructive storms and hurricanes that have significant physical, environmental and social losses and damages.

The majority of the Bahamian population lives in coastal areas and particular attention should be paid to the islands of New Providence, Grand Bahama and Abaco, where 90% of the country's population lives (The Commonwealth of The Bahamas, 2010). The remaining 10% of the population is spread around other settled islands and cays, collectively known as 'the Family Islands'. A total of 29 Bahamian islands are inhabited (Department of Statistics, 2010).

1.1.4. Climate

The climate in The Bahamas is sub-tropical, separated in two distinct seasons: warm but dry winter season from November to April and a hot wet summer season from May to October. Precipitation is more common in the northern islands, showing a gradient from the dry south to the humid north (Commonwealth of The Bahamas, 2001).

Annual mean temperature in The Bahamas has been increasing, with historical records showing that in the past century, annual mean temperatures have increased by 0.5°C since 1960 with an average rate of 0.11°C per decade. Further analyzed data show that the mean daily maximum temperature for July has increased an average of 2°C in 100 years, and, with the more recent data, at a rate of 2.6°C per 100 years. There is also seasonal variation between the islands, with the northern islands having a more rapid rate of warming than south-western islands (The World Bank Group, 2021).

1.1.5. Economic Profile

Prior to the COVID-19 pandemic, tourism represented the country's largest industry and source of income, constituting 50-70% of GDP and directly employing 65% of the workforce (Rolle et al., 2020). In The Bahamas, tourism includes cruise ship visitors, stopover visitors and sailing guests. Tourism directly or indirectly employs approximately 50% of the Bahamian population. Reefs play a vital role in The Bahamas' economy as reef diving and snorkeling are an important part of the country's tourism industry (The Government of The Bahamas, 2020). The financial services sector is the second largest contributor to the GDP.

The industrial sector is small but growing. It stands to make increasing contributions to GDP in years to come as development continues. Government (utility) corporations and the public service currently employ more Bahamians than any other single employer. Government utilities include The Bahamas Electricity Corporation (BEC), The Bahamas Telecommunications Company Limited (BTC, formerly Batelco), The Bahamas Hotel Corporation, the Broadcasting Corporation of The Bahamas, Bahamasair Holdings (the national airline) and The Bahamas Water and Sewerage Corporation.

The island of New Providence is the center of economic activity in The Bahamas, mainly due to the levels of construction and tourism activity. In 2019, Grand Bahama increased its contribution in the Construction and Accommodation and Food Services sectors. Also, this year, the Other Families grouping recorded expansions in the arts, other services, agriculture, farming, farming, forestry and fishing and wholesale and retail trade, transportation, and warehousing sectors. However, these increases were insufficient to offset

the impact of Hurricane Dorian and its impact on Abaco Island (Bahamas National Stadistical Institute, 2019).

The COVID-19 pandemic severely affected the GDP of The Bahamas., according to World Bank data, Bahamian GDP fell by more than $3 trillion in 2020. Although major islands and islands groups did not regain the same level of GDP attained in 2019, several islands are showing significant recovery with regard to 2020, specially New Providence, Abaco and Bimini & Berry islands (Bahamas National Stadistical Institute, 2022). There are also exceptions of islands that are better off in 2021 than they were in 2019, for example, Andros has increased its GDP (Bahamas National Stadistical Institute, 2022).

1.2. Climate Change in The Bahamas

1.2.1. Impacts of Climate Change

According to the Intergovernmental Panel on Climate Change (IPCC) latest findings on observed impacts and projected risks, some of the climate change impacts that have been increasingly affecting small islands include rises in temperature, stronger and more frequent tropical cyclones, increased storm surges, seal-level rise, coral bleaching, and propagation of invasive species (due to habitat destruction and degradation and the introduction of invasive alien species).

Due to its location in the Atlantic hurricane belt and like other Small Island Developing States (SIDS), The Bahamas is extremely vulnerable to the effects of disasters and climate change, as some 80 percent of the landmass is within 5 ft (1.5 m) of mean sea level and coastal areas hold the majority of the population and economic activity.

Historically, The Bahamas has been affected by various hurricanes which have caused a lot of loss and damage throughout the archipelago. Since 1990 there has been an increase in the frequency of tropical storms which may be caused by changes on El Niño pattern and increased heat waves, clear evidence of the changing climate (Collins et al., 2019). Observations from the Bahamas Department of Meteorology revealed that in less than a decade, three major tropical cyclones (category 3 or greater) impacted The Bahamas. In October 2016, Hurricane Matthew passed through the chain of islands, varying between category 3 and category 4 intensity levels that left widespread damage in its path. Nearly a year later, Hurricane Irma tore through the country as a category 4 storm in September 2017, rendering many smaller islands uninhabitable in the short -term and changing daily life in those areas in the long-term. In September 2019, the world watched as the category 5 Hurricane Dorian rained havoc down on The Bahamas Islands of Grand Bahama and Abaco and their communities, erasing any evidence of life in some neighborhoods and leaving behind a trail of heartbreak, sorrow, and death.

Different studies linking climate warming to tropical cyclones suggest that the observed increase in category 4 and 5 tropical cyclones in recent decades represents a detectable change (Knutson et al., 2019). Holland and Bruyère (2014) analyzed changes in the frequency of tropical cyclones for various storms categories and concluded that the proportion of hurricanes reaching category 4 and 5 has increased by 25%-30% per 1°C of global warming in recent decades.

Based on the Assessment of the Effects and impacts of hurricane Dorian in The Bahamas by the, the catastrophic damage to livelihoods and billions of dollars of infrastructure on the archipelago present significant challenges to the preparedness of its tourism-dependent economy and its rescue and recovery capacity. According to the Inter-American Development Bank (IADB) assessments, the hurricanes that have hit The Bahamas have had a severe impact on the country's GDP:

Year	Hurricane	Category	GDP Impact
2015	Joaquin	4	-0.11%
2016	Matthew	5	-0.6%
2017	Irma	5	-0.4%
2019	Dorian	5	-1%

Table 1. GDP Impact of past hurricanes that have strike The Commonwealth of The Bahamas. Source: Own elaboration based on the IADB Assessments.

The Bahamas is also impacted by non-tropical processes. Sea swells from extra-tropical cyclones during the winter season often cause flooding in The Bahamas, due to its low relief, along with beach erosion (The World Bank Group, 2022). In addition, sea level rise (SLR) can lead to coastal flooding. Since most of the islands' infrastructure and settlements are located along or near the coast, serious economic and social consequences for residents and the tourism sector are realized.

In addition, hurricanes and extreme weather events can cause significant damage and loss of these marine life forms, which are exacerbated by climate change-related stressors such as rising sea surface temperatures, which are already causing coral bleaching on the nation's reefs. (The Commonwealth of The Bahamas, 2005; The Government of The Bahamas, 2014b). These impacts also involve changes in marine biodiversity and losses in fishery productivity.

Another relevant vulnerability is access to drinking water, which is made worse by contamination of water resources caused by storm surges. Groundwater supplies (wells) are at risk of saltwater intrusion and contamination during storm surges, hurricanes, or SLR. In addition, due to their location and lack of resilience water-related infrastructure such as reverse osmosis facilities are also at risk of flooding (The World Bank Group, 2022).

According to climate projection data used for the IPCC's Sixth Assessment Report (AR6), The Bahamas may experience warming of mean annual temperature. The rate of warming is expected to be pronounced year-round, but particularly significant in the summer months (June-August) (GCF, 2020). Heat waves are expected to be more frequent, intense and longer lasting, meaning an increase in the number of hot days and the heat index, which will trigger an increase in the frequency and intensity of dry spells and wildfires. Weather projections indicate that fire severity could also increase (GFDRR, n.d.). The projected and estimated temperature increases have serious health implications for Bahamians, as daily temperatures will be able to reach the upper limits of human physiological adaptation more frequently.

Heat waves and high temperatures can also have serious impacts and pose a risk to food and nutrition security both directly, through their effects on agriculture and fisheries, and indirectly, by contributing to underlying risk factors (World Health Organization, 2021). Rising temperatures also affect the water-holding capacity of soils and the suitability of the cropland environment (i.e., ecological conditions) and thus their productivity and cropping potential. This leads to situations of food insecurity due to reduced crop yields, causing difficulties in access to food, its nutritional quality and price stability (World Health Organization, 2021).

1.2.2. Loss and Damage

The main vehicle to deal with loss and damage under the UNFCCC is the Warsaw International Mechanism (WIM), established in 2013 to advance knowledge generation, coordination, and support to address loss and damage.

The concept of loss and damage in this NDC refers to the adverse impacts of climate change resulting from slow onset (e.g., sea level rise) and extreme weather events (e.g., cyclones) and affecting both human and natural systems. The Bahamas is comfortable with the definition of loss and damage derived from IADB assessment of the effects and impacts of Dorian in the Bahamas (2019). Damage is defined in the assessment as a monetary estimation of the value of the physical assets partially or totally destroyed in each sector while losses are a monetary estimation goods that go unproduced and services that go unprovided during a period running from the time the disaster occurs until full recovery and reconstruction.

As the climate crisis intensifies, impacts might exceed the capacity of human and natural systems to adapt, and thus lead to unavoidable and in some cases irreversible outcomes and can be monetizable (e.g., loss of income and physical assets particularly in hurricanes Irma (2017) and Dorian (2019)) or include non-economic losses (NELs), such as loss of biodiversity, territory, cultural heritage, and those related to the emerging issue of climate-induced human mobility (e.g. hurricane Dorian).

The lists of recent reports/studies that have documented losses and damage associated with climate change impacts include: The Bahamas Nationally Determined Contribution (NDC, 2015); Assessment of the Effects and Impacts of Dorian in The Bahamas (2019); The Bahamas Third National Communication (TNC, 2022).

Pre-emptive adaptation which indicates the priority programmes for different categories of climate risk management by key sector is contained in the National Adaptation Plan: Vision 2040.

As a member of the Caribbean Catastrophe Risk Insurance Facility (CCRIF), The Bahamas has in place contingency measures for adaptation. In addition to providing parametric insurance to its members (based on individual country policies) for tropical cyclones, earthquake and excess rainfall, the CCRIF supports the implementation of the Climate Risk Adaptation and Insurance in the Caribbean (CRAIC) Project, which includes a micro-insurance product called the Livelihood Protection Policy (LPP), which helps protects the livelihood of vulnerable low-income individuals such as small farmers, tourism workers, fishers, market vendors, and day laborers, by providing quick cash pay-out following extreme weather events (specifically, high winds and heavy rainfall).

The Bahamas has communicated its needs for addressing loss and damage to the UNFCCC through its National Communication and NDC. However, the country will seek to establish a baseline on non-economic and social loss and damage, as well as territory and ecosystem services; and design and development of infrastructure and plans for relocation/resettlement of households and communities from frequently affected areas through the technical assistance that would be channeled through the Santiago Network. The Network was established at COP 25 to catalyze technical assistance on loss and damage for the implementation of relevant approaches at the local, national, and regional level.

1.2.3. Future Climate Projections/Climate Variables Trend

Climate projections for temperature and precipitation in The Bahamas were obtained from the global climate model compilations of the CMIP6 that supports the IPCC's AR6 6. For the AR5, the scenarios used for the projections were based on different greenhouse gas concentration trajectories (Representative Concentration Pathways, RCP), for the AR6 these scenarios were based on five different narratives describing possible socioeconomic developments that could shape our future society (Shared Socioeconomic Pathways, SSP), and describe which reductions in emissions are achievable.

Scenario	Description
SSP1-1.9	This is a pathway that limits global warning to below 1.5°C, the aspirational goal of the Paris Agreement. The most optimistic scenario. Global CO_2 emissions are cut to net zero by mid-century with a switch to more sustainable practices.
SSP1-2.6	This is a "very stringent" pathway. According to the IPCC, RCP 2.6 requires that carbon dioxide (CO_2) emissions start declining by 2020 and go to zero by 2100. It also requires that methane emissions (CH_4) go to approximately half the CH_4 levels of 2020, and that sulfur dioxide (SO_2) emissions decline to approximately 10% of those of 1980–1990. Temperatures stabilize around 1.8°C above pre-industrial levels by 2100.
SSP2-4.5	This is the most probable baseline scenario (no climate policies) taking into account the exhaustible character of non-renewable fuels. RCP 4.5 requires that carbon dioxide (CO_2) emissions start declining by approximately 2045 to reach roughly half of the levels of 2050 by 2100. It also requires that methane emissions (CH_4) stop increasing by 2050 and decline somewhat to about 75% of the CH_4 levels of 2040, and that sulfur dioxide (SO_2) emissions decline to approximately 20% of those of 1980–1990. Temperatures rise 2.7°C by the end of the century.
SSP3-7.0	This is a baseline outcome rather than a mitigation target. Emissions and temperatures rise steadily and global CO_2 emissions roughly double from current levels by 2100. Countries become more competitive shifting towards national security and ensuring their own food supplies. Temperatures rise 3.6°C by 2100.
SSP5-8.5	RCP8.5, generally taken as the basis for worst-case climate change scenarios. Global CO_2 emissions levels double by 2050. Economy growth based on intensive fossil fuel exploitation and energy-intensive lifestyles. Temperatures rise 4.4°C by the end of the century.

Table 2. Scenarios described in the AR6 of the IPCC.

Sea-level in The Bahamas might increase by the end of the 21st century ranging from 0.4m under an optimistic scenario with low carbon emissions, high renewables, and strong international cooperation (RCP 2.6) to nearly 0.7m under a pessimistic (business as usual) scenario (RCP 8.5). This could result in immersion of coral reefs and flooding of low-lying lands.

Regarding tropical cyclones and severe storms, in 2019 the IPCC concluded with medium confidence that these events are expected to become more extreme in the Caribbean (Magnan et al., 2019). In addition, the latest IPCC report (AR6) concludes with medium confidence that tropical cyclones will increase in the Caribbean and with high confidence that the proportion of intense tropical cyclones (Category 4–5) and peak wind speeds of the most intense tropical cyclones are projected to increase at the global scale with increasing global warming (Gutiérrez et al., 2021; IPCC, 2021).

1.2.4. GHG Emissions

The energy sector in The Bahamas is one of the largest GHG emitters in the country. According to the GHG national inventory emissions for 2018, the sector corresponds to 47.09% (2,949.58 Gg CO_2-eq) of the total national emissions (6,264.39 Gg CO_2-eq) with 48.51% of the emissions associated with the energy industries, 11.87% with the manufacturing and construction industries, 24.67% with transport, 14.95% with other sectors (commercial, institutional, residential and agriculture/forestry/fishing/fish farms), and the remaining 0.0006% of emissions corresponds to fugitive emissions from oil and natural gas distribution.

Based on information included in the National Inventory Report[1], in The Bahamas most energy sector emissions stem from fuel combustion. Energy electricity and power generation is based on fuel oil and diesel consumption. On the other hand, the country has limited industrial activities so emissions from fuel consumption in the manufacture and industry sub-sector are derived from construction activities. Regarding the transport sector, it is dominated by road transport, but also domestic aviation and domestic

[1] The Bahamas' Third National Greenhouse Gas Inventory Report to the United Nations Framework Convention on Climate Change, GHG Emissions and Removals 2001-2018 (March 2022).

waterborne navigation play a relevant role, with tourism being a strong driver for the subsector. Emissions in the institutional/commercial subsector are also strongly influenced by tourism activity. Emissions from other sectors, such as agriculture, fisheries and forestry only take place to a limited extent. Finally, it is important to mention that fuel production does not occur in country with the country depending almost 100% on imported oil, however, fuel distribution does. Moreover, data monitoring for carbon capture and storage can be enhanced.

With the goal of reducing GHG emissions, the country has put its efforts in developing its Third National Communication (TNC) and Biennial Update Report (BUR) identifying in the process a total of 41 mitigation measures in the five (5) IPCC sectors of Energy, IPPU, Agriculture, LULUCF and Waste. These mitigation measures will contribute to a reduction of national emissions and achieve a goal established in both the National Energy Policy (NEP) 2013-2033 and first NDC of having 30% of the country's energy coming from renewable sources in 2030. In addition, these measures will contribute achieving a 30% reduction in total GHG emissions in 2030 compared to baseline/BAU value, which is also a goal set on the country's first NDC. It is however important to highlight that a reduction on emissions from the LULUCF sector plays a major role in achieving the set goals and that the country's longer-term ambition is to reach net zero emissions from the LULUCF sector by 2045.

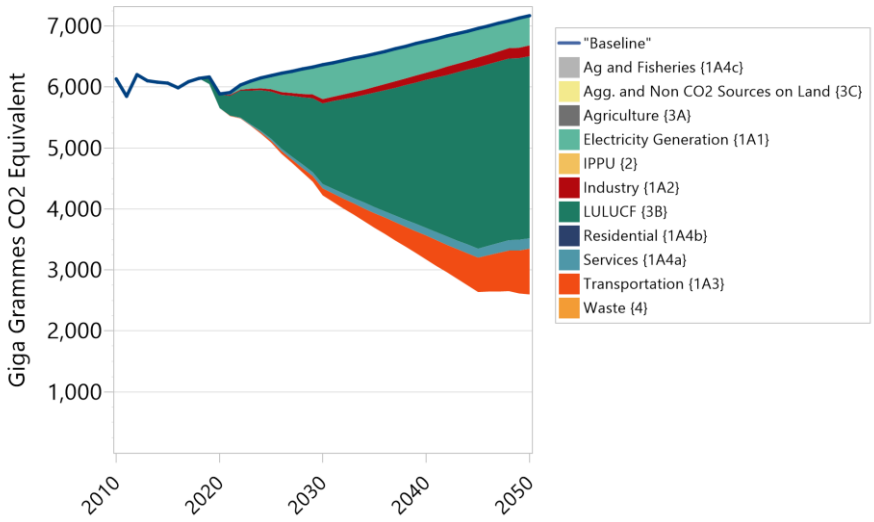


Figure 1. Projected emission reductions by sector with mitigation actions compared to the baseline.

1.2.5. Climate Action

Since the submission of its first NDC, and with the main goals of reducing its GHG emissions and increasing the country's resilience to the impacts of climate change, the Government of The Bahamas has been implementing several projects focused on climate action (Table 3).

Year	Climate Action Projects
2021	Building the Bahamas capacity in transparency for climate change mitigation and adaptation
2020	Meeting the challenges of 2020 in The Bahamas (GEF)
	Implementing land, water, & ecosystem management in The Bahamas
	Recommendations for the Implementation of Sustainable and Climate Resilient Tourism Certifications in the Bahamas
	Capacity Strengthening for a More Resilient Bahamas
	Reconstruction with Resilience in the Energy Sector in The Bahamas
2019	Advancing Renewable Energy in The Bahamas
	Supporting a Comprehensive Renewable Energy Program and Institutional Reform in the Bahamas
	MARPOL for the Blue Economy: The Caribbean-s First Marine Waste Reception and Processing Facility
2018	Supporting Renewable Energy within the Implementation of the Electricity Act in The Bahamas
2017	The Pine Island Project: Forest/Mangrove Innovation & Integration
	Climate Resilient Coastal Management and Infrastructure Program
	Bahamas Energy Learning Exchange Program
2016	Support to Climate-Resilient Tourism Development in San Salvador
	Sustainable Infrastructure Upgrade for the Family Island Airports Bahamas
	Sustainable Urban Bus System Planning and Design
2015	Implementation of the ESCI in Nassau, The Bahamas

Table 3. List of climate change projects implemented by the Government of The Bahamas since 2015.

2. Policy Framework

As a Small Island Developing State and although its contribution to the global emission of greenhouse gases is almost negligible at 0.01% (World Bank, 2015), The Bahamas is a responsible member of the international community, and as such, is committed to setting emission reduction targets. In this context, the country ratified the Paris Agreement and submitted its first NDC in 2016 committing to a reduction of its GHG emissions by 30% compared to its BaU scenario by 2030, conditional upon international support. The Bahamas intends to achieve this target through a sustainable development and economy-wide approach.

In addition, recognizing its vulnerability to climate change-related impacts, and the need for planned adaptation to achieve long-term sustainable development, the Government of The Bahamas has important elements and concrete actions to integrate climate change into economic, social and environmental policies.

2.1. National framework

The main climate-related policies and instruments in place at national level include:

1963

- Public Works Act

The main objective of this Act is to regulate the construction, management and development of public works, buildings and roads, and provide protection of public property. It contains 12 sections which refer, among others, to the powers of the Minister with respect to the appointment of roads or the numbering of houses. Section 6 empowers the Minister responsible for Public Works to make Rules for, among other things: the use, obstruction, alteration, encroachment upon, or damage to any of the property belonging to the Government or held by the Government; removal of filth or rubbish and the cleansing and keeping clean of all public drains, and other public lands and grounds and the care and attendance of drains and floodgates. Also, the last sections refer to penalties, reports, vesting of property and contracts.

1968

- The Coastal Protection Act

The main objective of this Act was to make provision for the protection of the coast against erosion and encroachment by the sea and for purposes connected therewith. It grants power for the Minister to carry out coast protection work whilst placing restrictions on the carrying out of private coast protection work. The Act facilitates the apportionment of charges and/or recovery of charges. It includes prohibition of excavation or removal of materials from seashore. There are Provisions as to compensation as well the requisite regulations.

In support of this Act, the IADB, in 2017, grated a loan to the Commonwealth of The Bahamas to cooperate in the execution of a climate-resilient coastal management and infrastructure program.

1997

- The Conservation and Protection of the Physical Landscape of The Bahamas Act and Regulations

This Act outlines the procedure for applying for permission to excavate material, operate a landfill or remove named protected forest tree species. Penalties for breaches are also listed. It seeks to limit the destruction of trees of ecological significance with respect to water percolation rates, so less vulnerable areas are exposed to the impacts of climate change.

1999

- The National Biodiversity Strategy and Action Plan

This document traces the efforts between September 1996 and 1999 during which the country initiated a Biodiversity Strategy and Action Plan, the formulation of the then Bahamas Environment Science and Technology (BEST) Commission and a National Biodiversity Task Force. Nine actions or proposals are documented:

  - Formulation of The BEST Commission, which coordinates the work of all the various Governmental and NGO groups with responsibilities and concerns for the environment as well as resolving conflicts of interest to ensure the most effective use of resources.
  - Establishment of the National Biodiversity Task Force (Biodiversity) that was formed to provide inter alia a forum for exchange of information among those agencies with responsibilities for conservation and biodiversity.
  - National Consultative Process. The committee was charged with the role of preparing and conducting the consultative process for the Action plan.
  - Non-Implementation of the Recommendations of the Biodiversity Data Management Project.
  - Incomplete Preparation of Bioregional Guidelines.
  - Planning for a System of National Parks and Protected Areas.
  - Proposed Development of Monitoring and Evaluation Methodologies.
  - Proposed Protection and Rehabilitation of Threatened or Degraded Ecosystems and of threatened species.
  - Improvement of the Botanical Gardens to Enhance its Capacity for Ex Situ conservation.

A review done in 2009 states the need for a review of the National Biodiversity Strategies and Action Plans (NBSAPs), as only the Establishment of a Biodiversity Task Force was recorded as completed.

2002

- Bahamas National Investment Policy

This Policy was designed to support investment friendly climate; to guarantee the complementarity of Bahamian and overseas investments; and to foster appropriate linkages with all sectors of the economy, in particular, with the tourism and financial services sectors to encourage the exploitation of their natural resources in an environmentally sound and sustainable manner; to foster the economic growth and development of The Bahamas.

It includes information on the role of the Bahamas Investment Authority, investment incentives and concessions, areas targeted for foreign investors, areas reserved for Bahamians; and minimum investment and immigration benefits associated with property investments. It also includes a guide to project proposals that any international investor wishing to do business in The Bahamas should submit

In 2011, the Government of The Bahamas amended the National Investment Policy to remove foreign investment restrictions on restaurants and entertainment businesses and increase the minimum investment requirement from $250,000 to $500,000.

2003

- The Bahamas Building Code – 3rd edition – Ministry of Works and Utilities

The purpose of this code (Ministry of Works and Utilities, 2003) is to provide certain minimum standards, provisions, and requirements for safe and stable building design methods of construction and uses of materials in building and/or structures hereafter erected, constructed, enlarged, altered, repaired, moved, converted to other uses or demolished, to regulate the equipment, materials, use and occupancy of all buildings.

The scope of the code considers:

- New buildings and structures hereafter erected in The Commonwealths of The Bahamas, except in Port Area in Grand Bahama Island.
- Addition, alterations and repairs in all buildings and structures shall comply with the provisions for new buildings and structures except as otherwise provided in Section 104.
- Any material changes of use, or occupancy, of a building shall comply with Rule 4 of The Building Regulation (General) Rules 1971.

Improving energy efficiency in buildings is usually very cost-effective, but significant potential remains to save energy in most buildings. Policies such as building energy codes have a proven track record in making new buildings more efficient.

Although the country's building code is considered one of the most robust in the region, Hurricane Dorian has demonstrated that it is not robust enough. For that reason, the building code is being reviewed and updated adopt a stronger code with respect to climate change impacts, specifically, storm events and sea level rise.

2004

- The National Wetlands Policy of The Bahamas

On June 7, 1997, The Bahamas signed the Ramsar Convention on Wetlands. The purpose of this document is to have a comprehensive wetland policy that clearly outlines the Government of The Bahamas' guidelines and objectives for the protection of wetlands. This policy can be used by those responsible for the administration of existing laws and regulations related to wetlands as a guideline to ensure their sustainable management. It also serves as a guide for activities that may be carried out in and around wetlands.

- The Environmental Health Services Act

These Regulations (The Government of The Bahamas, 2004), made under the Environmental Health Services Act, make provision for a public waste collection service and private collection of waste, prescribe rules for the transportation, disposal and collection of domestic and commercial waste including special (hazardous) waste, define prohibited methods of disposal of waste and regulate the operation of waste management facilities including waste recycling plants.

No person shall handle special waste except in accordance with directions of the Director of the Department of Environmental Health Services. The Regulations also define duties of waste collectors and prohibit littering and the illegal dumping of waste.

2005

- National Environmental Management and Action Plan (NEMAP)

The NEMAP was implemented under the framework of the National Capacity Needs Self Assessment (NCSA) project. The key actions to be taken in The Bahamas that were defined in this policy were:

- The adoption of a National Environmental Policy.
- The enactment of new environmental legislation.
- The establishment of a new Department and Ministry of Environment.
- The implementation of a new governance structure.
- The adoption of an environmental management plan, including new regulations, guidelines and policies.
- Options for securing stable and reliable funding for environmental management.
- Improvements in human resources, Family Island services, training, information management, and compliance and enforcement.

- National Policy for the Adaptation to Climate Change

As part of the country's response to climate change impacts, The Bahamas has developed in 2005 a National Policy for the Adaptation to Climate Change that focuses on ten (10) main sectors of the Bahamian economy: Agriculture, Energy, Transportation, Coastal and Marine Resources and Fisheries, Forestry, Tourism, Human Health, Human Settlement, Water resources, and Finance and Insurance. The policy provides an assessment of the degree of vulnerability of The Bahamas to the projected climate change impacts and of the capacity for adaptation to anthropogenic climate change by sectors and proposes strategies for anticipating and ameliorating or avoiding the negative impacts (The Commonwealth of The Bahamas, 2005).

This Policy defines the adaptations measures that need to be implemented in order to fulfil the goals, objectives, principles and directives defined in it. It focusses on the integration of climate change considerations into the planning, development and implementation of virtually all activities and programmes at all levels. Such programmes will allow to reduce vulnerability to existing climate change stresses and promoting sustainable development.

The Policy describes the need for the government to be involved as an important facilitator for the implementation of the policy directives to create an enabling environment to foster the development of adaptation programs to ensure planning and development of actions to achieve the objectives in the sectors analyzed in this policy.

To further advance adaptation efforts in the country, the Government intends to make amendments to the 2005 National Policy for the Adaptation to Climate Change and develop a national and sector adaptation plan (NAP/SAPs).

2006

- The Planning and Subdivision Act

This Act provides for a more effective organization of the mitigation of, preparedness for, response to and recovery from emergencies and disasters in The Bahamas.

- Roads Act

This Act concerns the classification, declaration, construction, maintenance, and control of public roads which are divided into the following classes: major roads and minor roads. It make provision for the establishment of public roads, for the control and maintenance of public roads and for other purposes incidental thereto.

Other related matters that are dealt with through this Act include the restriction on the discharge of water and other liquids from private lands onto public roads, the duty of owners of adjoining land in relation with vegetation, restriction on the removal of sand from coastal areas in the vicinity of public roads and the (compulsory) acquisition of land by the Minister and exchange of land. All public roads within The Bahamas shall be under the charge and control of the Minister who shall have and exercise in respect thereof the powers and duties conferred by this Act.

2009

- The Utilities Regulation and Competition Authority (URCA) Act

The Utilities Regulation and Competition Authority (URCA) was created to serve as the primary governing body of the new regulatory regime for electronic communications in The Bahamas.

In addition to its regulatory functions and powers over the electronic communications sector in The Bahamas (including the designation of operators as possessing significant market power), URCA will also be responsible for competition issues arising from anti-competitive agreements, abuse of

dominant position and merger control in the provision of networks, carriage services and content services (including broadcasting). Thus, the roles of the national communications regulator and the national competition authority are combined into one agency as URCA.

2010

- **Disaster Preparedness and Response Act**

This Act makes provision for land use planning and regulates the subdivision of land. The objects and purposes of this Act are to: (a) provide for a land use planning based development control system based on policy, land use designations and zoning; (b) prevent indiscriminate division and development of land; (c) ensure the efficient and orderly provision of infrastructure and services to the built environment; (d) promote sustainable development in a healthy natural environment; (e) maintain and improve the quality of the physical and natural environment; (f) protect and conserve the natural and cultural heritage of The Bahamas; (g) provide for planning processes that are fair by making them open, accessible, timely and efficient; (h) recognize the decision making authority and accountability of the Government in land use planning; and (i) plan for the development and maintenance of safe and viable communities. According to this Act, there shall be a Land Use Plan for each island of The Bahamas, consistent with all National Land Use Development Policies, which shall be prepared by or for the Department.

2012

- **Master Plan for The Bahamas National Protected Area System**

Through this Master Plan the Government of The Bahamas has identified targets for expanding protected areas for terrestrial and marine ecosystems in order to meet its obligations under the Convention on Biological Diversity (CBD).

2013

- **The Bahamas National Energy Policy 2013 -2033**

The country developed its NEP 2013-2033 (Ministry of the Environment and Housing, 2013) to improve the national circumstances around the energy sector. The document outlines several key goals including: the general awareness of Bahamians on the importance of energy conservation; modern energy infrastructure, which would enhance energy generation capacity; the outcome that The Bahamas would become a world leader in providing opportunities in the energy sector; and more dynamic and appropriate governance, institutional, legal and regulatory framework, which would advance future developments in the energy sector.

According to the information included in the NEP, The Bahamas is almost 100% dependent on imported oil, which is used for electricity generation and transport in the country. In 2009, 44% of the electricity generated in the country was produced by heavy oil, Bahamas Electrical Corporation/Bahamas Power and Light (BEC/BPL) was the only electricity provider in the country using heavy fuel oil, while the remaining 56% was produced from diesel oil.

Different companies are responsible for supplying power to the various islands of The Bahamas. The Grand Bahama Power Company (GBPC) is the electricity provider on the island of Grand Bahama, the Bahamas Power and Light (Company Ltd. BPL) is responsible for supplying major islands like Abaco, the company St. George's Cay Power Company provides electricity to the islands of St. George's Cay (Spanish Wells), Russell Island and Royal Island, and the Morton Power Plant, provides electricity to the island of Inagua.

Likewise, the Bahamian energy and electricity infrastructure is affected by climate change, provoking loss and damage, supply interruptions and higher energy prices. The diversification of energy sources

and increase of the share of national and decentralized renewable energies in the Bahamian energy mix thus decreases the risk of energy insecurity.

In this context, the Policy mainly focuses on lowering the country's current dependency to imported oil thanks to an increased share of renewable electricity production and use, higher energy efficiency in buildings and to a move towards decarbonized transport. Programmes fostering information and education of households and businesses are also detailed.

The main target set in this policy correspond to the obtention of *30% of renewables in the energy mix by 2030*.

- The Montreal Protocol (Controlled Substances) Act (Cap. 216A) and Customs Management (Amendment) Act of 2013

As a signatory of the Montreal Protocol, The Bahamas published the Montreal Protocol Act (Parliament of The Bahamas, 2008), which places restrictions on the use, manufacture and sale of controlled substances (as specified the First Schedule to this Act) for purposes of giving effect in The Bahamas to the Montreal Protocol on Substances that deplete the Ozone Layer. No person shall use a controlled substance for agricultural and other purposes unless otherwise specified. The Act provides for a monitoring and control mechanism for the sale and purchase of controlled substances. The Act also prohibits certain release of controlled substances into the atmosphere and empowers the Minister responsible for Environmental Control to make Regulations for purposes of this Act and to amend the Schedules.

Currently, Hydrochlorofluorocarbons (HCFCs) trade is controlled by the Montreal Protocol (Import/Export Licensing System of Controlled Substances) Regulations (Cap. 216A) and the Customs Management (Amendment) Act of 2013. The Bahamas Customs and Excise Department enforces the regulations and submits compliance data to the National Ozone Unit (NOU).

The Bahamas has an enforceable licensing and quota system in place that ensures the country's compliance with the HCFC phase-out schedule. The Department of Environmental Health Services (DEHS) in the Ministry of Environment and Natural Resources establishes and monitors HCFC import quotas per substance and distributes them to registered importers based on their historic market share dating back to the last five years, and on the consumption, limits established under the Protocol.

While the licensing and quota system enabled the country to meet its HCFC consumption reduction targets to date, the Government of The Bahamas still needs to extend the system to include the most commonly used refrigerants such as Hydrofluorocarbons (HFCs) and HFC-based blends. These actions would correspond to the Kigali Amendment to the Montreal Protocol, which the country has not yet ratified.

2014

- Bahamas Protected Areas Fund (BPAF) Act

This Act establishes the BPAF as a body corporate and defines its functions and powers. It also defines the system of protected areas in The Bahamas and requires the Board of the Fund to establish and maintain a register called the Protected Areas Register. This Act also includes protection of carbon sinks.

- The Forestry Act (Amended 2014) and Forestry Regulations

The Forestry Act was enacted by the Bahamian Parliament in 2010 (The Government of The Bahamas, 2010) and then amended in 2014(The Government of The Bahamas, 2014a), to provide the conservation and control of forests. It establishes a Forestry Unit under the authority of the Ministry of the Environment and Natural Resources to regulate activities such as wood exploitation, to declare

and manage forest reserves, and monitor protected trees. Reserves should be declared according to environmental conservation objectives, to protect wildlife and prevent fires. The Act also regulates activities held on privately held lands. Every five year, a Forest Management Plans must be developed.

In 2014, Forestry Regulations (Ministry of the Environment and Housing, 2014) was amended, notably in order to include carbon sequestration and reforestation within the possible objectives of Forest Management Plans and to protect designated mangrove and mangrove ecosystems and other important biological and ecosystem services that are prone to be impacted by sea-level rise. Private landowners are equally encouraged to prepare such plans. Forest roads cannot be used as public highways unless a special governmental authorization is priorly issued. The Regulations require that 20% of the land cover shall be designated into either a forest reserve, a protected forest or a conservation forest.

In 2021, an amendment was made to the Forestry Regulations to add a subregulation allowing to make special provision for reduced fees to be payable for royalties, permits and licenses for the purpose of these regulations, in case a hurricane, tornado or any other natural disaster has occurred in any island, islet or cay throughout The Bahamas which causes grave damage to any forest produce or non-forest produce in any designated forest.

- Bahamas Public Parks and Public Beaches Authority Act

This Act is divided into six parts throughout which it establishes the Public Parks and Public Beaches Authority as a body corporate and defines its functions and power: to provide for the property rights and liabilities of the public parks and public beaches and to identify, regulate, maintain, develop and conserve public parks and public beaches and for connected purposes.

The Authority shall, among other things: control, plan, design, develop, administer, manage and maintain the public parks and public beaches designated by the Authority; propagate, protect and preserve the animals, plants and other organisms within the public parks and public beaches, and preserve objects and places of aesthetic, historical or scientific interest. It also states in this text that the Board shall be the governing body of the Authority.

2015

- SIDS DOCK

Entered into force on 30 September 2015, SID DOCK, is a treaty establishing the SIDS Sustainable Energy and Climate Resilience Initiative, aimed at connecting the energy sector in SIDS with the global markets for finance and sustainable energy technologies.

- Electricity Act (Renewable Energy) (Amended)

The Bahamian Parliament enacted the Electricity Act 2015 (Parliament of The Bahamas, 2015a) in order to overhaul the country's energy sector and edict policy targets, among others: 1) security and diversification of power supply and distribution, 2) access to cheap and reliable environmentally sustainable electricity, 3) and the establishment of the Utilities Regulations and Competition Authority (URCA) as the independent regulator of the sector.

The Act encourages a higher capacity of renewables electricity generation under a number of ways. It seeks a reorganization of the electricity sector, so that public suppliers shall increase the proportion of renewables in their generation mix. Suppliers shall submit a time-bound plan to URCA over their specific renewables' objectives and revise this plan every three years. Eventual additional energy needs should be met in priority by new renewables capacity.

It also promotes residential renewable energy generation for connection to the grid, and for self-generation. All stages are also regulated by URCA, and households need a grid interconnection

agreement to operate. URCA shall maintain a public list of entities granted approval. The document further highlights the need to encourage energy efficiency in the generation, distribution and consumption of electricity.

- The Water and Sewerage Corporation Act (Amended)

The Water and Sewerage Corporation Act (Parliament of The Bahamas, 2015b) is an Act to establish a Water and Sewerage Corporation for the grant and control of water rights, the protection of water resources, regulating the extraction, use and supply of water, the disposal of sewage and for connected purposes.

The Act consists of 41 sections divided into 7 Parts: Preliminary (I); Establishment of Water and Sewerage Corporation (II); Financial provisions (III); Transfer of Corporation of Government Installations (IV); Water-supply (V); Sewerage (VI); Miscellaneous (VII).

Section 3 declares water to be national resource of the Commonwealth and all private rights in water subject to the superior right of the Government to control and administer the marketing, production, extraction and use of water in the public interest. The Corporation shall control and ensure optimum development and use of water resources in The Bahamas and provide adequate supplies of water suitable domestic use, livestock, irrigation, etc., and provide adequate facilities for drainage and disposal of sewage.

In support to this Act, in 2017, the Government was granted with a senior loan by the GCF (co-financed by the Caribbean Development Bank (CDB)), to enhance the resilience of the water sector in The Bahamas to safeguard the country's water security in a changing climate. To this end, this project focuses on (i) strengthening the basis for more evidence-based policy and decision making on climate change and the water sector; (ii) supporting relevant stakeholders to apply this knowledge to the development and implementation of a more coordinated and coherent policy and governance framework; and (iii) scaling up investments in highly vulnerable islands to improve the resilience of the water system and services.

- The Bahamas' National Maritime Policy

This policy was developed by the Ministry of Transport and Aviation and its aim is to promote sustainable economic development of marine resources and activities and avoid inter-sectoral conflicts. The development of this national policy framework will assist the government of The Bahamas to achieve a number of objectives, including economic development; safeguarding the natural environment; providing for sustainable development; preserving a way of life that has sustained generations of Bahamians, and including recommendations for policies to improve climate resilience.

2016

- National Development Plan: Vision 2040

The National Development Plan: Vision2040[2], provides a roadmap for the future development of The Bahamas. The Plan includes a comprehensive policy framework that will guide Government decision making and investment. Its vision for 2040 highlights the desire of the Bahamian people for a natural environment and infrastructure that promotes a healthy, resilient, beautiful and modern society. Thus, the sixth national priority is to achieve "a sustainable and resilient environment."

[2] Working Draft for Public Consultation, available at: https://www.vision2040bahamas.org/media/uploads/Draft__National_Development_Plan_01.12.2016_for_public_release.pdf

The Plan has been aimed at addressing four main policy pillars:

- Economy: The National Development Plan will identify strategies that can make the Bahamian economy more resilient, create job opportunities for Bahamians and promote entrepreneurial activities and ownership.
- Governance: best practices will be highlighted to guide the governance of our institutions to become a more efficient and modern nation.
- Social Policy: outline the policies the country needs to improve public safety, healthcare, education and social services.
- Environment: invest in strategic infrastructure projects. Also, the Plan will illustrate ways in which beautiful natural environment can be enhanced while maximizing the value of built infrastructure.

The fourth pillar refers to both natural and built environment. It highlights the importance of the protection of both spheres, recognizing their central role for economic and social development. To achieve the vision of the National Development Plan, a comprehensive set of reforms is foreseen, to set the country on the path towards modern infrastructure in support of economic growth.

Climate change adaptation and mitigation measures are expected to be incorporated into public education, planning and budgetary processes, to increase awareness of climate risks and effects. Other planned outputs include a comprehensive policy on climate change and resilience developed and implemented for all national action plans; preparation of hazard / asset mapping in all islands; annual budgets reflecting budgetary allocations for climate change concerns; and the establishment of a National Implementing Entity for the Green Climate Fund.

2017

- National Tourism Development Strategy 2017-2022

The National Tourism Development Strategy 2017-2022 seeks to increase the growth and development of the tourism sector. It concludes with a five-year action plan that serves as a guide for achieving the strategic objectives. These objectives are:

- Strengthen the basic fundamentals of the sector: a service-oriented and well-trained workforce; a modern, high-quality tourism infrastructure; and a clean and beautiful environment.
- To attract more foreign direct investment (FDI) geared towards the development of smaller hotel properties and more sustainable tourist attraction partnerships.
- Establishment of a tourism-related employment index that will allow to expand tourism-based services and to track.
- Promotion of domestic tourism to encourage Bahamian entrepreneurs to appreciate and preserve their national heritage and create wealth in the communities.
- Creating a sustainable tourism sector by partnering and engaging local entrepreneurs, thereby improving the global trade and economic linkages of The Bahamas.
- Development of sustainable ecotourism, culture and historical sites.
- Reposition 'The Islands of The Bahamas' as the premier tourist destination.

2019

- The Environmental Planning and Protection Act

The main objectives of this Act are:

- To protect the environment of the islands of the Commonwealth of The Bahamas in order to provide for development that maintains ecological integrity and the social and economic well-being of the community.

- To provide a legal framework for the protection, enhancement and conservation of the environment in a sustainable manner.
- To promote the development of policies and plans, as well as public participation in decision-making processes, on environmental management to prevent environmental degradation.
- To establish a mechanism for the effective implementation of projects, programs and activities.

This law establishes provisions on the establishment, funding and duties of the Department of Planning and Environmental Protection. Due to environmental incidents and emergencies, the Department may issue instructions to take measures to protect the environment, health and safety of people, and to prevent, repair, mitigate or reduce the adverse effects of the incident. In addition, the Minister responsible for environmental planning and protection may issue regulations for the implementation of the provisions of this Act.

This Act also covers environmental planning, environmental impact assessment, environmental compliance certificate, duties for the protection of the environment, environmental incidents and emergencies, capacity building through information, research, environmental education and training, investigation and enforcement, offenses and penalties, and compensation for loss of property.

- **Environmental Protection (Control of Plastic Pollution) Act, 2019**

An act to prohibit single use plastic foodware and non-biodegradable, oxo-biodegradable and biodegradable single use plastic bags; prohibit the release of balloons; regulate the use of compostable single use plastic bags, and for connected matters.

2020

- **The Bahamas Power and Light (BPL) requirements for grid interconnection of small-scale renewable energy generation systems**

This document describes the general provisions and technical requirements for connecting Small scale Renewable Generation (SSRG) systems to BPL's power system (Bahamas Power and Light, 2020), inclusive of transmission and distribution. These requirements ensure:

- The compatibility of the SSRG system with the Grid
- The safety of the SSRG system operating in parallel with the Grid
- The safety of BPL's employees, agents, customers and the public; and
- High standards of power quality.

2021

- **The Civil Aviation Authority Bahamas (CAAB) Environmental Regulation**

The structure and substance of these regulations (CAAB, 2021) is based on Annex 16, Volume IV to the Convention on International Civil Aviation using the International Civil Aviation Organization (ICAO) model regulations. According to these regulations, The CAAB shall approve the airplane operator's compliance on the basis of satisfactory evidence that the operator meets requirements that are at least equal to those specified in these regulations. Specifically, environmental criteria are established for:

- Monitoring of CO_2 emissions
- Reporting of CO_2 emissions
- Verification requirements
- CO_2 offsetting requirements and emissions reductions

2022

- Climate Change and Carbon Market Initiatives Act

There is a draft law to respond to the Paris Agreement, and to help in the fight against climate change and create initiatives to offset carbon emissions. The main objectives of this Law will be:

  - Enable the Government to create incentives and implement initiatives to support the overall goal of reducing greenhouse gas emissions, in line with the NDCs.
  - To ensure the Bahamas' compliance with its obligations under the Paris Agreement, considering the common but differentiated responsibilities, respective capabilities and flexibility provisions recognized in the UNFCCC for small developing states to address climate change.
  - Enable the establishment of a market in the Bahamas for trading carbon credits. carbon credits.

- Carbon Credit Trading Act

This draft Bill has already gone out for public consultation in 2022. The Carbon Credits Trading Bill 2022 seeks to establish a regulatory framework for the trading of carbon credits in or from the Bahamas. The main objectives set out for this Act, are:

  - The creation of a regulatory framework for the conduct of carbon credit business, including carbon trading exchanges, carbon credit verification bodies and carbon trading registries.
  - Defining the requirements for the Commission's approval of the listing of carbon trading products on carbon trading exchanges.
  - Define the registration requirements for persons wishing to engage in carbon trading activities or operate.
  - Define mandatory requirements for registrants to maintain adequate financial resources and solvency.
  - Define requirements for registrants to implement and maintain registration and data protection measures.
  - Define requirements for registrants to comply with anti-money laundering (AML) and countering the financing of terrorism (CFT) prevention measures and standards.
  - Establishing offenses, penalties, and sanctions for non-compliance with the bill.

- Grand Bahama Power Company (GBPC) rules and regulations for Renewable Generation Systems (RGS)

As mandated in the most recent rate approval, the GBPC has received approval from the Grand Bahama Port Authority (GBPA) to begin the Renewable Energy Rider (RER) Pilot program. The RER, which is the first in The Bahamas, will allow residents on Grand Bahama the opportunity to sell the energy they produce using renewable sources to the utility.

The approved details of the RER are as follows:

  - All systems must be installed by a licensed electrician and approved by GBPC & GBPA, this ensures that the systems are properly installed and adhere to safety standards.
  - The maximum allowed capacity for RGS for Grand Bahama will be 3 MW, this is subject to an annual review by GBPA to determine if an adjustment if necessary.
  - Individual customer installations will be limited to a maximum of 1.5 times the estimated load for each location. This would limit customers to installations that would serve their needs but limit the size in order to get as much participation as possible given the capacity limit.
  - This Rider will be made available to all residential and commercial customers.

- GBPC will bill the Customer at the normal electricity rates for their particular category based on all the energy consumed.
- Regardless of whether it is derived from solar PV, wind, or other means, under the RER, the Customer will receive a credit on their bill for all the electricity generated at the RER credit rate.
- The approved Renewable Energy Rider Credit rate is 1.1 times the fuel charge.
- With the fuel charge averaging 9.5 cents per kWh, the current rate for the RER is approximately 10.5 cents per kWh.
- The Renewable Energy Rider Credit is subject to periodic review by GBPA during the Pilot program.
- Customers wishing to install RGS are required to have liability insurance.

This RER is guided by specific rules and regulations for RGS, particularly, the document (GBPC, 2022) describes the technical requirements for connecting up to 150kW, or larger if approved in writing by GBPC, to GBPC's electric distribution system (GBPC's Grid). These requirements are aimed at, among other things:

- ensuring the compatibility of the RGS with GBPC's Grid;
- ensuring the safety of the RGS operating in parallel with GBPC's Grid;
- facilitating the safety of GBPC's employees, agents, customers and the general public; and
- maintaining a high standard of power quality.

To be eligible to connect and operate in parallel with GBPC's Grid, the RGS must be wind and/or solar powered with a maximum aggregate capacity per facility of 1.5 times the customer's current average usage up to a maximum of 150kW. The average usage will be calculated based on the most recent twelve months that the customer relied on the grid or the most recent months where the customer does not have a twelve-month history.

- Bahamas National Trust (Preservation of Natural Parks) Bylaws

These Bylaws operate in conjunction with all other laws of The Bahamas and apply to the trust property specified in the First Schedule and held by the Bahamas National Trust for the purposes of the Act (commonly and collectively known as "National Parks").

Among others, the document includes provisions (i) on conservation, preservation and protection of parks, including environmental protection, protection of resources and other prohibited and restricted activities (ii) relating to specific parks shall apply to the park as specified, and on miscellaneous aspects such as authority of wardens, obstruction and other infringements, and prohibition of building structures, etc. below the high tide line.

2.2. International reports and commitments

The main climate-related reports and commitments at international level include:

2001

- First National Communication

The First National Communication (FNC) was submitted to the UNFCCC in 2001 (Commonwealth of The Bahamas, 2001).

Although The Bahamas is not a significant source of GHG global emissions, there is a need to reduce the drain of foreign reserves used to acquire imported fossil fuels. Moreover, there would be health

benefits from reduced emissions. Importation of fuels for electricity generation is expected to increase over time, driving up emissions, if measures are not taken to reverse or slow this trend.

In this document, The Bahamas explicitly mentions that the approach to address climate change mitigation must be multidisciplinary and cross-sectoral. At the same time, it reiterates the need for international assistance, sufficient financial resources and the availability of technological solutions and tools to achieve the objectives.

Among the options identified to reduce GHG emissions, in the First National Communication, it is worth highlighting the measures related to energy efficiency and the development of the use of renewable energies and cleaner fuels. In addition, The Bahamas was reviewing ways of achieving GHG reductions in the international bunkering and shipping sectors, which would have global benefits, and explore the feasibility of importing electricity from Florida via submarine cables.

Regarding Forestry, another key element for climate action, the pine forests of The Bahamas have been studied and their environmental benefits documented in work that formed part of The Bahamas Land Resources Survey. The protection of Bahamian forests by activities that reduces stresses from fires, and legislation providing for the setting aside of forests as conservation, managed and preservation areas, have the potential for enhancing the service that forests provide as sinks for carbon dioxide.

The First National Communication recognizes the country vulnerability to climate change in particular extreme events such as hurricanes and sea level rise. An initial V&A assessment considered both direct and indirect impacts of climate change and identified five sensitive sectors: tourism, health, water resources, agriculture and fisheries and biodiversity.

The report laments the inability of the country to seriously address adaptation and it identifies the existence of gaps in research and information needs within ten economic sectors or subject areas. To address those gaps, the document provides broad information on the type of efforts/recommendations, needed to reduce climate change impacts in the country, including:

- Increase capacity building in terms of international negotiation, vulnerability and adaptation assessments, and skills needed to translate recommendations into policy options.
- Strengthening The Bahamas Environment, Science and Technology (BEST) Commission[3] information technology capacity, and The Bahamas National Geographic Information System Centre (BNGISC).
- Improve data collection and monitoring in alignment with international organizations requirements.
- Improve climate change monitoring and observations in the country in particular in areas such coral reefs, fisheries, forests, agriculture, GIS, health, public works water resources and supply, economics, climate change awareness.
- Continued regional collaboration.
- Provide adequate financial resources towards public awareness, education, training and development and the requirement of external resources for CBA analyses, and the pre-feasibility and socio-economic impact analyses.

In addition, the First National Communication makes reference to many new laws that were being drafted or that had just come out in different areas and that are still in force today, such as the Conservation and Protection of the Physical Landscape of The Bahamas Act and Regulations (1997). This reflects the need for the necessary updating of laws in the country.

2014

[3] A primary government agency for creating framework strategies for sustainable development, for implementing the environmental impact assessment process, and for developing databases of environmental information.

- Second National Communication (SNC)

In its Second National Communication to the UNFCCC (The Government of The Bahamas, 2014b), The Bahamas introduced the NEP for the first time, committed *to "become a world leader in the development and implementation of sustainable energy opportunities, by aggressively re-engineering our legislative, regulatory, and institutional frameworks; retooling our human resources; and implementing a diverse range of well researched and regulated, environmentally sensitive and sustainable energy programmes and initiatives, built upon our geographical (both proximity and diversity), climatic (sun, wind, and sea) and traditional economic strengths (tourism and banking)."*

Given this commitment the focus of the policies and mitigation measures continued to aim at decreasing the dependence on imported oil, including a reduction in energy demand due to energy efficiency measures of 30% relative to a business as-usual scenario by 2030 and an increase in share of renewable energies in electricity generation of at least 15% by 2020 and 30% by 2030.

A mitigation scenario (the first three scenarios are demand-side measures and the fourth is a supply-side measure), mainly focused in the Energy sector, was developed for this report. It consisted of four components:

- Rooftop solar thermal hot water heaters replacing electric hot water heaters in residential homes (assuming that 100% of the hot water demand could be met by solar thermal by 2030);
- Distributed PV generation in residential homes (assuming that 100% of household photovoltaic potential could be achieved by 2030);
- Energy Efficiency measures (assuming that all other energy efficiency measures would amount to a 30% reduction in electricity demand compared to the baseline by 2030); and
- New Renewable Generation Mix (assuming that renewable power plants would be introduced to allow for 15% renewable generation by 2020 and 30% renewable generation by 2030).

The Second National Communication also provides an analysis of expected climate change impacts and end of century projections (sea-level rise, precipitation, temperature, storm surges associated with hurricanes) for the country. A vulnerability and adaptation assessment (V&A) was carried out following two principal approaches: (i) a consultative process involving key stakeholders and (ii) a modelling approach using climate change and sea-level rise projections for different time horizons in the future. After the evaluation process, it concluded that the key vulnerabilities in The Bahamas were water resources, forests, human health, agriculture, human settlement, disaster management, energy, tourism, and coastal zones; and that these vulnerabilities will get worse if no action is taken. Except for biodiversity, the document identifies a set of potential adaptation options for each sector. Additionally, it provides concrete recommendations associated with water resources, forests, tourism, and the financial, technical, and human resources.

This National Communication emphasizes the lack of climate change policies developed for the different sectors, analysing one by one and detailing both their deficiencies and the actions carried out or how they could contribute.

In addition, a number of key issues have been identified as fundamental to risk management and climate change adaptation: (i) information and awareness; (ii) education and training; (iii) integration of climate change adaptation into management, planning and budgeting processes; and (iv) cooperation and collaboration.

2015

- The Bahamas Intended Nationally Determined Contribution (INDC)

The Bahamas communicated its INDC to the UNFCCC on November 17, 2015, in line with decisions 1/CP.19 and 1/CP.20 (The Government of The Bahamas, 2015).

The Bahamas INDC was built on the participatory multi-stakeholder and cross sectoral consultative processes undertaken during the development of The Bahamas First and Second National Communications to the UNFCCC and its National Energy Policy.

Regarding mitigation, through various national policies and initiatives, it was estimated that The Bahamas will reduce its emissions by a minimum of 30% below 2002 levels.

According to the INDC, the main instrument for achieving this commitment lies in the implementation of the NEP. The electricity and transport sectors are the main usage sectors of fossil fuels in the country and the electricity demand is expected to increase in the medium term. Accordingly, the Government has defined the policy framework for a low carbon development plan through the National Energy Policy, that sets a target to achieve a minimum of 30% renewables in the energy mix by 2030 and will allow for a 10% Residential Energy Self Generation Programme within the year.

However, efforts to quickly address the renewable energy mix and residential self-generation power program were hampered when the country experienced back-to-back storms and hurricanes between 2015 and 2019. In addition, with Hurricane Dorian and the COVID-19 pandemic resulting in 3.4 billion in economic losses and damages, coupled with the additional growing impact of global inflation.

The Bahamas NEP establishes linkages with other sectors, (transport, construction, finance, inter alia) of the economy in order to achieve policy coherence and fulfil the achievement of the country's energy goals.

In addition to The Bahamas NEP, the Forestry Act was amended to allow for the establishment of a permanent forest estate. Under the amended Act, 20% of the land cover is designated into one of three categories (forest reserves, protected forests and conservation forests) and will be subject to a management plan for suitable management and environmental conservation.

Regarding adaptation, the INDC acknowledges the importance of adaptation to the country in particular the role of near shore environments and protected areas. Provides a list with examples of vulnerable sectors (Agriculture, livestock and fisheries, tourism, Health and wellbeing, Human settlement including housing, design of critical infrastructure, road, bridges, air and seaports, and Water resources management including water supply services, sewage and potable water systems) and associated adaptation options (planned or ongoing). The document clearly states the need of information to facilitate clarity, transparency and understanding; the assumptions and methodological approaches; fairness and ambition; means of implementation; and some additional information on recent impacts.

Although very broadly approached, the document explains the absolute necessity of adaptation by way of ongoing and planned work with desalination, the expansion of marine protected areas to conserve and protect fish spawning grounds, coral reefs and beaches all of which have economic significance. In this context, adaptation options are listed for some vulnerable sectors.

2022

- The Third National Communication (TNC) and Biennial Update Report (BUR1)

In parallel to updating the NDC the country is also developing its Third National Communication (TNC) and Biennial Updated Report (BUR1). One of the main objectives of the TNC/BUR1 process is to build local, individual and institutional capacity to implement the Convention. The TNC/BUR will strengthen the national capacities and further raise general knowledge and promote awareness on climate change and its effects. It will also strengthen the visibility of climate change issues on the national agenda through strengthened cooperation and increased involvement of all relevant stakeholders in the process.

3. Gaps, Needs and Opportunities for Climate Action

This section examines the main needs, gaps and opportunities identified at national scale associated with the implementation of climate change-related mitigation and adaptation actions and initiatives in The Bahamas and which served as basis for the identification of key elements for success as well as barriers and opportunities for development of this NDC and the achievement of its targets. Specifically, a sectoral Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis was conducted for the five priority sectors for mitigation action: (1) Energy; (2) Transportation; (3) IPPU; (4) LULUCF; and (5) Waste. The analysis was shared, discussed, and improved upon with key stakeholders. A similar effort was undertaken in adaptation, which also was discussed and improved with experts and stakeholders. The detailed SWOT analysis have been included in the Annex section.

3.1. Mitigation

The SWOT analysis of the principal emitting sector in the country revealed several conclusions about gaps, needs, and opportunities in terms of climate action for GHG emission reduction. Although there is a great opportunity to increase the financial backing for mitigation measures across all industries and to fund mitigation measures through carbon markets or climate finance in order to meet the mitigation targets, there are already certain financial incentives in place, including a program of rewards and fiscal measures to encourage and support investments in cutting-edge infrastructure and facilities for the energy sector. Overall, there is the need for increased public investments in infrastructure across all sectors and for the business community to get more involved in the implementation of mitigating measures.

In any case, the potential for mitigation actions seems clear, once financial, technical, and social constraints have been addressed. In particular, the country's potential for renewable energy has been highlighted by stakeholders and in literature. The deployment of renewable energy may lead to several economic and social benefits that are worth noting, for example, the introduction of renewable energy could be seen as an opportunity to diversify the economy and the employment, in addition to enabling people to have energy independence and therefore stable prices.

On the other hand, although many regulations (see section 2.1. National framework) are being developed that address several climate change related topics, there are still substantial regulatory needs and certain regulatory loopholes in supporting the goals of the mitigation actions. Consistency is required when trade-offs between development and climate action arise (e.g., mining and land use). Also, there is a need for additional resources and capacity building in the Government, as well as in various public and private institutions.

The social implications of the adoption of mitigating measures, such as investments in skill training, cultural practices, and gender parity, also have to be adequately considered. Cultural and practical barriers are for instance key when implementing mitigation actions in the transportation sector. On the other hand, in this sector, actions aimed at reducing GHG emissions may provide many environmental and social co benefits (e.g., improve air quality and therefore human health).

In addition, there is a considerable lack of reliable data in some sectors, which will be necessary to implement the mitigation actions. This is relevant in each and every sector. It would also be very relevant to have a comprehensive and quantitative analysis of the impacts due to climate change, as they may jeopardize the implementation of mitigation actions (particularly in the Energy and LULUCF sectors).

Due to its geographic characteristics, The Bahamas is particularly vulnerable. Imports are necessary for all sectors, which raises prices and jeopardizes the profitability of the implementation of mitigating measures across all sectors. This also means that the country many times relies on decisions made by external agents in order to fulfil its commitments. This is the case for instance of renovating vehicles or using less GHG-intensive refrigerants.

The SWOT analysis revealed that adopting best practices in the execution of this NDC's mitigation efforts will benefit from alignment with international protocols and standards. The results also indicated the importance of developing a plan for monitoring and evaluating the effectiveness of the mitigating measures once they have been put in place.

3.2. Adaptation

When it comes to adaptation, the country is blessed with extensive natural adaptation coverage (such as coral reefs and mangroves) which acts as a barrier against climate change impacts, particularly in coastal areas. There is a clear improvement in the last few years in terms of policy development, social awareness, and information. Certain solutions to help deal with climate change impacts in the country have been implemented such as parametric insurance or reinforcement of key infrastructure.

However, many gaps remain in terms of scientific data and research/information needed to understand and assess climate change vulnerability across all sectors and legislation. In addition, although adaptation policies and initiatives exist, many are outdated and obsolete. The geographic structure of the country also makes it challenging to face some impacts, due to its reliability on imported products (namely fossil fuels ad food), dispersion of the islands and dependence of natural resources in some sectors (e.g., tourism, fisheries, agriculture). In addition, many communities live in inadequate conditions, with poor sanitation and community infrastructure posing a risk to their health and wellbeing which exacerbates their vulnerability to climate induced impacts.

The access and use of international funds has increased in the last few years providing an opportunity for adapting and recovering after climate change induced catastrophes. In this regard, the implementation of mitigation actions may prove useful to diversify the country’s energy mix, as well as to provide climate finance. Synergies between mitigation and adaptation will need to be explored deeper.

Still, there is no question that The Bahamas faces a significant threat from unforeseen natural catastrophes due to its location in the tropical belt and hurricanes direct path. Building resilience and adaptation capacity is an urgent need for the country, even if many gaps exist in terms of capacity building and technical expertise. The lack of economic diversification and high demand for natural resources also pose a significand threat to the implementation of successful adaptation measures, although it also provides an opportunity for the development of soft adaptation measures that do not require large financial outlays, such as the inclusion of environmental awareness in the educational system or the practice of social adaptation measures across the country.

4. NDC update process

Within its commitment with the international community in the global fight on climate change under the UNFCCC, The Bahamas ratified in 2016 the Paris Agreement that mandates Parties to update and communicate their climate actions in the NDC to the UNFCCC every 5 years, and in 2016 the country has submitted its first NDC reporting its efforts to emissions and adapt to the impacts of climate change.

The Bahamas Updated NDC was developed under the umbrella of the Readiness and Preparatory Support Project entitled "Building Blocks for Strengthening The Bahamas Country Programme" developed collaboratively between the Government of The Bahamas, through the Ministry of Environment and Natural Resources (MoENR), which is the National Designated Authority (NDA) and the Caribbean Community Climate Change Centre (CCCCC), whose mandate is to coordinate the Caribbean Region's response to climate change, is accredited to the Green Climate Fund (GCF), and who served as the Delivery Partner with responsibility for the implementation of this Project.

Despite of the country's efforts to mitigate climate change and adapt to its impacts, The Bahamas needs to keep increasing its commitment and dedication to fight climate change by reducing its GHG emissions and increasing its resilience to climate change impacts. In this context, the definition and prioritization of the appropriate mitigation and adaptation components and measures for short-term implementation (2030) was based on an extensive analysis of the existing regulatory framework and the country's GHG emissions data focused on five (5) priority sectors (Energy, IPPU, Agriculture, LULUCF, and Waste), as well as a vulnerability analysis and assessment of the most vulnerable economic sectors, including a revision of ongoing and planned initiatives, in collaboration with several key stakeholders.

The mitigation and adaptation targets presented in the updated NDC are contingent upon receiving international support for technology transfer, capacity-building and financial resources, including through the Green Climate Fund (GCF), the Adaptation Fund (AF), multilateral and bilateral agreements and the local private sector. The frequency and intensity of impacts is well above the ability of the country's Government, non-governmental organizations (NGOs), and private sector to adapt. As a result, the strategy is to effectively and efficiently use climate finance to leverage local resources from the Government and the private sector by establishing the necessary national enabling environment to allow for the flow of funds. The latter will be addressed through the Bahamas CBIT Project.

To ensure consistency of this Updated NDC with the country priorities and the different instruments used to communicate, report and plan climate change action in The Bahamas such as the National Communications, the Biennial Update Report (BUR), the National Energy Policy 2013-2033, the National Adaptation Policy, and the National Development Plan, a series of multi-stakeholder and cross-sectorial consultative processes were organized. These include sessions undertaken during the development of the Biennial Update Report and the Third National Communication, as well as sessions targeted at (i) assessing and validating the main gaps, threats, strengths and opportunities associated with the implementation of climate change-related actions within different Bahamian sectors, and (ii) aligning the Updated NDC targets with the national priorities ensuring its contribution to reducing emissions as well as the achievement of national economic and development goals.

Building a strong foundation for the planning, implementation, and reporting of national climate actions requires adequate institutional, technical, and financial arrangements. In this context, several gaps should be addressed through capacity building and technology transfer. The DEPP requires substantial financial and human resources to achieve its mandate, cooperate effectively with national partners, implement capacity building programs, and establish robust information systems to address the challenges of climate change.

To sustain these efforts and scale up the implementation of mitigation and adaptation measures across The Bahamas, a MRV system under the CBIT Project will be institutionalized. The DEPP will establish a Climate Change Unit and assign employees to be responsible for climate data collection.

5. Mitigation

Despite contributing only 0.01% of global GHG emissions, The Bahamas is a responsible member of the international community, and as such, has defined two overarching goals towards 2030 that will contribute to the fulfilment of the carbon neutrality international goal by 2050:

- Reducing its GHG emission by 30% compared to its BaU scenario. This covers gases and sectors included in The Bahamas National Inventory[4].
- Having at least 30% of renewables in the country's energy mix.

In addition, in alignment with the BUR and increasing the ambition from its first NDC, The Bahamas is engaged in increasing the sales of electric and hybrid vehicles which will represent 35% and 15% (respectively) of total sales by 2030. It is important to mention that this increase in would need the reinforce from the above measures regarding the change in the energy matrix to increase the electricity generation from renewable sources.

Given the current country situation, The Bahamas is aware of the challenges associated with the fulfilment of these goals, and while there have been efforts in place to advance the issue of private electric and hybrid vehicle use, the country will further explore the benefit from a wider public transportation reform that promotes the public use of transportation to drive down greenhouse emissions. These goals will be achieved through the implementation of strategic components that will allow a transition to renewable energy while increasing energy efficiency and savings, the encouragement of sustainable agroforestry practices and an improvement on the waste management across the country.

NDC target (2030)	Component	SDG Linkages
Reduce GHG emissions by 30%	Promoting energy efficiency, sustainable practices across sectors and enhancing carbon capture.	
30% renewables in the energy mix	Promoting renewable generation and setting up incentive mechanisms.	
Electric and hybrid vehicles represent 35% and 15% of total vehicle sales, respectively	Promoting the electrification of road transportation.	

Table 4. Updated NDC mitigation goals and Sustainable Development Goals (SDG) linkages.

The NDC mitigation strategic components will be grounded in alignment with the TNC and BUR and through the implementation of the following series of actions covering all five (5) IPCC sectors of IPPU, Agriculture, LULUCF, Waste, and Energy, which has been disaggregated into Energy Demand, Electricity Generation and Transport sub-sectors (for additional details see the *Annex II. Detail of mitigation actions*):

Mitigation Actions	Sector/ Sub-sector
Promoting energy efficiency, sustainable practices across sectors and enhancing carbon capture	
Adoption and implementation of revised building code for all new buildings and renovations (including promotion and integration of nature-based solutions for low impact development) *	Energy Demand
Energy audits for all Government occupied buildings in New Providence	

[4] The Third National Greenhouse Gas Inventory Report to the UNFCCC for GHG emissions and removals 2001-2018 is developed by the Department of Environmental Planning and Protection of the Ministry of Environment and Housing of the Bahamas. The report has not been yet submitted to the UNFCCC.

Mitigation Actions	Sector/ Sub-sector
Energy audits for all existing Hotels and Industrial facilities	
Lighting retrofits for all Government occupied buildings in New Providence	
Public awareness campaign for energy efficiency and energy conservation*	
Streetlighting retrofit	
Energy Labelling program for all appliances	
Establish finance mechanism to increase access to low interest loans for EE and RE measures	
Energy Efficient Standards for air conditioning systems	
Promotion of Energy Efficiency in Water production	
Promotion of the use of Public Transport	Transport
Sustainable agroforestry practices in Andros, Grand Bahama, Acklins, Crooked Island, Planna and Samana Cays*	LULUCF
Conservation and Sustainable management practices and the establishment of a forest estate with 20% land cover	
Reestablishment & Rehabilitation of 50 ha of Davis Creek, Andros Ecosystem	
- 20% Phase Out of HFC	IPPU
Development of a waste management system to include composting systems	Waste
Introduction of a National Recycling Program	
Identify sustainable waste management practices	
Promoting renewable generation and setting up incentive mechanisms	
Increase solar water use by 40% for The Bahamas	Energy Demand
Introduce incentives for solar water heater installation	
Establish finance mechanism to increase access to low interest loans for EE and RE measures	
Five (5) carbon neutral Marine Protected Area facilities (photovoltaic substitute for diesel generators)	
Assessment of Renewable Energy Potential Across all occupied Islands*	Energy Generation
Achieve 30% Renewables on each major island by 2030*	
3MW Solar farm in Grand Bahama	
3MW of distributed generation in Grand Bahama through the Renewable Energy Rider program	
Additional 30MW of Solar PV Installed	
Installation of 20MW of wind power Installed	
Installation of 10MW of distributed generation on rest of islands	
Upgrade incentives for renewable energy systems	
Integrated resource and resilience plan for Grand Bahama Power Company and Bahama Power and Light*	
10 MW of installed distributed generation through a Renewable Energy Rider for Bahamas Power and Light (BPL) customers in New Providence	
Installation of approximately 1.2MW of distributed generation on 9 Government Facilities	
Reduce Transmission and Distribution losses by 2%	
Pilot Project for a 30kW OTEC Plant	
Installation of 15MW Waste to Energy	Energy Generation /Waste
Promoting the electrification of road transportation	
Standards implemented for vehicle fuel efficiency	Transport

Mitigation Actions	Sector/ Sub-sector
Improved Incentives for the purchase of electric vehicles*	
Assessment of Government vehicles and program for replacement of suitable vehicles with electric vehicles	
Introduction of electric vehicles to Government Fleet*	
Installation of charging stations for electric vehicles	

**This action has adaptation co-benefits*

Table 5. Actions supporting the Updated NDC mitigation goals.

6. Adaptation

Climate change is already causing a toll on the country with severe impacts on the territory, population, and major economic sectors. Tourism, which is the largest sector in The Bahamas, is affected by rising sea levels, coral bleaching, and impacts on biodiversity; also, agricultural yields are sensitive to changes in rainfall and temperature; other sectors critical to ensuring sustainable development, such as water resources, health and energy, are also affected by the region's increasingly variable climate and extreme weather events such as hurricanes.

In this context, The Bahamas seeks to highlight the sense of urgency to take definitive action to reduce the climate change-related impacts that are affecting the country with increasing force. This NDC includes specific strategic components for 2030 aimed at reducing the country's vulnerability and improve its ability to prepare and respond to climate change, while ensuring equitable, sustainable, and resilient growth, expanding the ambition by including additional coverage with respect to the previous NDC. These components focus on strengthening national policies and planning across all sectors, leveraging funding for adaptation action, strengthen public health security and resiliency to climate-related hazards, enhancing management of natural resources and promoting nature-based solutions, and improving the resilience of all infrastructure while strengthening and mainstreaming climate change education and awareness across all sectors.

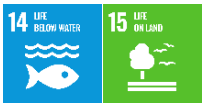
NDC target (2030)	Component	SDG Linkages
Reduce the country's vulnerability and improve its ability to prepare and respond to climate change, while ensuring equitable, sustainable, and resilient growth	Improve planning, preparedness, and response to climate emergencies	
	Strengthen the national regulatory framework and leverage adaptation funding	
	Protect human health and ensure population's food and water security	
	Improve management and conservation of ecosystems	
	Increase resiliency of energy infrastructure and diversify the Bahamian energy matrix with a focus on renewable	
	Improve education and awareness on climate change impacts	
	Enhance climate change information and monitoring	

Table 6. Updated NDC adaptation goals and SDG linkages.

A few examples of the actions that can be implemented by 2030 to support the targets of the adaptation strategic components are listed below:

Adaptation Actions	Sector
Improve planning, preparedness, and response to climate emergencies	
Improve access to accurate weather and climate-related data and projections (including flood maps to inform land use planning) to develop a better understanding of the risks and consequences of climate change across sectors	Cross-sectorial
Engage the community in the implementation of regular simulation evacuations	
Develop and implement community-based climate change adaptation plans on most vulnerable islands.	
Develop contingency planning for essential systems (electricity, heating, cooling, ventilation, water supply, sanitation services, waste management and communications) to ensure that they will not be cut off during extreme weather events	
Strengthening sensitive social and economic infrastructure across islands	
Develop and implement a plan for integrated coastal zone management to promote a sustainable development of coastal zones	
Build capacity among local communities for alternative livelihoods as a means of economic recovery/diversification to improve climate resilience	
Strengthen the national regulatory framework and leverage adaptation funding	
Conduct a national study on sectoral vulnerability based on geographic data and indicators	Cross-sectorial
Conduct a study on economics of climate change in The Bahamas with a cost benefit analysis of adaptation actions	Cross-sectorial
Develop and implement a National Adaptation Plan covering priority sector	Cross-sectorial
Review and update the National Policy for Adaptation to Climate Change	Cross-sectorial
Update and implement the Building Code so it considers the incorporation of the climate variable into infrastructure construction and reconstruction processes (including the promotion of nature-based solutions for low impact development)	Infrastructure
Enhance land use planning across the country to ensure climate change-related risks are appropriately addressed, including providing guidance on the location of coastal development	Human Settlements
Promote the use of public and private partnerships to increase funding for adaptation actions	Cross-sectorial
Leverage carbon markets to access adaptation funding	Cross-sectorial
Protect human health and ensure population's food and water security	
Explore new technological solutions for ensuring population's access to drinking water (e.g., a pilot project for a rainwater harvesting plant, that connects the most vulnerable households to a drinking water supply system, or for it to be maintained as backup in the event of a natural disaster)	Water Resources
Modelling extreme precipitation, sea-level rise and storm surge events, to develop a better understanding of the risks and consequences of these phenomena on water utility systems and availability of groundwater resources	Water Resources
Increase investments in desalination plants to ensure water availability, particularly on the islands with fewer freshwater resources (ex. New Providence) and promote on-site renewable power supplies (lowering costs of operation)	Water Resources
Raise awareness among vulnerable populations on climate change and climate-related health risks	Health

Adaptation Actions	Sector
Strengthen epidemiological surveillance systems and develop epidemic early warning systems informed by climate scenarios, to prevent the spread of infectious diseases	Health
Promote climate-smart clinics and health-related infrastructure	Health
Provide farmers with relevant meteorological information regularly, as well as weather forecasts, with the aim to foster climate-sensitive farming	Agriculture
Promote climate-smart sustainable agriculture measures (optimization of water use/storage, soil conservation, etc.) and agroforestry practices (including diversification of crops and raising livestock simultaneously, using significantly less land)	Agriculture
Assess climate change risk and impacts on the Agriculture/Fisheries sector (productivity and food security)	Agriculture/Fisheries
Investment in research on climate-resilient crops	Agriculture
Establishment of climate monitoring systems for farms	Agriculture
Improve management and conservation of ecosystems	
Establishment of payments for ecosystem services and other sustainable financing options to enhance protection of habitats for climate resilient communities (water purification, flood mitigation, carbon sequestration, etc.)*	Forests/Biodiversity
Review and update existing forest management plans (such as the Master Plan for The Bahamas National Protected Area System)	Forests
Increase (marine and terrestrial) protected areas under effective management	Biodiversity
Enhance protection and restoration of damaged/degraded ecosystems (e.g., terrestrial forests, mangroves, coral reefs) *	Biodiversity
Promote Nature-Based Solutions (NbS) approaches to sustain ecosystems that ensure resilience against climate-related threats (ex. coral reef and mangrove) involving local communities	Biodiversity
Develop ecological and economic analysis to increase knowledge on the value of forest, mangrove, coral reef and sea grass ecosystems	Forests/Biodiversity
Protect freshwater lenses to avoid losing natural well-fields to other land use	Water Resources
Increase resiliency of energy infrastructure and diversify the Bahamian energy matrix with a focus on renewable	
Achieve a 30% of renewable energy mix on each major island by 2030*	Energy
Increase the percentage of electric vehicles to Government Fleet*	Transport
Adoption and implementation of revised building code for all new buildings and renovations*	Infrastructure
Include climate change considerations in the design of new energy infrastructure (establish requirements), as well as contingency plans to reduce long power outages	Infrastructure
Awareness campaign for energy efficiency and energy conservation*	Energy
Assessment of renewable energy potential across all occupied islands*	Energy
Assessment of variations in energy demand derived from the effect of climate change	Energy
Develop incentives to encourage the purchase of electric vehicles*	Transport
Improve financial incentives for citizens/businesses to convert to solar*	Energy
Improve education and awareness on climate change impacts	
Strengthen effective delivery of climate change contents in the national educational program including usefulness of relevant meteorological information*	Cross-sectorial

Adaptation Actions	Sector
Increase awareness of the importance of coral reefs and mangrove forests for sustainable development and coastal protection	Biodiversity
Promote public awareness of the possible effects of climate change and disseminate good adaptation practices, in alignment with the Action for Climate Empowerment (ACE)	Cross-sectorial
Enhance climate change information and monitoring	
Establish national standards for collecting geospatial data particularly for coral reefs, fisheries, forests, agriculture, health, public works, water resources and supply, economics, and climate change awareness*	Cross-sectorial
Improve tracking and data collection of renewable energy installations (both private and public) in order to ensure we have an accurate record of all renewable energy systems*	

**This action has mitigation co-benefits*

Table 7. Examples of actions supporting the Updated NDC adaptation goals.

7. Information necessary for Clarity, Transparency and Understanding of The Bahamas NDC

According to Article 4.8 of the Paris Agreement, "Parties shall provide the information necessary for clarity, transparency and understanding" based on elaboration of information elements identified in paragraph 27 of the decision 1/CP.21. In this context, The Bahamas has adopted this guidance within its capacities and this section provides supplemental descriptive, explanative, and contextual information to facilitate clarity, transparency and understanding of the Updated NDC.

	Guidance provided by Decision 4/CMA	ICTU applicable to The Bahamas NDC
1	**Quantifiable information on the reference point (including, as appropriate, a base year):**	
a	Reference year(s), base year(s), reference period(s) or other starting point(s)	The reference year for the target is 2030 and the target is expressed both as relative to a BAU scenario for that year, and relative to 2010 baseline emissions. The BAU emissions projections have been calculated based on policies in place since 2013.
b	Quantifiable information on the reference indicators, their values in the reference year(s), base year(s), reference period(s) or other starting point(s), and, as applicable, in the target year	Total GHG emissions in The Bahamas rose from 5,214.80 Gg CO_2-eq in 2001 to 6,169.88 Gg CO_2-eq in 2018 (TNC and BUR1). The absolute emissions reductions resulting from this NDC contribution is 2,125Gg CO_2e (2030). Total economy-wide BAU emissions projections are 6,347Gg CO_2e (2030).
c	For strategies, plans and actions referred to in Article 4, paragraph 6, of the Paris Agreement, or polices and measures as components of nationally determined contributions where paragraph 1(b) above is not applicable, Parties to provide other relevant information	- National Policy for the Adaptation to Climate Change (2005) - National Adaptation Plan (under development) - Green Climate Fund Country Programme (under development)
d	Target relative to the reference indicator, expressed numerically, for example in percentage or amount of reduction	The Bahamas 2030 targets are: - 30% GHG emission reduction compared to its BAU scenario. - At least 30% of renewables in the country's energy mix. - Electric and hybrid vehicles represent 35% and 15% of total vehicle sales, respectively.
e	Information on sources of data used in quantifying the reference point(s)	Quantification of the reference indicators is based on data reported in The Bahamas´ emissions projections (BAU and mitigation scenarios) as part of its BUR, up until the end of the period. Following the end of the period quantification will be based on historic data reported in the National Inventory Report for the period, which can be compared with the previous projections made for that period (2001-2030)

	Guidance provided by Decision 4/CMA	ICTU applicable to The Bahamas NDC
F	Information on the circumstances under which the Party may update the values of the reference indicators	The Bahamas may update the base year data based on the continuous methodological improvement and data availability. Any updated information will be included in the Biennial Update Report or Biennial Transparency Report.
2	**Timeframes and/or periods for implementation**	
a	Time frame and/or period for implementation, including start and end date, consistent with any further relevant decision adopted by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA)	2020-2030
b	Whether it is a single-year or multi-year target, as applicable	Single-year target (2030)
3	**Scope and coverage**	
a	General description of the target	Absolute economy-wide emissions target expressed as a single-year target
b	Sectors, gases, categories and pools covered by the nationally determined contribution, including, as applicable, consistent with Intergovernmental Panel on Climate Change (IPCC) guidelines	Carbon dioxide (CO_2); Methane (CH_4); Nitrous oxide (N_2O). All sectors as defined by the IPCC 2006 Guidelines.
C	How the Party has taken into consideration paragraphs 31(c) and (d) of decision 1/CP.21	The scope of the coverage of this NDC has been extended to all categories of anthropogenic emissions in line with paragraph 31(c) by conducting a complete update of the historical sectors emissions. The Bahamas' GHG inventory is complete, recognizing that there are some estimated gaps related to baseline information, but are prioritized to be addressed in future inventory cycles - as per a UNFCCC QA exercise – in alignment with Transparency, Accuracy, Comparability, Completeness and Consistency (TACCC) principles. The country recognizes this and is committed to improving the completeness and accuracy of the GHG inventory for the next update of the NDC. While data management remains a challenge, over time data gaps are being closed. Support from international partners continues to be needed.
d	Mitigation co-benefits resulting from Parties' adaptation actions and/or economic diversification plans, including description of specific projects, measures and initiatives of Parties' adaptation actions and/or economic diversification plans.	Some of the proposed adaptation actions have mitigation co-benefits as they will contribute to GHG reduction. Further details on section 6.
4	**Planning Processes**	
a	Information on the planning processes that the Party undertook to prepare its nationally determined contribution and, if available, on the Party's implementation plans including, as appropriate:	See section 4

	Guidance provided by Decision 4/CMA	ICTU applicable to The Bahamas NDC
	(i) Domestic institutional arrangements, public participation and engagement with local communities and indigenous peoples, in a gender-responsive manner	For the validation of this NDC, consultative workshops were arranged with stakeholders.
	(ii) Contextual matters, including, inter alia, as appropriate: - (iia) National circumstances, such as geography, climate, economy, sustainable development and poverty eradication; - (iib) Best practices and experience related to the preparation of the nationally determined contribution; - (iic) Other contextual aspirations and priorities acknowledged when joining the Paris Agreement;	See sections 1 and 4
b	Specific information applicable to Parties, including regional economic integration organizations and their member States, that have reached an agreement to act jointly under Article 4, paragraph 2, of the Paris Agreement, including the Parties that agreed to act jointly and the terms of the agreement, in accordance with Article 4, n/a 16 paragraphs 16 18, of the Paris Agreement	*(to be confirmed)*
c	How the Party's preparation of its nationally determined contribution has been informed by the outcomes of the global stocktake, in accordance with Article 4, paragraph 9, of the Paris Agreement	Not applicable. The first global stocktake will occur in 2023. The Bahamas will take its outcomes into account in the preparation of future NDCs.
d	Each Party with a nationally determined contribution under Article 4 of the Paris Agreement that consists of adaptation action and/or economic diversification plans resulting in mitigation co-benefits consistent with Article 4, paragraph 7, of the Paris Agreement to submit information on: (i) How the economic and social consequences of response measures have been considered in developing the nationally determined contribution; (ii) Specific projects, measures and activities to be implemented to contribute to mitigation co – benefits, including information on adaptation plans that also yield mitigation co-benefits, which may cover, but are not limited to, key sectors, such as energy, resources, water resources, coastal resources, human settlements and urban planning, agriculture and forestry; and	Not applicable for this NDC

	Guidance provided by Decision 4/CMA	ICTU applicable to The Bahamas NDC
	economic diversification actions, which may cover, but are not limited to, sectors such as manufacturing and industry, energy and mining, transport and communication, construction, tourism, real estate, agriculture and fisheries.	
5	**Assumptions and methodological approaches, including those for estimating and accounting for anthropogenic greenhouse gas emissions and, as appropriate, removals**	
a	Assumptions and methodological approaches used for accounting for anthropogenic greenhouse gas emissions and removals corresponding to the Party's nationally determined contribution, consistent with decision 1/CP.21, paragraph 31, and accounting guidance adopted by the CMA	The Bahamas will account for its 2030 single-year target on the basis of total net national emissions reported in its National Inventory Report for the year 2030, submitted under the Paris Agreement.
b	Assumptions and methodological approaches used for accounting for the implementation of policies and measures or strategies in the nationally determined contribution	*(to be confirmed)*
c	If applicable, information on how the Party will take into account existing methods and guidance under the Convention to account for anthropogenic emissions and removals, in accordance with Article 4, paragraph 14, of the Paris Agreement, as appropriate	Global Warming Potentials (GWP) are based on IPCC AR5. The recommendations on accounting (accountability) contained in Annex II to Decision 4/CMA.1 shall be used for the accounting of anthropogenic emissions and removals. The 2022 NDC update GHGI is based on the 2006 IPCC Guidelines methodologies. It covers the period 2001-2018.
d	IPCC methodologies and metrics used for estimating anthropogenic greenhouse gas emissions and removals	
e	Sector-, category – or activity-specific assumptions, methodologies and approaches consistent with IPCC guidance, as appropriate, including, as applicable:	The Bahamas will partially address emissions and subsequent removals from natural disturbances in accounting for its NDC. The carbon stock changes from natural disturbances will partially be included in the national emissions totals (emissions from fires has not been estimated yet, as described in The Bahamas's BUR), consistent with approaches set out in the IPCC 2006 Guidelines. The Bahamas will continue to provide information on its approach to addressing emissions and subsequent removals from natural disturbances in its next Inventory reporting cycle.
	(i) Approach to addressing emissions and subsequent removals from natural disturbances on managed lands;	The Bahamas will partially address emissions and subsequent removals from natural disturbances in accounting for its NDC. The carbon stock changes from natural disturbances will partially be included in the national emissions totals (emissions from fires has not been estimated yet, as described in The Bahamas's BUR), consistent with approaches set out in the IPCC 2006 Guidelines. The Bahamas will continue to provide information on its approach to addressing emissions and subsequent removals from natural disturbances in its next Inventory reporting cycle.

	Guidance provided by Decision 4/CMA	ICTU applicable to The Bahamas NDC
	(ii) Approach used to account for emissions and removals from harvested wood products;	Not applicable (emissions from harvested wood products have not been estimated as part of the emissions inventory reported under the BUR).
	(iii) Approach used to address the effects of age-class structure in forests;	Not applicable for this NDC
f	Other assumptions and methodological approaches used for understanding the nationally determined contribution and, if applicable, estimating corresponding emissions and removals, including: (i) How the reference indicators, baseline(s) and/or reference level(s), including, where applicable, sector-, category – or activity-specific reference levels, are constructed, including, for example, key parameters, assumptions, definitions, methodologies, data sources and models used; (ii) For Parties with nationally determined contributions that contain non-greenhouse-gas components, information on assumptions and methodological approaches used in relation to those components, as applicable; (iii) For climate forcers included in nationally determined contributions not covered by IPCC guidelines, information on how the climate forcers are estimated; (iv) Further technical information, as necessary.	*(to be confirmed)*
g	The intention to use voluntary cooperation under Article 6 of the Paris Agreement, if applicable.	The Bahamas has put into place a legislative and policy regime, i.e., the Climate Change and Carbon Markets Initiative Act and the Carbon Trading Act to facilitate both Article 6 and market mechanisms in the VCM, which can benefit the country in the implementation of its climate targets.
6	**How the Party considers that its nationally determined contribution is fair and ambitious in the light of its national circumstances**	
a	How the Party considers that its nationally determined contribution is fair and ambitious in the light of its national circumstances	Although its contribution to global GHG emission is residual, as part of its international commitment The Bahamas is putting its efforts to transition to a low carbon sustainable development and plans to achieve its emission reduction targets by promoting (i) energy efficiency, sustainable practices across sectors and enhancing carbon capture, and (ii) renewable generation and the setup of incentive mechanisms. In this context, The Bahamas Updated NDC reflects the country's commitment in enhancing its mitigation efforts by 2030 with an increase in ambition from its previous NDC targeted at the promotion of the electrification of road

	Guidance provided by Decision 4/CMA	ICTU applicable to The Bahamas NDC
		transportation. The specific target is to have a 35% and 15% representation of electric and hybrid vehicles (respectively) of the total vehicles sales by 2030. In addition, climate change impacts are already taking a toll on the country and increasing the development challenges that the country, as many other Caribbean SIDS, face. In this context, this Updated NDC not only reflects an increased ambition in terms of renewable transition but, in the light of national circumstances, also expands its coverage to reduce the country's vulnerability and improve its ability to prepare and respond to climate change while ensuring equitable, sustainable, and resilient growth.
b	Fairness considerations, including reflecting on equity	Refer to 6(a)
c	How the Party has addressed Article 4, paragraph 3, of the Paris Agreement	Refer to 6(a)
d	How the Party has addressed Article 4, paragraph 4, of the Paris Agreement	The Bahamas 2030 targets are "economy-wide absolute emission reduction targets".
e	How the Party has addressed Article 4, paragraph 6, of the Paris Agreement	As a Small Island Developing State, The Bahamas 2030 targets reflect the country's context and circumstances.
7	**How the nationally determined contribution contributes towards achieving the objective of the Convention as set out in its Article 2**	
a	How the nationally determined contribution contributes towards achieving the objective of the Convention as set out in its Article 2	This Updated NDC will contribute to "strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty" by reducing its contribution to global GHG emissions that are affecting the climate system and implementing actions that will reduce the country's vulnerability and improve its ability to prepare and respond to climate change, while ensuring equitable, sustainable, and resilient growth.
b	How the nationally determined contribution contributes towards Article 2, paragraph 1(a), and Article 4, paragraph 1, of the Paris Agreement	With the GHG emission reduction target set in this Updated NDC, The Bahamas will contribute to "Holding the increase in the global average temperature to well below 2°C above preindustrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change". In alignment with its BUR and TNC, the country is committed in implementing a series of mitigation actions/strategies across the following categories: Energy Demand, Electricity Generation, Transport, Agriculture, Land Use, Land Use Change and Forestry, Industrial Processes and Product Use and Waste, that will support the achievement of the 2030 target.

8. NDC Implementation

8.1. Institutional Arrangements

To ensure an adequate implementation of the Updated NDC, it is important to guarantee the existence of effective, flexible and sustainable institutional arrangements that ensure appropriate coordination between the different intergovernmental institutions, private sector entities and other key actors in the Bahamian society.

In this context, the implementation of this NDC will be coordinated by the Ministry of Environment and Natural Resources' Department of Environmental Planning and Protection (DEPP) as the country's operational focal point for the UNFCCC, with the support from The Bahamas National Climate Change Committee (NCCC), that includes representatives from government, private and civil agencies and provides strategic level guidance on climate change related activities, policies and plans, and functions as the National Project Consultative Committee for national reporting to the UNFCCC or other climate entities. Other key actors that will facilitate the development, implementation, follow-up and monitoring of the NDC include the different national agencies, and other public and private actors.

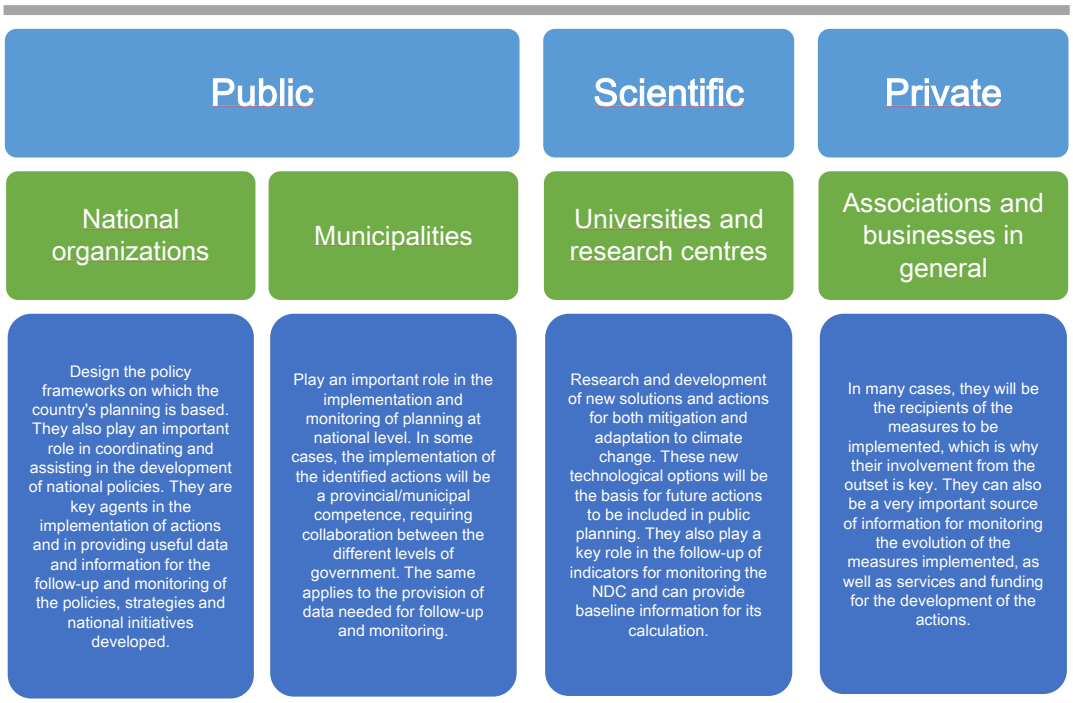


Figure 2. Key actors for NDC implementation. Source: Own elaboration.

8.1.1. Mitigation Institutional Arrangements

The national process for preparing The Bahamas' energy initiatives is currently guided by a collaboration between the Ministry of the Environment and Natural Resources, Bahamas Power and Light (BPL), Department of Environment Planning and Protection, Water and Sewerage Corporation and the Bahamas Chamber of Commerce. The Department of Environmental Planning and Protection (DEPP) is the institution responsible for conception, proposing and implementing the national environmental policy and the national environmental management program; guiding, coordinating and supervising all the activity of the Ministry in accordance with the law; and ensuring the correct application of the technical and scientific development policy for the sector's human resources. These institutional arrangements must be strengthened and formalized to ensure that all segments of society are involved.

8.1.2. Adaptation Institutional Arrangements

The Government of the Bahamas established the National Emergency Management Agency (NEMA) to coordinate the preparedness, response to and mitigation of emergencies on a national level through collaboration, cooperation, coordination, between government and non-governmental agencies. NEMA is headed by a public officer holding the office of Director. The Director is assisted by several public officers appointed or assigned to NEMA and other persons whose services have been engaged by, or who have volunteered their services to NEMA. There is also an Advisory Committee of NEMA composed of representatives from relevant Government Ministries and Departments and from the private sector. The Committee meets to discuss means to mitigate the impact of disasters, including hurricanes. Each of the Government Agencies is also responsible to prepare a Disaster Preparedness Plan which details the steps the agency takes in preparing for and responding to a disaster whether natural or man-made. The Advisory Committee of NEMA also focuses on the importance of being properly prepared for a hurricane or other disaster.

The Government's disaster management programme has been linked to the urban renewal initiative in Nassau. Regarding emergency preparedness and response, the Ministry of Health and Environmental Services counts with the Health Emergency Plan that is activated before hurricane landfall and staff deployed with emergency supplies to all the islands to be present in a state of readiness. Likewise, the Red Cross, The Bahamas Defense Force and the Police Department have programs, however they require strengthening and institutionalization through appropriate legislation. In addition, the Draft National Disaster Plan sets out the Basic Plan, Emergency Support functions for the key response and support agencies, the Recovery Function and Standard Operating Procedures for the National Emergency Operations Centre.

8.2. NDC monitoring

For an adequate implementation of the Updated NDC, it is necessary to have the appropriate monitoring tools to obtain reliable and transparent information on its state of progress. At the same time, appropriate communication and dissemination channels must be in place to enable effective communication of its implementation to the different stakeholders.

Having ratified the Paris Agreement, The Bahamas has the responsibility to fulfil the requirements of the Paris Agreement, including the Enhanced Transparency Framework (ETF) that specifies how Parties to the Agreement must report on progress in climate change mitigation, adaptation measures and support needed. In this regard, The Bahamas is committed to ensuring transparency and openness of key information related to climate change impacts and progress in climate action by measuring, reporting, and verifying the following activities and actions at the national level:

- Activities that cause climate change (Greenhouse Gas Inventory).
- Actions taken that prevent climate change (mitigation actions and NDC implementation progress).
- Climate change impacts and adaptation.
- Actions taken to adapt to climate change (adaptation actions and NDC implementation progress).
- Financial and other support needed and received for undertaking actions above.

In this context, the country is currently developing a Monitoring, Reporting and Verification (MRV) system to generate information on progress in the implementation of the Updated NDC, as well as information on the funding, technology transfer and capacity building support requested and received. Once implemented, this system will allow for the proper monitoring of the Updated NDC actions through the application of monitoring indicators for mitigation and adaptation actions that will, in turn, measure the success of each action and identify corrections, adjustments and updates as needed.

The information and knowledge provided by these indicators is a decisive input for decision-making, as well as for ensuring the success of the NDC. However, it should be noted that in order to define an agile

monitoring system, it is necessary to bear in mind the availability of basic information and data quality, and it is necessary to continue working on improving the data surveying and collection processes.

In alignment with other recent national reports to the UNFCCC, the key implementation and stakeholder institutions for climate MRV in The Bahamas include:

Area	Stakeholders
Mitigation	1. Dept of Agriculture 2. Bahamas Agricultural Health and Food Safety Authority Forestry Unit 3. Bahamas National Trust (BNT) 4. Bahamas Reef Environment Educational Foundation (BREEF) 5. The Nature Conservancy 6. Ministry of Environment and Natural Resources 7. Grand Bahama Power Company 8. Bahamas Power and Light 9. Port Department 10. Bahamas Maritime Authority 11. Road Traffic Department 12. Dept of Statistics 13. Customs Dept. 14. Dept of Environmental Health Services 15. Ministry of Works 16. Water and Sewerage Corporation (WSC) 17. Bahamas Waste 18. University of Bahamas 19. Department of Lands and Surveys 20. Fuel Importers 21. Industry Companies (Salt, Cement) 22. Easy Car Sales (RE Electric Vehicle sales) 23. Construction Association 24. Bahamas Chamber of Commerce and Employers Confederation (BCCEC) 25. Family Islands Chambers of Commerce 26. Raising Awareness about The Bahamas Landfill (RABL) - community awareness group 27. Re-earth- environmental advocacy group
Adaptation	1. University of The Bahamas, Climate Change Adaptation and Resilience Research Centre (CCARR) 2. BREEF 3. TNC 4. BNT 5. Dept of Social Services 6. Dept of Gender and Families 7. NEMA 8. Dept of Marine Resources 9. WSC 10. Ministry of Health 11. Ministry of Tourism 12. Ministry of Works 13. Dept of Meteorology 14. Bahamas Agriculture and Marine Science Institute (BAMSI) 15. The Bahamas Bureau of Standards and Quality (BBSQ) 16. University of The Bahamas, Faculty of Pure & Applied Sciences 17. IOM Bahamas

Area	Stakeholders
	18. Civil Society Bahamas (CSB) 19. Bahamas Technical and Vocational Institute (BTVI) 20. Ministry of Education 21. Ministry of Public Works 22. Young Marine Explorers (YME) (Coastal conservation group) 23. Caribbean Challenge Initiative (CCI) - work group on protected areas under UN Convention on Biological Diversity. 24. Department of Physical Planning (Town Planning Committee) 25. One Eleuthera Foundation 26. Cape Eleuthera Institute, The Island School 27. Perry Institute of Marine Science 28. Bahamas Red Cross Society 29. Buckeye Bahamas Hub 30. Representatives from the Tourism Industry 31. Local Government
Support requested and received	1. Bahamas Protected Areas Fund 2. Dept of Environmental Planning and Protection (DEPP) 3. Office of the Prime Minister • The Prime Minister's Delivery Unit. • Public Sector Investment Programme (PSIP). • The Economic Development and Planning Unit. • Climate Change and Environmental Advisory Unit. • Sustainable Development Goal Unit. 4. Ministry of Finance • Economic Development and Planning • Budgetary Planning & Central Bank of The Bahamas • Government Finance and Borrowings • Relations with Multi-Lateral Financial Institution 5. Bahamas Technical and Vocational Institute (BTVI) 6. Bahamas National Trust 7. Bahamas Development Bank

9. NDC Financing

The mitigation and adaptation targets presented in the updated NDC are contingent upon receiving international support for technology transfer, capacity-building and financial resources, including through the Green Climate Fund (GCF), the Adaptation Fund (AF), multilateral and bilateral agreements and the local private sector. The indicative cost for The Bahamas identified NDC measures through 2030 is in excess of USD 4000 million for mitigation and adaptation actions. The exact cost for these activities will be further developed over the next few years. As a result of low international ambition for mitigation as well as still very high subsidies for financing of carbon intensive activities, the cost of adaptation is expected to continue to increase and even go beyond the ability of certain sectors to adapt. The Bahamas is not able to pay for the incremental cost of adaptation and mitigation while supporting the development agenda of the country.

10. References

Bahamas National Stadistical Institute. (2019). *GROSS DOMESTIC PRODUCT of The Bahamas by Islands*.

Bahamas National Stadistical Institute. (2022). *ADVANCED ESTIMATES OF GROSS DOMESTIC PRODUCT BY MAJOR FAMILY ISLANDS & ISLAND GROUPS SERIES: 2021*. https://www.bahamas.gov.bs/wps/wcm/connect/f171ccdc-92e0-469c-9180-54ba6e6789e4/Family+Island+GDP+2021-Press+Release.pdf?MOD=AJPERES

Bahamas Power and Light. (2020). *Requirements for Grid Interconnection of Renewable Generation Systems*. http://www.blpc.com.bb/images/brochures/requirements_for_grid_interconnection.pdf

CAAB. (2021). *The Civil Aviation Authority Bahamas Environmental Regulation* (p. 96). https://doi.org/10.4337/9781785368547.00014

Collins, M., Sutherland, M., Bouwer, L., Cheong, S.-M., Frölicher, T., Des Combes, H. J., Roxy, M. K., Losada, I., McInnes, K., Ratter, B., Rivera-Arriga, E., Susanto, R. D., Swingedouw, D., & Tibig, L. (2019). Chapter 6: Extremes, Abrupt Changes and Managing Risks. *IPCC SR Ocean and Cryosphere*, 6-1-6–67.

Commonwealth of The Bahamas. (2001). First national communication on Climate Change. In *First National Communication on Climate Change* (Issue April, pp. 1–98). http://www.best.gov.bs/Documents/FNC main doc.pdf

Commonwealth of The Bahamas. (2015). *The Bahamas' National Maritime Policy*. https://www.bahamas.gov.bs/wps/portal/public/About Us/Goals and Objectives/!ut/p/b1/vZXbkqo4GIWfpR-gm4RT4BIR5YwQIsiNBR4QBEWg5fD0gz17ampmqtu52CW5orJWfcX6swgVUSEVXeJ7lsZtdr3ExeM94rfuDLjYFBlpqS0Y4BqqJLAQAcAzk2AzCcA3jwS-_AxYWpLECpZD-yLQoAx5g3BgqdK__N8JNPinf-l

Department of Statistics. (2010). *The Commonwealth of The Bahamas: Census of Population and Housing*. 197.

GBPC. (2022). *Grand Bahama Power Company rules and regulations for renewable generation systems* (p. 20).

GCF. (2020). *Climate resilience of the water sector in The Bahamas*.

GFDRR. (n.d.). *ThinkHazard!*

Gutiérrez, J. M., R.G. Jones, G.T. Narisma, L.M. Alves, M. Amjad, I.V. Gorodetskaya, M. Grose, N.A.B. Klutse, S. Krakovska, J. Li, D. Martínez-Castro, L.O. Mearns, S.H. Mernild, T. Ngo-Duc, B. van den Hurk, & J.-H. Yoon. (2021). *Atlas. In Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (V. Masson-Delmotte, P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L.Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K.Maycock, T. Waterfield, O. Yelekçi, R. Yu, & B. Zhou (eds.)). Cambridge University Press. https://interactive-atlas.ipcc.ch/

IPCC. (2021). *The Physical Science Basis Summary for Policymakers: AR6*.

Knutson, T., Camargo, S. J., Chan, J. C. L., Emanuel, K., Ho, C. H., Kossin, J., Mohapatra, M., Satoh, M., Sugi, M., Walsh, K., & Wu, L. (2019). Tropical cyclones and climate change assessment. *Bulletin of the American Meteorological Society*, *100*(10), 1987–2007. https://doi.org/10.1175/BAMS-D-18-0189.1

Magnan, A. K., Garschagen, M., Gattuso, J. P., Hay, J. E., Hilmi, N., Holland, E., Isla, F., Kofinas, G., Losada, I. J., Petzold, J., Ratter, B., T.Schuur, Tabe, T., & Wal, R. van de. (2019). Cross-Chapter Box 9: Integrative Cross-Chapter Box on Low-Lying Islands and Coasts. In H.-O. Pörtner, D. C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, K. Mintenbeck, A. Alegría, M. Nicolai, A. Okem, J. Petzold, B. Rama, & N. M. Weyer (Eds.), *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate* (pp. 657–674).

Ministry of Environment and Housing. (2013). *Environmental Health (Vehicle emissions) regulations*.

Ministry of the Environment and Housing. (2013). *The Bahamas National Energy Policy, 2013-2033* (p. 40). https://www.bahamas.gov.bs/wps/wcm/connect/c0934c9b-fc0e-4496-90e7-5d273c57553a/energypolicy.pdf?MOD=AJPERES

Ministry of the Environment and Housing. (2014). *Forestry Regulations*.

Ministry of Works and Utilities. (2003). *Bahamas Building Code - Third Edition 2003* (3rd ed.).

Parliament of The Bahamas. (2008). *Montreal Protocol (Controlled substances) Act* (p. 17). Official Gazette the Bahamas.

Parliament of The Bahamas. (2015a). *Energy Act* (p. 87). Official Gazette the Bahamas.

Parliament of The Bahamas. (2015b). *The Water and Sewerage Corporation Act*. Official Gazette the Bahamas.

Rolle, S., Minnnis, J., & Bethell-Benett, I. (2020). *Tourism Development, Governance and Sustainability in The Bahamas*. https://books.google.ca/books?hl=en&lr=&id=Ki3tDwAAQBAJ&oi=fnd&pg=PT11&dq=tourism+bahamas&ots=SpLTVlYrHc&sig=RwvlKNt5tW0lttddoe6lODm4F60&redir_esc=y#v=onepage&q=tourism bahamas&f=false

Simpson, M. C., Scott, D., New, M., Sim, R., Smith, D., Harrison, M., Eakin, C. M., Warrick, R., Strong, A. E., Kouwenhoven, P., Harrison, S., Wilson, M., Nelson, G. C., Donner, S., Kay, R., Geldhill, D. K., Liu, G., Morgan, J. A., Kleypas, J. A., … Stager, H. (2009). *An Overview of Modeling Climate Change Impacts in the Caribbean Region with contribution from the Pacific Islands*. United Nations Development Programme (UNDP).

The Commonwealth of The Bahamas. (2005). National Policy for the Adaptation to Climate Change. In *National Policy for the Adaptation to Climate Change* (Issue March).

The Government of The Bahamas. (2004). *Environmental health services (collection and disposal of waste) regulations* (p. 20).

The Government of The Bahamas. (2010). *Forestry Act* (p. 23). Official Gazette the Bahamas.

The Government of The Bahamas. (2014a). *Forestry Act (Amendment)*. Official Gazette the Bahamas.

The Government of The Bahamas. (2014b). *The Second National Communication Report of The Commonwealth of The Bahamas Under The United Nations Framework Convention on Climate Change (UNFCCC)*. 191. https://unfccc.int/sites/default/files/resource/bhsnc2.pdf

The Government of The Bahamas. (2015). *Bahamas Intended Nationally Determined Contributions (INDC) under the UNFCCC*.

The Government of The Bahamas. (2020). *2020 Fiscal Strategy Report*. www.bahamasbudget.gov.bs

The World Bank Group. (2021). *Climate Change Knowlegde Portal*. https://climateknowledgeportal.worldbank.org/

The World Bank Group. (2022). *Bahamas, The - Vulnerability | Climate Change Knowledge Portal*. https://climateknowledgeportal.worldbank.org/country/bahamas/vulnerability

United Nations. (n.d.). *World Population Prospects - Population Division*. Retrieved September 27, 2022, from https://population.un.org/wpp/

World Health Organization, U. N. F. C. on C. C. (2021). *Health and Climate Change Country Profile 2021. Bahamas*.

Annex I. SWOT Analysis

AI.1. Mitigation

Energy

Strengths	Weaknesses
• Good potential for use of renewable energy sources (bioenergy, solar, wind, ocean thermal energy conversion OTEC, wave energy and waste-to-energy). • Steep drop-offs in most of the major islands that make OTEC technology feasible, as well as seawater district cooling and deep-well reverse thermal conversion technologies. • No proven existing reserves of easily exploitable fossil fuel sources. • The Ministry of Finance is developing and implementing a programme of incentives and fiscal measures to enable and support investments in modern facilities and infrastructure in the energy sector.	• Limited financial (public sector) resources, to support greater provision of renewable energy and staffing/capacity needed in the area of renewables & environmental protection. • Lack of adequate data (national energy balance). • Weak coordination amongst different Ministries which limits the coordination of the identified mitigation action. • Lack of awareness, knowledge and skills among users, planners, designers, and service providers about renewable energy technologies and how they can be applied. • Historically, carbon reduction and climate change are treated with low priority by Political directorate. • Limited staffing (experts). • Slow bureaucracy in Public Service. • Limited policies/laws that encourage energy conservation and no energy efficiency standards. • Policy inconsistencies: Actual Electricity Act of 1956 does not allow independent power producers (IPPs) to sell to the national grid. This is a major barrier to the use of renewable sources. • Grid intertie has not been effectively implemented, so net metering in necessary • Low levels of awareness of energy conservation practices (energy efficiency). • Low efficiency of energy production and distribution (due to leaks and losses that entails in representative amounts of fossil fuel waste). • High dependency on fossil fuel imports. • Limited sectoral training in GHG accounting.
Opportunities	**Threats**
• Transition to electric vehicles. • Retrofit public buildings so that they are more energy efficient. • Weatherize low- and middle-income households so that they are also more energy efficient. • MRV system (finance) – capacity building. • Improved technologies within energy efficiency are available.	• Unwillingness to invest in plant upgrades and new infrastructure. • Resistance to subsidy removal on fuels. • Slow legislative agenda / implementation changes in country´s political landscape can cause disruptions to the climate change program. • High capital costs for the implementation of renewable energy initiatives. • Unwillingness to supply data to relevant authorities. • A natural disaster area. The Bahamas is in the tropical belt and is the direct path of hurricanes.

• Declining cost of renewable energy. • Current high cost of fossil fuels makes renewables and alternative fuels & technologies economically attractive (reasonable payback). • Introduction of carbon emissions and energy efficiency as factors in negotiations and for commitments. • Availability of access to climate finance grants and low-interest loans for SIDS to help reduce the costs of implementation of renewable energy initiatives. • Increase of the energy security and coverage. • Obtention of more affordable energy to consumers due to the reduction of costs of energy production. • Development of new industry with the provision of opportunities or innovation and employment generation. • Archipelagic nature of The Bahamas provides a viable option to install small renewable energy systems in mini-grids or stand-alone systems. • Reduction of the dependency of imported fossil fuels. • Reduction of energy losses due to the distribution of electricity through the grid. • The implementation of energy efficiency and conservation measures will be the least expensive, lowest risk and most effective means of immediately reducing energy consumption. • Improvement of air pollution and air quality. • Potential business opportunities for the private sector (subject to the review and update of the actual electricity act of 1956).	• Oil exploration and extraction, as it will increase greenhouse gas emissions globally, at a time when the UN Secretary General has called to accelerate the phase-out of coal and fossil fuel extractions. In addition, this is a threat given the failed exploration activities in 2021, including technical failures and a lack of accountability by exploring corporations to pay related debts to the government and others.

Transportation

Strengths	Weaknesses
• The government is encouraging people to shift to electric vehicles. ○ By 2030, The Bahamas intends to sell 15% hybrid vehicles and 35% electric vehicles. • The operational cost of electric vehicles is cheap compared to conventional cars. • The government is committed to assessing the possibility to switch from fossil fuels to electric vehicles. • Coherence with political context and international goals (climate change and air pollution). • Import duties for electric vehicles is 11% compared to roughly 80% for others.	• High Initial cost of electric vehicles compared to conventional vehicles. • Existence of gaps of data on climate change and energy usage in the transportation sector. • Limited public resources to build infrastructure for electric vehicles (enough electric vehicle charging stations). • Oil companies supply the fuels and lubricants derived from fossil fuels used in the transportation sector. • Tax revenues might go down in the transition to EV. • Lack of technical knowledge from policymakers. • Cultural challenges to switching to public transportation, such as public safety. • The vehicles used for public transportation are not commonly fuel efficient. • Extreme events may affect not only EV infrastructure but also public transportation. • Supply chain challenges for electric vehicles. • Limited sectoral training in GHG accounting. • Non reliable electricity. • Lack of training on new technology and competition and location of charging station.
Opportunities	**Threats**
• Financing opportunities using climate finance or carbon markets. • Air quality benefits linked with the use of electric vehicles. • Reducing GHG emissions through the transportation sector. • Declining cost of electric vehicles. • Electric vehicles are more attractive due to the increasing fuel costs. • Implementation of standards for vehicle fuel efficiency, which would reduce consumption of fossil fuels. • Installation of charging stations for electric vehicles. • Incentives for electric vehicles distributors and buyers. • Improving public transportation systems to provide better social benefits. • Changing practices and preferences. • Upskill in auto-mechanics and skills in repairing electric vehicles. • Accessibility for walking and biking will also be key for low-carbon transportation.	• Geographical vulnerabilities and dependency on imported vehicles. Decisions in other markets will therefore affect the country. • Expensive initial cost of electric vehicles could cause consumer reluctance. • Changing cultural practices (e.g., waiting to charge the vehicle), might not be accepted. • Social impacts, such as unemployment generated by self-charging electric vehicle stations. • Vandalism in electric vehicle stations. • Currently, there are few small islands that can only be reached by boat; thus, marine transportation might be harder to address. • Potential revenue losses for the government if switching to electric vehicles (because a reduction in the number of fossil fuel cars can lead to a reduction in road taxes levied depending on the type of fuel used in cars). • Unemployment in the auto-mechanic sector. • Centralizing the solution in electric vehicles, could impact the result, public transportation and fuels efficiency will need to take an important role as well. • Potential for mass damage to public charging stations due to extreme weather events.

IPPU

Strengths	Weaknesses
• International regulations in place to limit GHG intensive HFC gases.	• Kigali Amendment not yet ratified. • Lack of data. • Need for internal regulation. • Limited sectoral training in GHG accounting.
Opportunities	**Threats**
• Compatibility of eco-friendly refrigerants. • Synergies with Energy efficiency measures. • Creating strategies involving the private sector on the climate change mitigation activities within the IPPU sector. • Synergies in GHG regulations for The Bahamas and Port Area.	• Difficulties for monitoring leaks on GHG- intensive HFC gases. • Relying on imports for refrigerants.

Land Use, Land-Use Change and Forestry (LULUCF)

Strengths	Weaknesses
• Environmental Assessments required by regulation for certain interventions. • Public appreciation for green spaces (residents and tourists). • Forestry Act and Forestry Regulations provide a regulatory framework for LULUCF activities, including the establishment of a permanent forest estate. • In accordance with the Forestry Act of 2010, the Ministry of the Environment formed a Forestry Unit to oversee, manage, and develop forests. This unit is led by a Director of Forestry. • Forestry and land cover in national park system, with The Bahamas National Trust legislation. • The forestry and land use change sectors serve as a sink for greenhouse gas emissions in The Bahamas. • Carbon markets Act. • Eco-tourism activities are already taking place.	• Lack of information on the potential climate change impacts on Bahamian forests and their vulnerability. • Competition for space with other economic sectors. • Low soil fertility in certain areas and soil fragility. • Lack of awareness in some economic sectors about the benefits and co-benefits of forests. • Lack of participation on international Committees in this sector. • Blue carbon projects tend to be very expensive if co benefits are not considered and monetized. • Significant lack of capacity, in terms of resources, in the Forestry Unit. Lack of capacity in the National Trust. • Lack of standardized methods of monitoring and local ownership maps. Lack of standardization in environmental assessments. • Lack of a clear definition of authority for protected areas. • Lack of a comprehensive land ownership tenure and jurisdiction map for the Bahamas. • Limited sectoral training in GHG accounting.
Opportunities	**Threats**
• Need for compliance with international standards and protocols. • To establish institutional arrangements for forestry (Forestry Unit). • To assess the existing forest management plans. • Enabling the sustainable use of the resources found in the natural pine forests. • Carbon markets and climate finance can provide incentives. Blue and green carbon stand out in voluntary carbon markets. • Educational programs at the University of The Bahamas. • Co benefits of green/blue areas: leisure, erosion reduction, tourism and economic activities, etc. • Potential markets for timber-based products. • Ministry of Tourism has issued a Global Sustainable Tourism Certificate. • Mitigation of effects in temperature through technological advancement and climate-controlled spaces. • Many partners with formal relationships have data and are willing to share. (Bahamas National Trust, Real Estate Agencies, The Royal Bahamas Police Force, Water and Sewerage Corporation).	• Approving permits based on ineffective environmental impact assessments. • The land can become exhausted after a few seasons of farming. • The agricultural sector is greatly affected by international competition. • Potential for increased incidence of pests. • Plants/crops sensitive to increasing temperature. • Potential high risk of forest fires. • Loss of native animal and plant species. • Incoming mining projects and Mining Act. • Lack of comprehensive land use planning. • Pressure of development, e.g., housing, infrastructure needs. • Climate change impacts may include drought, storm energy and SLR and each of these impacts should be treated differently. • Illegal land clearing.

Waste

Strengths	Weaknesses
• Domestic, industrial, and commercial waste regulations. • Construction and demolition waste regulations. • Existing experiences separating cooking oil and composting. • Consideration is being given to building a 15-Megawatt waste-to-energy power station for both electricity production and waste management.	• Lack of public awareness. Tourists sometimes show more awareness than locals. • Waste is not separated at household level. • Lack of baseline data. • Tourism waste is on the rise, and the existing strategy has not taken this into full account. • Less than 20% of residences are connected to public sewage drainage, collection, treatment, and disposal systems, hence the majority of liquid waste is disposed of through septic tanks. • Accumulations of waste affect the local water resources.
Opportunities	**Threats**
• Technological options available to improve waste management (although potentially expensive and require substantial areas). • Financial support can be provided by climate finance or carbon markets. • There is a great market for aluminum cans and glass bottles. • Waste can be a useful resource to produce energy (e.g., organic waste can produce cooking gas in household digesters, methane gas can be collected from landfills). • Education can transform people's behavior. • Public-private partnerships can deliver good results.	• Existing policies need to be updated. • Running out of land to dispose of the waste. • Lack of technology to The Bahamas to implement non-conventional waste management. • Existing informal settlements that are currently managing waste.

AI.2. Adaptation

Strengths	Weaknesses
• Extensive natural adaptation (ex. mangrove and coral) coverage which act as a barrier towards climate change effects. • Increased political will, focused on climate change aspects (an example is the creation of the NCCC). • Electricity has been supplied to all major islands. • Recent infrastructure improvements (including roads, airports, water and sewerage). • Legislation and international protocols to protect the environment are in place. • The existence of a parametric insurance (through the Caribbean Catastrophe Risk Insurance Facility) that gives government access to short-term liquidity mechanisms to deal with the emergency (such as hurricanes) and reducing budgetary volatility. • Some studies also show that there is a relatively high level of awareness of climate change in The Bahamas, compared to other developing countries. • Certain strategic documents have already been amended to include climate adaptation-related considerations (for example, the Forestry Act Regulations, which include objectives to protect mangrove ecosystems from sea-level rise).	• Gaps in scientific data and research to understand and assess climate change vulnerability across all sectors and also to inform policy- and decision-making. • There are knowledge gaps associated with the value of ecosystems, the importance of conservation, and climate change socioeconomic impacts particularly in the forestry and biodiversity sectors. • Lack of awareness in climate change impacts. • The legislation is somewhat outdated (ex. Coastal Protection Act 1968, National Biodiversity Strategy and Action Plan 1999, Planning and Subdivision Act that looks into land use planning - 2010) and needs revision (particular attention should be given to coastal development/construction. • High dependance on imported fossil fuels. • Heavy economic reliance on a single industry and a single market (tourism and financial services being the main economic drivers in the country). • High dependence on imported food. • There are highly vulnerable communities that live in inadequate conditions, with poor sanitation and community infrastructure. • Although since 2017 there is an operational national evacuation plan, evacuation protocols and procedures can be improved to avoid chaos during an emergency. Early warning systems mechanisms are in place but there is the need to ensure population adhere to these warnings (particularly for tornados). • Limited capacity within the country to implement adaptation actions (poor coordination and data communication between government entities and technical institutions, financial constraints, etc.). • Lack of trained staff in the agriculture sector that understand climate change and that has access and know how to use smart devices; and also lack of personnel to transfer information to farmers. • Technical capacity constraints in key public sector entities, mainly due to lack of funding allocations and investments for capacity building and also due to Bahamas' population size. • Lack of maintenance of infrastructure.
Opportunities	**Threats**
• Tourism is heavily owned by foreign operators and generates ~ 50% of total direct GDP – priority to implement adaptation measures and develop the right strategies for attracting greater private sector partners/funding (ex., by restructuring MOUs/agreements, creating a Fund to support adaptation measures in the sector).	• The Bahamas geographic characteristics makes the country very vulnerable to climate change-related events (such as SLR, coastal erosion, increased frequency and intensity of extreme weather events) because of its limited land masses, low-relief and dispersion of islands. • Lack of warning system for climate- and health-related issues makes the population's health a particular concern (ex. extreme heat events and saltwater intrusion on groundwater sources

• Due to the impact of the recent hurricanes that have hit the country several settlements must be completely rebuilt - opportunity to design resilient spaces through adequate land use and zoning schemes and draft new post disaster strategies that could be expanded to the rest of the country. • Multilateral investments in adaptation projects have been increasing in the past years creating, among others, opportunities for integration/strengthening nature-based solutions across multiple sectors. • Some climate adaptation investments can be channeled to the reconstruction projects. • The country can take advantage of the need to renew sectoral policies and plans to incorporate the climate change variable and propose more ambitious actions. • To diversify the country's energy sources (ex., increasing the renewable share) as this decreases the risk of energy insecurity. • Through agreements with international partners in academia, donors, NGO and businesses the country can become an innovation hub for new technologies for adaptation (ex. The Bahamas became the first country in the Caribbean to join the Agriculture Innovation Mission for Climate – a joint initiative by the US and the United Arab Emirates that aims at catalyzing investments in research for climate-smart agriculture and food systems innovation between 2021-2025). • Participation in Carbon Markets (Article 6 and Voluntary Markets) can help to channel much needed adaptation finance support for the country.	increases the risk for population with high blood pressure) with the adherence or trust in systems being an issue. • Lack of purposeful built hurricane shelters in the country with tropical cyclones increasing in strength. • Salt-water intrusions and arising water table from SLR and storm surges may render the already limited arable land unfit and contaminate freshwater resources posing a risk to food security and human health. • Extreme events cause loss and damage to energy infrastructures and price fluctuations due to changes on demand, posing a risk to energy security. • High costs of innovative and climate smart technology. • Public fiscal constraints, which are becoming increasingly pronounced with successive hurricane seasons and the COVID-19 pandemic. • Increases in mean temperature and humidity may facilitate the introduction and spread of exotic diseases and disease vectors. • Increased demand on limited natural resources (ex., the increased demands from industry, agriculture, and population growth are putting a pressure on the country's finite and vulnerable water resources). • Lack of willingness from people in different sectors (e.g., farmers) to provide data and to implement necessary climate actions. • Noncompliance with environmental laws - pressure on natural resources including trees, mangroves, sandbanks, which help with reducing flooding. • Vulnerable economy based largely on a single sector. • Despite all the policies and acts in place there is a lack of funding allocated for environmental management. • While there may be early warning systems, awareness campaigns and community workshops around safety and security protocols, non-vulnerable areas within communities, food depots, and the importance of adhering to public announcements is lacking. • The adherence to early warning systems is a complex problem involving a large migrant problem. • Oil exploration and extraction is also a threat, particularly given the failed exploration activities last year. The Bahamas is particularly at threat due to the location in a hurricane zone, lack of capacity for clean-up, and clear climate vulnerabilities.

Annex II. Detail of mitigation actions

AII.1 Energy

Type of information	Brief description
Name and general descriptions of the mitigation actions	**1.- Adoption and implementation of revised building code for all new buildings and renovations.** The Bahamas currently has a building code from 2003. The revised building code is expected to improve the minimum standards, provisions, and requirements for safe and stable building design and construction methods.
Coverage and addressed NDC commitment	Coverage: • Local Plans and Regulations. • Carbon Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030. • A minimum of 30% renewables in the energy mix by 2030.
Quantitative goals	By 2025, the energy demand has decreased, and resilience increased due to the implementation of the new building code. The estimated avoided GHG emissions related to the implementation of this action is 22.6 $GgCO_2$-eq by 2030.
Progress indicators	• New and renovated buildings implemented using regional energy efficiency building code. • Education and awareness programs conducted on regional energy efficiency building code. • Practitioners trained in the revised building code.
Methodologies and assumptions	Modelled using the LEAP software. It is assumed that the adoption and implementation of The Bahamas revised building code will reduce energy used for cooling and lighting by 25% in the new residential and commercial buildings. One thousand one hundred thirty-two new residential (1132) buildings per year are assumed, with an average annual electricity consumption of 1835 kWh/household for lighting and 2618 kWh/household for air conditioning (AC). One hundred and ten (110) new commercial buildings per year are assumed, 86% of which are non-governmental. The average floor space is assumed as 1455 m2/building, with an average annual electricity consumption of 31.2 kWh/m2 for lighting and 58.13 kWh/m2 for AC. It is assumed that all new residential and commercial buildings will have air conditioning systems. This revised building code will impact the new construction of residential and commercial buildings between 2024 and 2030.
Objectives of the measures	To adopt and implement the revised building codes for all new construction and renovations.
Adaptation co-benefits	Yes. This action can lead to improved energy efficiency and reduced energy losses from the infrastructure which can play a crucial role during storms, droughts, extreme heat or during power cuts, reducing vulnerability against the current and future effects of climate change.
Appropriateness and effectiveness of the mitigation actions	Improving building design can reduce the energy demand and enhance resilience. The adoption and implementation of this revised building code will assist in the reduction of emissions for commercial and residential buildings. The revision of the building code is currently ongoing, with several stakeholder workshops and webinars. The revised building code is expected to cover the entire Commonwealth of The Bahamas except for the Port area in Grand Bahama Island. In the 2013-2033 Energy Policy, the need to encourage the integration of renewable energy in building design the physical planning process is highlighted. This is encouraged to be integrated using an appropriately revised building code (Ministry of the Environment and Housing, 2013). In addition, The Bahamas is also currently in the process of adopting the regional Energy Efficiency Building Code.
Status	Ongoing
Duration	2020-2025
Lead Agency	Department of Physical Planning, Ministry of Public Works, Building Control

Type of information	Brief description
Name and general descriptions of the mitigation actions	**2.- Energy audits for all Government occupied buildings in New Providence**. Energy audits are instrumental in the identification of energy efficiency options for buildings. This is an enabling measure for the introduction of energy efficiency building measures
Coverage and addressed NDC commitment	Coverage: • Local Plans. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030
Quantitative goals	The emissions reduction potential cannot be quantified ex-ante.
Progress indicators	• Government buildings in New Providence audited. • Audit reports received.
Methodologies and assumptions	Not modelled. This action in preparatory for actual retrofits. The buildings identified are expected to be occupied for long term. The measures identified are also expected to be combined into specific mitigation actions for the buildings.
Objectives of the measures	To conduct energy audits for all Government occupied buildings in New Providence.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	It will help to identify and quantify specific energy efficiency measures and potential reductions.
Status	Ongoing
Duration	2020-2025
Lead Agency	Department of Physical Planning, Ministry of Public Works, Bahamas Power and Light

Type of information	Brief description
Name and general descriptions of the mitigation actions	**3.- Energy audits for all existing hotels and industrial facilities.** Energy audits are instrumental in the identification of energy efficiency options for buildings. The tourism sector is a key economic factor in The Bahamas and the hotels plays a critical role in energy consumption. This is an enabling measure for the introduction of energy efficiency building measures.
Coverage and addressed NDC commitment	Coverage: • Local Plans. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Quantitative goals	The avoided GHG emissions by 2030 in the ambitious scenario is estimated at 74.6 GgCO2-eq for replacement of diesel generators and 61.3 GgCO2-eq for implementation improvements in energy intensity in the industry sector. The combined effect of these two measures would result in 135.9 GgCO2-eq of avoided GHG emissions.
Progress indicators	• Hotels and industrial facilities audited. • Number of audit reports received
Methodologies and assumptions	Modelled using the LEAP software. This action is preparatory for actual retrofits. The measures identified are also expected to be combined into specific mitigation actions for the facilities identified. In the modelling an ambitious mitigation scenario was developed and proposed measured were modelled for the hotel and industrial sector. It was assumed that currently diesel is used in backup generators that provide distributed electricity in

Type of information	Brief description
	some of the service sector facilities. In this ambitious scenario, the distributed solar PV systems will displace 30% of the diesel used in the service sector. In addition, the industrial sector will experience a reduction in energy intensity by 2% annually compared to the 0.5% reduction modelled for the baseline and mitigation scenarios.
Objectives of the measures	To conduct energy audits for all existing hotels and industries.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	This mitigation action will support the country in achieving the NDC target based on economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Status	Ongoing
Duration	2020-2025
Lead Agency	Ministry of Tourism, Chamber of Commerce, Bahamas Power and Light

Type of information	Brief description
Name and general descriptions of the mitigation actions	**4.- Lighting retrofits for all Government occupied buildings in New Providence**. The adoption of lighting retrofits is usually seen as a quick and low-cost energy efficiency measure in budlings. This energy efficiency measure will help reduce the energy demand in the government buildings. This measure is expected as one of the first results of the energy audits.
Coverage and addressed NDC commitment	Coverage: • Infrastructural Projects. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Quantitative goals	The estimated avoided GHG emissions are 8.2 GgCO2-eq by 2030.
Progress indicators	• Buildings retrofitted for lighting; number and type of lights replaced
Methodologies and assumptions	Modelled using the LEAP software. The assumption is that fluorescent lights in buildings are being replaced with LEDs, leading to a 60% reduction in electricity consumption for lighting in Government buildings. This reduction can be further enhanced with additional measures proposed from the energy audits. Approximately, 14% of all buildings in New Providence are Government occupied, which represent 402 buildings. The retrofits are implemented starting in 2020 and reach 100% by 2030.
Objectives of the measures	To undertake comprehensive lighting retrofits for all Government occupied buildings in New Providence. To reduce energy demand and emissions in Government buildings in New Providence. To improve energy efficiency in Government occupied buildings in New Providence.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	This mitigation action will support the country in achieving the NDC target based on economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Status	Ongoing
Duration	2020-2030
Lead Agency	Department of Physical Planning, Ministry of Public Works, Ministry of Environment and Housing

Type of information	Brief description
Name and general descriptions of the mitigation actions	**5.- Public awareness campaign for energy efficiency and energy conservation**. Public Education and awareness are an important mechanism to maximize emission reduction. Education and awareness of the public on energy efficient

Type of information	Brief description
	equipment available to encourage increase in uptake and measures to conserve energy to reduce consumption.
Coverage and addressed NDC commitment	Coverage: • Education and Awareness. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Quantitative goals	This is an enabling activity and therefore no direct emissions reduction potential is attributed to this action.
Progress indicators	• Percentage increase in purchase of energy efficient equipment. • Reduction in energy demand.
Methodologies and assumptions	Not modelled. Public Awareness and Education on energy efficiency will increase penetration of energy efficient equipment in both the residential and commercial sectors.
Objectives of the measures	To encourage the public to adopt energy efficiency and energy conservation measures.
Adaptation co-benefits	Yes. Public education in these topics will enhance awareness on how energy efficiency and conservation activities can contribute to, among others, reducing reliance on energy generated through the combustion of fossil fuels, and lowering the energy demand during for example periods of heat waves and extreme weather events, contributing to energy security.
Appropriateness and effectiveness of the mitigation actions	Although this action is not expected to have a direct emission reduction potential, it is expected that it will help the country to achieve the NDC target based on economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Status	Planned
Duration	2022-2033
Lead Agency	Ministry of Environment and Housing, Bahamas Power and Light, University of the Bahamas, Chamber of Commerce

Type of information	Brief description
Name and general descriptions of the mitigation actions	**6.- Streetlighting retrofit.** Retrofits of streetlights through the replacement of commonly high-pressure sodium bulbs to either LED or solar lights to help reduce energy consumption. The streetlight project is currently ongoing.
Coverage and addressed NDC commitment	Coverage: • Infrastructural Projects. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Quantitative goals	The estimated avoided GHG emissions by 2030 are 18.5 GgCO2-eq.
Progress indicators	• Number of Lights and type of lights retrofitted
Methodologies and assumptions	Modelled using the LEAP software. Assumed that current streetlights in The Bahamas will be replaced either by 100% more efficient solar lights or 60% more efficient LED lights. There are approximately 46,000 streetlights in The Bahamas, including high-pressure sodium (HPS), mercury vapor, metal halide, incandescent, LED, and solar. Streetlights are assumed to be on for 12 hours per day. 24% of the existing lights are LED, and less than 1% is solar. Starting in 2020 and by 2025, all other lights (estimated as 35,000 250 W lights) will be replaced by 70 W LED lights.
Objectives of the measures	To undertake lighting retrofits to reduce energy consumption and emissions from streetlighting.
Adaptation co-benefits	No

Type of information	Brief description
Appropriateness and effectiveness of the mitigation actions	This mitigation action will support the country in achieving the NDC target based on economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Status	Ongoing
Duration	2020-2033
Lead Agency	Bahamas Power and Light Company, Grand Bahama Power Company

Type of information	Brief description
Name and general descriptions of the mitigation actions	**7.- Increase solar water use by 40% for The Bahamas.** Replacement of electrical and LPG water heaters both in the residential and commercial sectors with solar water heaters will help reduce energy consumption and emissions.
Coverage and addressed NDC commitment	Coverage: • Infrastructural Projects. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030. • A minimum of 30% renewables in the energy mix by 2030.
Quantitative goals	The estimated avoided GHG emissions are 34.5 GgCO2-eq.
Progress indicators	• Number of new solar water heaters installed. • Percentage increase in solar water heaters.
Methodologies and assumptions	Modelled using the LEAP software. It is assumed that the current uptake of solar water heaters is 5%, and an increase in use of solar water heaters of 40% is expected by 2030. Of the current 115660 households, 60% use water heaters. The average annual energy consumption of water heaters is 1890 kWh/household. There are currently 3946 commercial buildings with an average floor space of 1455 m2/building. 10% of commercial buildings use water heaters with an average annual energy consumption of 2.15 kWh/m2. Currently, water heating is mainly electric or with LPG. Only 5% of water heaters are solar.
Objectives of the measures	To increase the uptake of solar water heaters by 20%.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	This mitigation action will support the country in achieving the two main commitments of the country expressed in its first NDC. On one hand, the NDC target based on economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030; on the other hand, the target related to a minimum of 30% renewables in the energy mix by 2030.
Status	Planned
Duration	2022-2033
Lead Agency	Ministry of Environment and Housing

Type of information	Brief description
Name and general descriptions of the mitigation actions	**8.- Introduce incentives for solar water heater installation.** The introduction of incentives will encourage the uptake of solar water heaters. This action is an enabling action to the previous mitigation action (Increase solar water use by 40% for The Bahamas).
Coverage and addressed NDC commitment	Coverage: • Regulations. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030. • A minimum of 30% renewables in the energy mix by 2030.
Quantitative goals	Bundled with Mitigation Action "Increase solar water use by 40% for The

Type of information	Brief description
	Bahamas".
Progress indicators	• Number of concessions processed for solar water heaters
Methodologies and assumptions	Not Modelled. The introduction of incentives for solar water heater installation will increase the use of solar water heaters. This action was not modelled as single mitigation strategy but is assumed to be incorporated into the modelling of mitigation action 7 as an enabling factor to increase the installation and adoption of solar water heaters. Incentives are expected to encourage the adoption and installation of more solar water heaters. The Bahamas Energy Policy indicates that the Ministry of Finance will be responsible for developing a programme of incentives and fiscal measures to enable and support investments in energy efficiency and conservation initiatives. To achieve this mitigation action, there is the need to identify and develop a list of suitable incentives for solar water heater installation.
Objectives of the measures	To promote and increase the uptake of solar water heaters use.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	This mitigation action is quite important to support the achievement of the previous mitigation action (Increase solar water use by 40% for The Bahamas), both are complementary.
Status	Planned
Duration	2022-2025
Lead Agency	Ministry of Finance, Ministry of Environment and Housing

Type of information	Brief description
Name and general descriptions of the mitigation actions	9.- Energy Labelling program for all appliances. Mandatory labelling standards to inform consumers on the energy efficiency of appliances.
Coverage and addressed NDC commitment	Coverage: • Local Plans and Regulations. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Quantitative goals	N/A
Progress indicators	• Number of labelling standards developed. • Percentage increase in appliances with energy labels.
Methodologies and assumptions	This action will not be modelled. Energy labelling will give consumers a more informed decision when purchasing products and coupled with public awareness and education will assist in the shift to more energy efficient equipment.
Objectives of the measures	To provide clear and simple indication of energy efficiency of appliances and inform consumers.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	Although this action is not expected to provide direct emission reductions, it is expected that it will help the country to offer a better knowledge to the population about the energy efficiency of appliances, so they will have the opportunity to make better decisions.
Status	Planned
Duration	2022-2033
Lead Agency	Bahamas Bureau of Standards and Quality

Type of information	Brief description
Name and general descriptions of the mitigation actions	**10.- Establish finance mechanism to increase access to low interest loans for EE and RE measures.** This finance mechanism is expected to facilitate the sourcing of low-cost development funds for productive enterprises for energy and energy efficiency projects. This will allow both businesses and residents to access low interest loans to finance energy and energy efficient projects through the establishment of a special fund.
Coverage and addressed NDC commitment	Coverage: • Local Plans. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030. • A minimum of 30% renewables in the energy mix by 2030.
Quantitative goals	N/A
Progress indicators	• Financing mechanism established. • Number of applications to receive financing. • Number of loans approved.
Methodologies and assumptions	This action will not be modelled. The introduction of the facility will encourage the uptake of renewable energy and energy efficient equipment.
Objectives of the measures	To establish a finance mechanism to increase access low interest loans for energy and energy efficient measures.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	Although this action is not expected to provide direct emission reductions, it is expected that it will help the country to obtain funds for productive enterprises for energy and energy efficiency projects, which will help the country later to reduce emissions.
Status	Planned
Duration	2022-2025
Lead Agency	Ministry of Finance, The Bahamas Development Bank, Ministry of Environment and Housing

Type of information	Brief description
Name and general descriptions of the mitigation actions	**11.- Energy Efficient Standards for air conditioning systems.** Mandatory standards for air conditioning will encourage the adoption of more energy efficient equipment. A shift to more energy efficient air conditioning systems will reduce energy consumption and long-term costs to the consumers.
Coverage and addressed NDC commitment	Coverage: • Regulations. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Quantitative goals	The estimated avoided GHG emissions by 2030 is 109.6 GgCO2-eq for use of more efficient air conditioning systems. In the ambitious scenario, the use of sea water cooling in hotels is expected to have a reduction in GHG emissions by 6.2 GgCO2-eq.
Progress indicators	• Percentage increase in energy efficient appliances on island
Methodologies and assumptions	Modelled using the LEAP software. The adoption of standards will improve the energy efficiency of the equipment purchased. Number of households are currently 115,660, the number of commercial buildings is currently 3,946 with an average floor space of 1,455 m2/building. Approximately 60% of households in The Bahamas have AC, with an average annual electricity consumption for AC of 2,618 kWh/household. All commercial buildings have AC, with an average annual electricity consumption for AC of 58.13 kWh/m2. The standards are assumed to consider a 30% increase in efficiency by 2030.

Type of information	Brief description
	In the ambitious scenario, the adoption of seawater cooling in hotels was modelled for more efficient cooling. Currently, there are approximately 300 hotels in The Bahamas, with an average of 3,425 m2/building and average annual electricity consumption for cooling of 50.4 kWh/m2. By 2030, 20% of all hotels will implement sea water cooling. This technology reduces energy consumption for cooling by 80%.
Objectives of the measures	To encourage the shift to more energy efficient air conditioning systems.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	This mitigation action will support the country in achieving the NDC target based on economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030. In addition, this mitigation action will also support the mitigation action under the IPPU sector (HFCs gases).
Status	Planned
Duration	2022-2025
Lead Agency	Bahamas Bureau of Standards and Quality

Type of information	Brief description
Name and general descriptions of the mitigation actions	**12.- Promotion of Energy Efficiency in Water production**. The water production in The Bahamas is a very high energy intensive process (reverse osmosis). The introduction of energy efficient measures will reduce energy costs and reduce emissions.
Coverage and addressed NDC commitment	Coverage: • Infrastructural Projects. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Quantitative goals	Due to constraints with energy consumption data in the water production process, this action was not modelled.
Progress indicators	• Percentage reduction in energy demand in the water sector
Methodologies and assumptions	Not modelled. Due to constraints with energy consumption data in the water production process, this action was not modelled.
Objectives of the measures	To improve energy efficiency in the water sector.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	At this moment the information available to estimate the mitigation potential is not enough, however, it is supposed that promoting energy efficiency in any sector would allow the country to reduce emissions. The country needs to continue working to achieve the required information and based on the estimates, report the required information.
Status	Ongoing
Duration	2022-2033
Lead Agency	Water & Sewage Corporation

Type of information	Brief description
Name and general descriptions of the mitigation actions	**13.-Five (5) carbon neutral Marine Protected Area facilities (photovoltaic substitute for diesel generators).** Substituting diesel generator for photovoltaic systems will demonstrate the social, environmental, and economic feasibility of climate change mitigation through implementing innovative carbon neutral solutions that will contribute to the effective management of marine protected areas and to reduce risks associated to the use of diesel such as “pollution / storage”. Diesel fuel requires storage of bulk fuels on the islands and the transfer of fuel from bulk storage

Type of information	Brief description
	to monthly storage for daily use. This storage and transfer increase the risk of a spill into the water or ground resources of the park. The proposed sites are (i) Visitors Centre for Warderick Wells (ECLSP), (ii) West Andros Fee collection booth, (iii) Bonefish Pond high visibility demo pilot.
Coverage and addressed NDC commitment	Coverage: • Infrastructural Projects. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030. • A minimum of 30% renewables in the energy mix by 2030.
Quantitative goals	Estimated total GHG emissions reduction is 3.5 Gg CO2-eq.
Progress indicators	• Number of kW of PV systems installed. • Emissions reductions of CO2eq.
Methodologies and assumptions	Modelled using the LEAP software. Solar PV systems will be installed to complete replace the diesel generators at the facility. The assumptions are that each location currently has 100kW generator in use. Each gallon of diesel fuel produces, on average, 10,084 g of CO2. 60 kW Diesel Generator at ¾ load fuel consumption = 5.8 gallon/hr32. By 2030, 5x100 kW generators at 75% load factor and 25% efficiency will be replaced by PV systems.
Objectives of the measures	To demonstrate the viability of photovoltaic systems in creating carbon neutral facilities.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	This mitigation action will support the country in achieving the two main commitments of the country expressed in its first NDC. On one hand, the NDC target based on economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030; on the other hand, the target related to a minimum of 30% renewables in the energy mix by 2030.
Status	Ongoing
Duration	2017-2030
Lead Agency	DEPP, Bahamas National Trust, Department of Marine Resources

Type of information	Brief description
Name and general descriptions of the mitigation actions	**14.- Assessment of Renewable Energy Potential Across all occupied Islands**. The Bahamas energy mix is currently dominated by fossil fuels. The Bahamas aims to reach 30% renewables in the electricity generation by 2030. An assessment of renewable energy potential will help identify possible locations for renewable energy projects and/or interventions.
Coverage and addressed NDC commitment	Coverage: • Local Plans. Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030. • A minimum of 30% renewables in the energy mix by 2030.
Quantitative goals	The emission reduction potential will be determined upon completion of assessment.
Progress indicators	• Number of assessments completed
Methodologies and assumptions	The assumption is that The Bahamas has an abundance of renewable energy potential, but the exact size, location and type of the renewable energy potential has not been determined yet.
Objectives of the measures	To undertake a complete assessment of the renewable energy potential across The Bahamas.
Adaptation co-benefits	Yes. Renewable energy as a distributed energy resource, contributes to climate-resilient and less-capital-intensive adaptation.

Type of information	Brief description
Appropriateness and effectiveness of the mitigation actions	Considering the general goal and the scope of this mitigation action and considering the goal and scope of the mitigation action "30% Renewables on each major island by 2030".
Status	Planned
Duration	2022-2025
Lead Agency	Ministry of Environment and Housing, Bahamas Power and Light, Grand Bahama Power Company, Morton Salt Company

Type of information	Brief description
Name and general descriptions of the mitigation actions	**15.- 30% Renewables on each major island by 2030**. The Bahamas energy mix is currently dominated by fossil fuels. The Bahamas aims to reach 30% renewables in the electricity generation by 2030. 30% renewable energy is proposed on the major islands New Providence, Grand Bahama, and the Family Islands as a group.
Coverage and addressed NDC commitment	Coverage: • Infrastructural Projects. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030. • A minimum of 30% renewables in the energy mix by 2030.
Quantitative goals	A reduction in emissions of 412.6 GgCO2-eq is estimated.
Progress indicators	• kW of installed renewable energy systems.
Methodologies and assumptions	Modelled using the LEAP software. The utility grids are able to handle the increase in renewables without undergoing major upgrades to their system. To achieve 30% in renewable energy penetration, the following was modelled 174MW of Solar PV systems, 30kW of OTEC, 15MW of Waste to Energy and 20MW of wind.
Objectives of the measures	To increase the penetration of renewable energy by 30% by 2030.
Adaptation co-benefits	Yes. This action will help diversify the Bahamian energy mix reducing its dependency to fossil fuels and consequently, reducing the probability of system disruptions due to extreme weather and spikes in demand.
Appropriateness and effectiveness of the mitigation actions	This mitigation action will support the country in achieving the two main commitments of the country expressed in its first NDC. On one hand, the NDC target based on economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030; on the other hand, the target related to a minimum of 30% renewables in the energy mix by 2030.
Status	Planned
Duration	2022-2030
Lead Agency	Ministry of Environment and Housing, Bahamas Power and Light, Grand Bahama Power Company

Type of information	Brief description
Name and general descriptions of the mitigation actions	**16C.- 3MW Solar farm in Grand Bahama**. The Bahamas energy mix is currently dominated by fossil fuels. The Bahamas has set a target of generating 30% of its power from renewable sources by 2030. Installation of renewable energy systems will help achieve this goal as well as significantly assist in achieving emission reductions.
Coverage and addressed NDC commitment	Coverage: • Infrastructural Projects. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O)- Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030. • A minimum of 30% renewables in the energy mix by 2030.

Type of information	Brief description
Quantitative goals	Bundled in Mitigation Action "30% Renewables on each major island by 2030".
Progress indicators	• kW of installed solar PV system.
Methodologies and assumptions	Modelled using the LEAP software. Bundled in Mitigation Action "30% Renewables on each major island by 2030".
Objectives of the measures	To increase the penetration of renewable energy by 30% by 2030.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	This mitigation action is complementary to the previous mitigation action (30% Renewables on each major island by 2030).
Status	Ongoing
Duration	2020-2025
Lead Agency	Grand Bahama Power Company

Type of information	Brief description
Name and general descriptions of the mitigation actions	**17.- 3MW of distributed generation in Grand Bahama through the Renewable Energy Rider program**. The Bahamas energy mix is currently dominated by fossil fuels. The Bahamas' goal is to produce 30% of its energy from renewable sources by 2030. Installation of renewable energy systems will help achieve this goal as well as significantly assist in achieving emission reductions. This includes renewable energy systems installed for residential and commercial buildings that are grid-connected in Grand Bahama.
Coverage and addressed NDC commitment	Coverage: • Infrastructural Projects. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030. • A minimum of 30% renewables in the energy mix by 2030.
Quantitative goals	Bundled in Mitigation Action "30% Renewables on each major island by 2030".
Progress indicators	• kW of installed renewable energy systems.
Methodologies and assumptions	Modelled using the LEAP software. Bundled in Mitigation Action "30% Renewables on each major island by 2030".
Objectives of the measures	To increase the penetration of renewable energy by 30% by 2030.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	This mitigation action is complementary to the previous mitigation action (30% Renewables on each major island by 2030).
Status	Ongoing
Duration	2016-2025
Lead Agency	Grand Bahama Power Company

Type of information	Brief description
Name and general descriptions of the mitigation actions	**18.- Additional 30MW of Solar PV Installed**. The Bahamas energy mix is currently dominated by fossil fuels. The Bahamas has established a target of 30% renewables in the electricity generation by 2030. Installation of renewable energy systems will help achieve this goal as well as significantly assist in achieving emission reductions.
Coverage and addressed NDC commitment	Coverage: • Infrastructural Projects.

Type of information	Brief description
	• Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030. • A minimum of 30% renewables in the energy mix by 2030.
Quantitative goals	Bundled in Mitigation Action "30% Renewables on each major island by 2030".
Progress indicators	• kW of installed solar PV systems.
Methodologies and assumptions	Modelled using the LEAP software. Bundled in Mitigation Action "30% Renewables on each major island by 2030".
Objectives of the measures	To increase the penetration of renewable energy by 30% by 2030.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	This mitigation action is complementary to the previous mitigation action (30% Renewables on each major island by 2030).
Status	Idea
Duration	2022-2030
Lead Agency	Ministry of Environment and Housing, Bahamas Power and Light

Type of information	Brief description
Name and general descriptions of the mitigation actions	**19.- Installation of 20MW of wind power Installed**. The Bahamas energy mix is currently dominated by fossil fuels. The Bahamas is aiming to generate 30% of the electricity from renewables by 2030. Installation of renewable energy systems will help achieve this goal as well as significantly assist in achieving emission reductions.
Coverage and addressed NDC commitment	Coverage: • Infrastructural Projects. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030. • A minimum of 30% renewables in the energy mix by 2030.
Quantitative goals	Bundled in Mitigation Action "30% Renewables on each major island by 2030".
Progress indicators	• kW of installed wind power systems
Methodologies and assumptions	Modelled using the LEAP software. Bundled in Mitigation Action "30% Renewables on each major island by 2030".
Objectives of the measures	To increase the penetration of renewable energy by 30% by 2030.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	This mitigation action is complementary to the previous mitigation action (30% Renewables on each major island by 2030).
Status	Idea
Duration	2022-2030
Lead Agency	Ministry of Environment and Housing, Bahamas Power and Light

Type of information	Brief description
Name and general descriptions of the mitigation actions	**20.- Installation of 10MW of distributed generation on rest of islands**. The Bahamas energy mix is currently dominated by fossil fuels. The Bahamas has committed to generate of the electricity from renewables by 2030. Installation of renewable energy systems will help achieve this goal as well as significantly assist in achieving emission reductions. This includes renewable

Type of information	Brief description
	energy systems installed for residential and commercial buildings that are grid-connected in the Family Islands.
Coverage and addressed NDC commitment	Coverage: • Local Plans. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030. • A minimum of 30% renewables in the energy mix by 2030.
Quantitative goals	Bundled in Mitigation Action "30% Renewables on each major island by 2030".
Progress indicators	• kW of installed solar PV system.
Methodologies and assumptions	Modelled using the LEAP software. Bundled in Mitigation Action "30% Renewables on each major island by 2030".
Objectives of the measures	To increase the penetration of renewable energy by 30% by 2030.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	This mitigation action is complementary to the previous mitigation action (30% Renewables on each major island by 2030).
Status	Ongoing
Duration	2017-2030
Lead Agency	Bahamas Power and Light, Ministry of Environment and Housing

Type of information	Brief description
Name and general descriptions of the mitigation actions	**21.- Upgrade incentives for renewable energy systems**. The Bahamas energy mix is currently dominated by fossil fuels. The Bahamas aims to increase to 30% the renewables in the electricity generation by 2030. The upgrade of incentives will encourage the installation and implementation of renewable energy systems.
Coverage and addressed NDC commitment	Coverage: • Local Plans and Regulations. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030. • A minimum of 30% renewables in the energy mix by 2030.
Quantitative goals	No direct GHG emissions reductions.
Progress indicators	• Number of upgrade of incentives approved.
Methodologies and assumptions	Not modelled. Assumption that the upgrade of incentives would increase the use of renewable energy systems. This action is considered an enabling factor to accelerate the adoption of renewables.
Objectives of the measures	To increase the penetration of renewable energy by 30% by 2030.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	Although this action is not expected to provide direct emission reductions, it is expected that it will help the country to upgrade the achievement of incentives which will encourage the installation and implementation of renewable energy systems, projects which will help the country later to reduce emissions.
Status	Planned
Duration	2022-2025
Lead Agency	Ministry of Finance, Ministry of Environment and Housing

Type of information	Brief description
Name and general descriptions of the mitigation actions	**22.- Integrated Resource and Resilience Plan for Grand Bahama Power Company and Bahama Power and Light**. The Bahamas energy mix is currently dominated by fossil fuels. The Bahamas aims to achieve 30% renewables in the electricity generation by 2030. Integrated Resource and Resilient Plans (IRRP) will plan how the country can supply its electricity needs in the future. This will take into considerations the goals and renewable energy resource assessments conducted.
Coverage and addressed NDC commitment	Coverage: • Local Plans. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O) Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030. • A minimum of 30% renewables in the energy mix by 2030.
Quantitative goals	This action is not expected to provide direct emission reductions.
Progress indicators	• Number of integrated resource and resilience plans undertaken.
Methodologies and assumptions	The integrated resource and resilience plans undertaken by each power provider to improve planning for renewable energy introduction and improve resilience. Assumption that integrated resource and resilience plan will provide a comprehensive overview of necessary upgrades, improvements and additions to the systems required in each time frame. It will also help identify the best mix of renewables for The Bahamas.
Objectives of the measures	To identify the best mix of renewable energy systems to increase resilience, energy independence and maintain low system costs.
Adaptation co-benefits	Yes. The development of IRRPs will help to increase the energy system resiliency to impacts of climate change.
Appropriateness and effectiveness of the mitigation actions	Although this action is not expected to provide emission reductions, it will help to identify and quantify specific renewable energy installations and potential reductions.
Status	Idea
Duration	2022-2025
Lead Agency	Bahamas Power and Light, Grand Bahama Power Company, Ministry of Environment and Housing

Type of information	Brief description
Name and general descriptions of the mitigation actions	**23.- 10 MW of installed distributed generation through a Renewable Energy Rider for Bahamas Power and Light (BPL) customers in New Providence**. The Bahamas energy mix is currently dominated by fossil fuels. The Bahamas' goal is to produce 30% of its energy from renewable sources by 2030. Installation of renewable energy systems will help achieve this goal as well as significantly assist in achieving emission reduction. This includes renewable energy systems installed for residential and commercial buildings that are grid-connected in New Providence and excludes the 1.2MW identified through the Solar Assessment report.
Coverage and addressed NDC commitment	Coverage: • Infrastructural Projects. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030. • A minimum of 30% renewables in the energy mix by 2030.
Quantitative goals	Bundled in Mitigation Action "30% Renewables on each major island by 2030".
Progress indicators	• kW of installed solar PV system.
Methodologies and assumptions	Modelled using the LEAP software. Bundled in Mitigation Action "30%

Type of information	Brief description
	Renewables on each major island by 2030".
Objectives of the measures	To increase the penetration of renewable energy by 30% by 2030.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	This mitigation action is complementary to the previous mitigation action (30% Renewables on each major island by 2030).
Status	Ongoing
Duration	2017-2024
Lead Agency	Bahamas Power and Light; Ministry of Environment and Housing

Type of information	Brief description
Name and general descriptions of the mitigation actions	**24.- Installation of approximately 1.2MW of distributed generation on 9 Government Facilities**. The Bahamas energy mix is currently dominated by fossil fuels. The Bahamas aims to reach 30% renewables in the electricity generation by 2030. Installation of renewable energy systems will help achieve this goal as well as significantly assist in achieving emission reduction. This project was identified through the solar assessment report.
Coverage and addressed NDC commitment	Coverage: • Infrastructural Projects. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030. • A minimum of 30% renewables in the energy mix by 2030.
Quantitative goals	Bundled in Mitigation Action "30% Renewables on each major island by 2030".
Progress indicators	• kW of installed solar PV system on public institutions.
Methodologies and assumptions	Modelled using the LEAP software. The following is assumed for this project; 1.2 MW will consist of the following: • Roof mounted systems: o 12.0 kW at the House of Assembly and Senate Buildings. o 51.0 kW at C.I Gibson Senior High School; 56.1 KW at Uriah McPhee Primary school. o 83.1 kW at Doris Johnson Senior High School. o 136.2 kW at T.G Glover Primary School. o 76.5 kW at Customs Headquarters. o 73.2 kW at Ministry of Education Building. o 167.1 kW at C.V Bethel Senior High School. • Carport Systems: o 475.5 kW at the Office of the Prime Minister. o The following rates were assumed for the project. o $2.50/W for PV system under 20kW (roof-mounted). o $2.25/W for PV systems between 21kW and 100kW (roof-mounted). o $2.00/W for PV systems over 100kW (roof-mounted). o $5.00/W for carport Po Systems. The total cost of the installation is estimated at $3.78 Million dollars (BAH)
Objectives of the measures	To increase the penetration of renewable energy by 30% by 2030.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	This mitigation action is complementary to the previous mitigation action (30% Renewables on each major island by 2030).
Status	Ongoing

Type of information	Brief description
Duration	2019-2030
Lead Agency	Ministry of Environment and Housing

Type of information	Brief description
Name and general descriptions of the mitigation actions	**25.- Reduce Transmission and Distribution losses by 2%.** Reducing transmission and distribution losses, reduces the amount of electricity to meet demand. Capital investments are required in transmission equipment and meters.
Coverage and addressed NDC commitment	Coverage: • Infrastructural Projects. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Quantitative goals	Estimated GHG emissions reduction of 32.4 GgCO2-eq.
Progress indicators	• Percentage reduction in transmission and distribution losses.
Methodologies and assumptions	Modelled using the LEAP software. Assumed that reduction by 2% of losses in transmission and distribution is achieved by 2030, and further reduction is achieved by 2050. The average T&D losses in The Bahamas will be reduced from 10% in 2018 to 8% by 2030.
Objectives of the measures	To increase the energy efficiency of the transmission and distribution system by reducing losses.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	This mitigation action will help the country to reduce the amount of energy production needed to attend the energy demand, that is, it is a mitigation action linked to energy efficiency during the energy transmission process instead of in the energy use. This mitigation action is quite important for the country not solely in terms of emissions reduction.
Status	Planned
Duration	2022-2030
Lead Agency	Bahamas Power and Light

Type of information	Brief description
Name and general descriptions of the mitigation actions	**26.- Pilot Project for a 30kW OTEC Plant**. The Bahamas is currently in discussions with CARICOM, CCRREE, CCCCC and SIDS DOCK to develop a pilot OTEC plant. However, OTEC is still seen as being in its experimental stage globally. Still, The Bahamas has a reverse geothermal energy profile, and it may be possible to obtain the necessary temperature difference for OTEC from deep wells rather than cold seawater.
Coverage and addressed NDC commitment	Coverage: • Infrastructural Projects. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030. • A minimum of 30% renewables in the energy mix by 2030.
Quantitative goals	Bundled in Mitigation Action "30% Renewables on each major island by 2030".
Progress indicators	• kW of OTEC produced.
Methodologies and assumptions	Modelled using the LEAP software. Bundled in Mitigation Action "30% Renewables on each major island by 2030".
Objectives of the measures	To increase the penetration of renewable energy by 30% by 2030.

Type of information	Brief description
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	This mitigation action is complementary to the previous mitigation action (30% Renewables on each major island by 2030).
Status	Ministry of Environment and Natural Resources
Duration	Planned
Lead Agency	2022-2030

Type of information	Brief description
Name and general descriptions of the mitigation actions	27.- Installation of 15MW Waste to Energy. The Bahamas energy mix is currently dominated by fossil fuels. The Bahamas has committed to generate 30% of the electricity from renewables by 2030. Installation of renewable energy systems will help achieve this goal as well as significantly assist in achieving emission reduction.
Coverage and addressed NDC commitment	Coverage: • Infrastructural Projects. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030. • A minimum of 30% renewables in the energy mix by 2030.
Quantitative goals	Bundled in Mitigation Action "30% Renewables on each major island by 2030".
Progress indicators	• kW of installed waste to energy plant. • kg of waste processed through plant.
Methodologies and assumptions	Modelled using the LEAP software. Bundled in Mitigation Action "30% Renewables on each major island by 2030".
Objectives of the measures	To increase the penetration of renewable energy by 30% by 2030.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	This mitigation action is complementary to the previous mitigation action (30% Renewables on each major island by 2030). It is important to mention that this mitigation action could also imply emission reduction in the waste sector, and the magnitude of this emissions reduction will depend on the specific way this energy is going to be obtained (burning biogas from landfills, from incineration processes, etc.)
Status	Ongoing
Duration	2020-2030
Lead Agency	Ministry of Environment and Housing/ Department of Environment Health Services/ Bahamas Power and Light

AII.2 Transport

Type of information	Brief description
Name and general descriptions of the mitigation actions	**28.- Standards implemented for vehicle fuel efficiency** Improved fuel efficiency reduces the demand for fuel in vehicles and therefore reduces consumption of fossil fuels.
Coverage and addressed NDC commitment	Coverage: • Regulations. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Quantitative goals	Due to lack of data this action was not modelled.
Progress indicators	• Fuel efficiency standard for vehicles developed. • Percentage of Increase in vehicle fuel economy.
Methodologies and assumptions	Not modelled. It is assumed that fuel efficiency improvement will be 15% in passenger vehicles, and 10% in light duty and medium duty vehicles.
Objectives of the measures	To encourage the uptake of more energy efficient vehicles.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	This mitigation action will support the country in achieving the NDC target based on economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Status	Planned
Duration	2022-2025
Lead Agency	The Bahamas Bureau of Standards and Quality

Type of information	Brief description
Name and general descriptions of the mitigation actions	**29.- Improved Incentives for electric vehicle** Improved incentives for electric vehicles will enhance the attractiveness of electric vehicles for the public and increase the purchase of electric vehicles.
Coverage and addressed NDC commitment	Coverage: • Regulations. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Quantitative goals	It is an enabling action, son no direct GHG emissions are expected from it.
Progress indicators	• Improved incentives developed. • Percentage of Increase of electric vehicle from implementation of improved incentives.
Methodologies and assumptions	Not modelled. Improved incentives will assist in the increase uptake of electric vehicles. The Bahamas currently has incentives on electric vehicles with import duties reduced to 10% for vehicles with a landing price of $50,000 (BSD). However, these incentives need to be revised to encourage increased uptake of electric vehicles.
Objectives of the measures	To encourage the purchase of electric vehicles.
Adaptation co-benefits	Yes. This action will help diversify the Bahamian energy mix and reduce its fossil fuel dependence with a focus on renewables.
Appropriateness and effectiveness of the mitigation actions	This mitigation action will support the country in achieving the NDC target based on economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Status	Planned

Type of information	Brief description
Duration	2022-2025
Lead Agency	Ministry of Finance, Ministry of Environment and Housing

Type of information	Brief description
Name and general descriptions of the mitigation actions	**30.- Assessment of Government vehicles and program for replacement of suitable vehicles with electric vehicles** To effectively conduct a transition to electric vehicles and prevent stranded assets, fleet assessment should be conducted. This fleet assessment will identify suitable electric vehicle replacement for internal combustion engine (ICE) vehicles and create a plan for replacement based on age and use of vehicles.
Coverage and addressed NDC commitment	Coverage: • Local Plans. Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Quantitative goals	The emission reduction potential will be determined upon completion of assessment.
Progress indicators	• Assessment completed. • Vehicle transition plan for government fleet developed.
Methodologies and assumptions	Thorough assessment of vehicles in the Government fleet will be conducted and suitable replacement vehicles identified. Plan will be developed for transition of ICE vehicles to electric vehicles. The assumption is that government fleet has suitable replacement electric vehicles and vehicles are constantly being upgraded and therefore they can be transitioned to electric vehicles. A challenge with larger vehicles must be addressed.
Objectives of the measures	To identify suitable electric vehicle replacement in the Government fleet.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	This mitigation action will support the country in achieving the NDC target based on economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Status	Planned
Duration	2022-2025
Lead Agency	Ministry of Finance, Ministry of Environment and Housing

Type of information	Brief description
Name and general descriptions of the mitigation actions	**31.- Introduction of electric vehicles to Government Fleet** Based on the vehicle transition plan developed, The Government of The Bahamas will begin the implementation of transition from combustion vehicles to electric ones.
Coverage and addressed NDC commitment	Coverage: • Infrastructural Projects. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Quantitative goals	Bundled with Mitigation Action 33.
Progress indicators	Number of Government ICE vehicles transitioned to electric vehicles.
Methodologies and assumptions	Modelled using the LEAP software. Bundled with Mitigation Action 33. There is a need to find options that are not cost-prohibitive.

Type of information	Brief description
Objectives of the measures	To increase penetration of electric vehicles in the government fleet.
Adaptation co-benefits	Yes. This action will help diversify the Bahamian energy mix and reduce its fossil fuel dependence with a focus on renewables.
Appropriateness and effectiveness of the mitigation actions	This mitigation action will support the country in achieving the NDC target based on economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Status	Ongoing
Duration	2019-2030
Lead Agency	Ministry of Finance, Ministry of Environment and Housing

Type of information	Brief description
Name and general descriptions of the mitigation actions	**32.- Installation of charging stations for electric vehicles** To transition to electric vehicles, proper infrastructure such as charging station needs to be installed. This is an enabling factor to increase penetration of electric vehicle.
Coverage and addressed NDC commitment	Coverage: • Infrastructural Projects. Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Quantitative goals	This action is not expected to provide direct emission reductions but will help increase the penetration of electric vehicles on the islands.
Progress indicators	Number of charging stations installed.
Methodologies and assumptions	Geographic wide installation of electric chargers. The installation of electric chargers geographic wide will increase the penetration of electric vehicles on island. Wiring for charging ports in new homes needs to be considered.
Objectives of the measures	To increase penetration of electric vehicles.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	This mitigation action will support the country in achieving the NDC target based on economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Status	Ongoing
Duration	2019-2030
Lead Agency	Ministry of Environment and Housing

Type of information	Brief description
Name and general descriptions of the mitigation actions	**33.- Increase sales of electric vehicles to 35% and hybrid to 15%** Adoption of electric vehicles simultaneous with the transition to renewables will help reduce fossil fuel consumption in the transport sector.
Coverage and addressed NDC commitment	Coverage: • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Quantitative goals	The total GHG emission reduction potential is estimated at 1.1 GgCO2-eq by 2030.
Progress indicators	Percentage of electric vehicle sales.
Methodologies and assumptions	Modelled using the LEAP software. Electric cars, electric SUVs and electric motorcycles are assumed to represent 35% of the sales of vehicles by 2030. To be updated upon completion of

Type of information	Brief description
	modelling. Electric vehicles are assumed to represent 35% of the sales of vehicles by 2030. This represents an electric vehicle stock share of 13% by 2030. Hybrid vehicles are assumed to represent 15% of the sales by 2030. This corresponds to a vehicle stock share of 5%. Only road transport vehicles were considered in this methodology.
Objectives of the measures	To increase the sale of electric vehicles by 35% by 2030. To increase energy efficiency in the transport sector. To reduce emissions in the transport sector.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	This mitigation action will support the country in achieving the NDC target based on economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Status	Ongoing
Duration	2016-2030
Lead Agency	Ministry of Finance, Ministry of Environment and Housing

Type of information	Brief description
Name and general descriptions of the mitigation actions	**34.- Promotion of the use of Public Transport** Increase access to the public transport and increase reliability may help reduce the use of private vehicles, causing a modal shift and thereby reducing the fossil fuel consumption in the transport sector and assisting in traffic management. Managing travel demand for different areas and increase planning in the public transport system.
Coverage and addressed NDC commitment	Coverage: • Local Plans and Regulations. • Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O). Addressed NDC commitment (First NDC): • Economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Quantitative goals	The estimated GHG emissions reduction potential is 12.9 GgCO2-eq by 2030.
Progress indicators	• Number of minutes of reduced commute times. • Number of reduced private vehicles on the road during peak hours.
Methodologies and assumptions	Modelled using the LEAP software. The number of public transits trips will increase and reduce the distance travelled using personal vehicles. The shift of demand from private passenger vehicles to public transit vehicles. After 2025, the number of private cars will stop growing due to the increased availability of public transport. Private cars are assumed to drive 14,484 km/vehicle per year and have an average of 1.5 passengers per car. The avoided passenger kilometers from the private cars are assumed to be absorbed by buses with an average occupancy rate of 21 passengers per vehicle and an annual mileage of 40,000 km per vehicle. The need to assess a change for busses that offer wheelchair availability and strollers need to open on the side where the sidewalk is. Better regulation in public transportation is a must. Modernization of the system with schedule display is a proposed option.
Objectives of the measures	To increase the use of public transport, to increase energy efficiency in the transport sector, to help reduce commute times by reducing the number of private vehicles on the road.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	This mitigation action will support the country in achieving the NDC target based on economy-wide reduction GHG emissions of 30% when compared to its BaU scenario by 2030.
Status	Planned
Duration	2022-2030
Lead Agency	Ministry of Transport and Local Government

AII.3 Industrial Processes and Product Use (IPPU)

Type of information	Brief description
Name and general descriptions of the mitigation actions	**35.- 20% Phase Out of HFC** Encouraging alternatives to HFC refrigerants through ratification of Kigali Amendment to the Montreal Protocol and also improving energy efficiency in the sector.
Coverage and addressed NDC commitment	This action aims to reduce HFC emissions from refrigeration and air conditioning (RAC) equipment. This can be achieved by substituting HFC refrigerants with low-GWP refrigerants (in installed stock) and limiting the import of new HFC-based equipment. The replacement of refrigerants can lead to an implicit improvement in the energy efficiency of RAC equipment, thereby reducing energy demand, generating savings for end users and lowering the load on the national electricity system. GHG covered: HFC, CO_2e (indirect emissions due to electricity consumption).
Quantitative goals	Not estimated
Progress indicators	Annual HFC consumption based on imports and exports of controlled substances.
Methodologies and assumptions	The assumption is 20% HFC phase down by 2030. Assumption is that each year from implementation a fraction of the imported HFCs will be replaced by alternative refrigerants which at least a 90% lower global warming potential HFCs. It is necessary to avoid cost-prohibitive solutions. Duty is an issue. Interoperability between Customs and The Department of Environmental Planning and Protection (DEPP). Agencies need to work together for enforcement of Kigali Amendment. Additionally, boxes are being mislabeled some products are coming into the country when they shouldn't be.
Objectives of the measures	To reduce HFC refrigerants use in residential, commercial, and industrial sectors, while transiting to lower-GWP refrigerants.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	HFCs have high global warming potential (GWP), raising concern about their impacts as they become increasingly used as replacements for ozone-depleting substances (ODS), and as economic growth spurs demand for new equipment, especially in the refrigeration/AC sector. Replacing high-GWP HFCs with low-GWP alternatives could avoid 0.1°C of warming by 2050. Fast action under the Montreal Protocol could limit the growth of HFCs and avoid up to 0.5°C of warming by 2100. Additionally, the HFC phase-down can lead to an improvement in the energy efficiency of new and existing equipment, helping to reduce the load on the Bahamian electricity system.
Status	Newly Proposed
Duration	2022-2030
Lead Agency	Ozone Unit, Department of Environmental Health Service

AII.4 Land Use, Land-Use Change and Forestry (LULUCF)

Type of information	Brief description
Name and general descriptions of the mitigation actions	**36.- Sustainable agroforestry practices in Andros, Grand Bahama, Acklins, Crooked Island, Planna and Samana Cays** The Pine-Island project will target non-timber forest products with a multi-pronged approach to improving livelihoods while ensuring the sustainability of the resources. Two projects' areas were selected as Palm cultivation on Andros and Grand Bahama and sustainable Cascarilla cultivation on Acklins and Crooked Island. Integrating natural biodiversity, species and trees with crops and livestock will increase emission sinks from native trees, less fertilizer use, increase habitat and build resilience against one-off diseases.
Coverage and addressed NDC commitment	This measure is aimed at reducing GHG emissions from the agriculture sector and increase carbon sinks. Particularly agroforestry comes with many positive effects that benefit farmers and local communities, on and off-farm biodiversity, and soil health. It is a farming practice that follows the principles of agroecology and implements them through the integration of trees into the farm management. GHG covered: Carbon Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O)
Quantitative goals	Due to data constraints on the hectares of land to be converted and the sequestration potential, this mitigation action was not modelled.
Progress indicators	• Palm cultivation area. • Cascarilla cultivation area. • Gained vegetation mass. • Applied fertilizer. • Number of ha of agricultural lands converted to agroforestry.
Methodologies and assumptions	With a view towards preserving biodiversity, a technical guide will be developed for the identification and utilization of degraded forest lands for sustainable oil palm expansion, and a site selection guide for identifying high potential areas for sustainable palm oil. Through the development of alternative livelihoods, including agroforestry and non-timber forest products, pressure on forest resources will be relieved while providing opportunities for generation of income in remote coastal communities hard hit by the economic downturn and loss of tourism revenues. This mitigation action needs to have a special consideration as everything for these islands requires transportation and infrastructure, they are rural, habitat is pretty wild, lots of vines, shrubs, grasses grow up to the palm tree level. To enter these islands, it is necessary to take a flight as they are very remote.
Objectives of the measures	• To increase emission sinks in the agriculture sector. • To improve biodiversity in selected areas. • To increase use of agro-forestry management practices among coastal communities.
Adaptation co-benefits	Yes. Agroforestry is considered a low-cost adaptation solution, as it helps combating land degradation and desertification, as well as improving food security.
Appropriateness and effectiveness of the mitigation actions	The Pine-Island project will target non-timber forest products with a multi-pronged approach to improving livelihoods while ensuring the sustainability of the resources. Two projects' areas were selected as Palm cultivation on Andros and Grand Bahama and sustainable Cascarilla cultivation on Acklins and Crooked Island. Integrating natural biodiversity, species and trees with crops and livestock will increase emission sinks from native trees, less fertilizer use, increase habitat and build resilience against one-off diseases.
Status	Ongoing
Duration	2015-2025
Lead Agency	Ministry of Agriculture and Marine Resources

Type of information	Brief description
Name and general descriptions of the mitigation actions	**37.- Conservation and Sustainable management practices and the establishment of a forest estate with 20% land cover**

Type of information	Brief description
	Managing 15% of the conservation forest (149,396.99 hectares) and forest reserves (96,542.61 hectares) and protected forests (37,810.58 hectares) on Abaco, Andros, Grand Bahamas, and New Providence.
Coverage and addressed NDC commitment	This measure is part of the mitigation route of the Land Use, Land Use Change and Forestry (LULUCF) sector. Forests play a critical role in mitigating climate change by capturing carbon dioxide and storing carbon within soils and forest biomass, so forest management actions are necessary to support maintaining or enhancing the forest carbon sinks. GHG covered: Carbon Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O).
Quantitative goals	The estimated GHG emission reduction is 381.151 $GgCO_2$-eq.
Progress indicators	• Forest cultivation area. • Forest mass gained. • Forest area conserved. • Recovered mangrove area. • Diversity assessment. • Number of ha of reforested areas in degraded areas.
Methodologies and assumptions	Modelled using the LEAP software. Annual carbon savings by the benefit of the project through integration of forest domain into land-use planning improved forest management. They avoided deforestation together with mangrove rehabilitation efforts estimated up to 381.151 $GgCO_2$-eq. This data was entered into the model as recommended by the project. Generational land and land ownership may be an issue. There is an educational barrier in the communities on the islands as they are committed to traditional farming practices.
Objectives of the measures	• To improve the sustainable management practices of existing and new forest reserves. • To increase emission sinks. • To improve biodiversity in selected area.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	The Pine Island project seeks to innovate community management plans for newly gazetted forest areas. Natural biodiversity, species and trees with crops and livestock will increase emission sinks from native trees, less fertilizer use, increase habitat and build resilience against one-off disease. Under the Pine Islands – Forest/Mangrove Innovation and Integration (Grand Bahama, New Providence, Abaco, and Andros), these measures have been identified, and sites have been assessed.
Status	Ongoing
Duration	2015-2025
Lead Agency	Forestry Unit

Type of information	
Name and general descriptions of the mitigation actions	**38.- Reestablishment & Rehabilitation of 50 ha of Davis Creek, Andros Ecosystem** Reestablishment and rehabilitation of Davis Creek in Andros will improve sequestration potential.
Coverage and addressed NDC commitment	This measure is part of the mitigation route of the Land Use, Land Use Change and Forestry (LULUCF) sector. Mangrove soils are highly effective carbon sinks, sequestering vast amounts of carbon. Wetlands, and especially mangrove forests, sequester far more carbon per square mile than do tropical forests, and they also provide shelter for fish, protect the coast from storm surges, and keep coral reefs alive. GHG covered: Carbon Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O).
Quantitative goals	The estimated GHG emission reduction is 14.563 $GgCO_2$-eq.
Progress indicators	• Mangrove forest mass gained. • Mangrove forest area conserved. • Mangrove forest area recovered. • Number of ha of seagrass beds, reefs, mangroves protected and rehabilitated.
Methodologies and assumptions	Modelled using the LEAP software. According to recent studies, mangroves contain an average of 1,023 tons of carbon per

Type of information	
	hectare. This model will pilot restoration efforts for up to 50 hectares across a potential 500 hectares of mangrove forest, increasing carbon sequestration up to 14.563 $GgCO_2$-eq. This data was entered into the model as recommended by the project. Restoring flow would reduce the areas mangroves inhabit
Objectives of the measures	To increase emission sinks; to rehabilitate and re-establish Davis Creek in Andros.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	Reestablishment and rehabilitation of Davis Creek in Andros will improve sequestration potential.
Status	Ongoing
Duration	2015-2025
Lead Agency	Forestry Unit

AII.5 Waste

Type of information	Brief description
Name and general descriptions of the mitigation actions	**39.- Development of a waste management system to include composting systems** Composting breaks down food and green waste for soil creation. This reduces the amount of organic waste going into landfills. Good composting practices assist in minimizing GHG emissions. This proposed action is modelled after other Caribbean islands mitigation action for waste.
Coverage and addressed NDC commitment	This measure is part of the waste sector's mitigation pathway, mainly aimed at mitigating methane emissions, and represents a desirable measure due to the environmental benefits it provides in the short-medium term. Compost benefits the climate by improving carbon sequestration in the soil and by preventing methane emissions through aerobic decomposition, as methane-producing microbes are not active in the presence of oxygen. GHG covered: Carbon Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O).
Quantitative goals	Due to lack of data this action was not modelled
Progress indicators	• Produced waste. • Waste sent to landfill. • Waste characterization. • Organic waste sent to composting. • Percentage of Increase in composting systems.
Methodologies and assumptions	Not modelled. Waste management and composting will reduce the amount of organic waste landfills, whereby reducing emissions, however implementation must be strengthened. Waste is currently not separated at household level. Deep water well discharges need to be considered.
Objectives of the measures	To improve waste management and encourage composting to reduce waste to the landfill.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	Composting breaks down food and green waste for soil creation. This reduces the amount of organic waste going into landfills. Good composting practices assist in minimizing GHG emissions. This proposed action is modelled after other Caribbean islands mitigation action for waste.
Status	Newly Proposed
Duration	2022-2030
Lead Agency	Ministry of Environment and Housing, Department of Environmental Health Services

Type of information	Brief description
Name and general descriptions of the mitigation actions	**40.- Introduction of a National Recycling Program** Recycling is the reprocessing of materials (mainly used) into new products. This program will help reduce the waste entering the landfills, reduce consumption of raw materials, reduce energy usage and GHG emissions. It is a key component to waste management practices.
Coverage and addressed NDC commitment	This measure is part of the waste sector's mitigation pathway, mainly aimed at mitigating methane emissions, and represents a desirable measure due to the environmental benefits it provides in the short-medium term. Recycling helps reduce greenhouse gas emissions by reducing energy consumption. Using recycled materials to make new products reduces the need for virgin materials. This avoids greenhouse gas emissions that would result from extracting or mining virgin materials. GHG covered: Carbon Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O)
Quantitative goals	Due to lack of data this action was not modelled.
Progress indicators	• Waste characterization. • Annual separated waste. • Annual recycled waste. • Amount of waste diverted from the landfill.

Type of information	Brief description
Methodologies and assumptions	Not modelled. A recycling program will enhance the behavioral change for recycling. The assumption made is waste originally destined for the landfill will be diverted to the recycling facility. Analyzing previous endeavors to reduce the risk of failure is a must. There is a great market for aluminum cans and glass bottles.
Objectives of the measures	To reduce waste at the landfill.
Adaptation co-benefits	No
Appropriateness and effectiveness of the mitigation actions	Recycling is the reprocessing of materials (mainly used) into new products. This program will help reduce the waste entering the landfills, reduce consumption of raw materials, reduce energy usage and GHG emissions. It is a key component to waste management practices.
Status	Newly Proposed
Duration	2022-2030
Lead Agency	Ministry of Environment and Housing, Department of Environmental Health Services

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