St. Kitts and Nevis

Updated Nationally Determined Contribution

Communicated to the UNFCCC October 2021

Introduction

The Federation of St. Kitts and Nevis hereby communicates its Nationally Determined Contribution (NDC) toward achieving the UNFCCC objective as set out in Article 2 of the Convention, and in accordance with decisions 1/CP.19 and 1/CP. 20. St. Kitts and Nevis pledges a carbon dioxide (CO_2) emissions reduction target of 61% against a 2010 base year.

The twin island Federation of St. Kitts and Nevis is a democratic and sovereign country located in the northern part of the Lesser Antilles chain of islands in the Caribbean. Climate change is already impacting critical sectors including agriculture, water, tourism and health, and affecting particularly vulnerable communities and groups. In addition, the COVID-19 pandemic has had a severe impact on St. Kitts and Nevis' tourism-dependent economy. The travel and tourism sector's contribution to national GDP contracted from 52% in 2019 to 22% in 2020, and tourism-related services continue to be affected by the ongoing pandemic.

The NDC revision process was supported by the NDC-Partnership, Climate Analytics, and IRENA in collaboration with the European Commission's support through the EU Technical Assistance Facility (EUTAF) on the technical component for the assessment and modelling of the mitigation actions. The technical component was followed by several validation workshops with a multi-sectoral approach that included engagements with key ministries, public stakeholders, and technical experts.

The Government of St. Kitts and Nevis is appreciative of the support provided by the NDC Partnership through its implementation partners as well as the Government of Norway for their financial support as part of the NDC Partnership's Climate Change Enhancement Package (CAEP). St. Kitts and Nevis requires international support to achieve its CO_2 emissions reduction target as well as to implement adaptation measures reducing the risks of climate change, and address loss and damage that is already being experienced and is projected to increase.

Mitigation

The largest source of national greenhouse gas emissions is burning of diesel for electricity generation, followed by gasoline consumption for transportation, at approximately 60% and 30% respectively. The release of carbon monoxide from residual crops in the AFOLU sector is also a significant contributor of emissions. The remaining CO_2 emissions come from the consumption of kerosene, lubricants, and other oils. Power generation released 156 $GgCO_2e$ in St. Kitts and Nevis in 2020. 95% of electricity is generated through diesel power plants, with approximately 3% (2.2 MW) coming from wind and approximately 2% from solar (1.5 MW) for a total of 5.6%.

St. Kitts and Nevis is committed to reducing its emissions and limiting the average global temperature rise to 1.5° C. In the first NDC, St. Kitts and Nevis proposed a CO_2 emissions reduction target of 22% by 2025 and 35% by 2030 compared to the business-as-usual scenario, decreasing economy-wide emissions to 529 $GgCO_2e$. and 540 GgCO2e. by 2025 and 2030 respectively. The first NDC covered all *economic* sectors, but special attention as given to the power generation and transportation sectors because they had the highest CO_2 emissions reduction potential.

This NDC revision process found that the BAU scenario in the first NDC was overestimating GDP growth, and in consequence overestimating current baseline emissions as well as the trajectory for 2025. The revised NDC includes an emissions reduction target against a 2010 base year instead of a BAU scenario for improved clarity and consistency in monitoring and reporting emissions.

This revised and strengthened NDC pledges a significantly more ambitious mitigation target of **reducing economy-wide CO_2 emissions by 61% by 2030, compared to the base year 2010**, conditional upon adequate access to resources including climate finance as well as capacity building support. This will be achieved by switching to 100% renewable energy in electricity generation and increasing the share of electric vehicles in the vehicle fleet to at least 2%. Additionally, St. Kitts and Nevis seeks financial and capacity building support to develop the necessary charging infrastructure and training programs to enable swift decarbonization of the transport sector.

For the 2020 revision cycle, the participatory process with technical support from IRENA led to the development of an assessment of the cost-effectiveness of mitigation options for the power and transport sectors.

When comparing the emissions target of this NDC against a 2010 base year, this NDC translates to a 61% decrease in total carbon dioxide emissions. St. Kitts and Nevis' first NDC pledged to decrease emissions by 35% against a business-as-usual scenario. However, based on observations over the past 5 years, this business-as-usual scenario was overestimating GDP growth and carbon intensity of the economy. In consequence, the proposed target of 35% reduction by 2030 against the BAU in the first NDC would effectively have resulted in a 115% increase in emissions compared to 2010.

In absolute terms, the first NDC proposed a target emission of no more than 529 $GgCO_2e$, while this revised NDC proposes to reduce emissions to 124 $GgCO_2e$. The base year 2010's emissions were 253 $GgCO_2e$ excluding forestry. This emissions reduction largely comes from the energy sector, namely from power generation and transportation, which emit the largest share of GHG emissions in the country. The proposed intervention in this revised NDC includes 100% renewable energy for power generation and electrification of 2% of the total vehicle fleet.

Box 1: A comparison of mitigation ambition in the first NDC and this revised NDC.

Data limitations

While the target of this NDC was informed by a comprehensive scenario analysis of the energy sector, a lack of data for the Agriculture, Forestry and Land Use (AFOLU), Industrial Processes and Processing Unit (IPPU), and Waste sectors was a barrier to conducting an economy-wide analysis. Due to the availability of quantifiable information to set measurable goals as well as the highest potential for emissions reduction, the energy sector is the focus of this NDC.

The FAO Statistics Division 2014 estimates that forests in St. Kitts and Nevis remove approximately 137 Gg of carbon dioxide annually. However, recent data on land use change, biomass stock, or biomass growth is lacking, and the calculation of the amount of greenhouse gas removed relies on estimations from default values. Due to this uncertainty and lack of contextual nationally specific data, a new forest inventory would be highly useful in providing more accurate information.

St. Kitts and Nevis does not track emissions from the Forestry, Industrial Processes and Product Use (IPPU), and waste sectors, but the emissions from these sectors are presumed to be minimal. Measurement of national emissions from the AFOLU, IPPU and waste sectors can be implemented in the future for more robust ICTU communication, subject to available capacity building support.

Adaptation

The Federation of St. Kitts and Nevis is committed to improving resilience and capacities to adapt to the long-term impacts of climate change and ensure the well-being and prosperity of its population and the health of its natural resources. St. Kitts and Nevis aims to reduce vulnerability to the adverse impacts of climate change through cross-sectoral and multi-faceted measures that build adaptive capacity and resilience over the long-term. This will be achieved through mainstreaming climate change adaptation into the national development agenda, ensuring mitigation co-benefits where possible and mobilizing external climate finance to support effective adaptation planning and implementation.

St. Kitts and Nevis follows guidance provided by Decision 9/CMA.1 to include adaptation as a component of NDCs. Information on elements (a) through (e) are provided with the purpose of increasing the visibility and profile of adaptation and its importance for St. Kitts and Nevis; strengthening action and support for adaptation; providing inputs for the global stocktake and promoting learning and understanding from experiences with adaptation thus far.

Adaptation priorities

The National Climate Change Policy, 2017 provides the legal mandate and policy framework for climate action in St. Kitts and Nevis. The National Climate Change Adaptation Strategy, 2018 operationalizes the National Climate Change Policy and was developed using a participatory approach, gaining input and recommendations from diverse stakeholder groups through national consultations. The Strategy details specific adaptation objectives and measures across eight sectors (agriculture, coastal and marine ecosystems, forest and terrestrial ecosystems, finance and banking, human health, infrastructure and physical development, tourism and water) and five cross-cutting areas (stakeholder capacity building and engagement, information management, research and monitoring, integrated adaptation and disaster risk reduction and inter-sectoral coordination) for the time period of 2018-2030.

The Strategy is built on principles of enhanced stakeholder participation; building capacity to address climate change impacts; decision-making based on scientific and local knowledge; sustainable use and management of the environment and natural resources; preservation of St. Kitts and Nevis' cultural heritage; gender equity; enhanced inter-sectoral coordination; the precautionary principle; adoption of a low regret approach; recognition that adaptation is an additional burden for St. Kitts and Nevis; integrity and good governance; and promotion of regional cooperation. Adaptation measures included in the Strategy largely focus on building adaptive capacity and readiness including the enabling conditions needed for implementing effective adaptation; reducing exposure to climate hazards; and reducing inherent sensitivities to climate impacts.

In 2021, during development of the St. Kitts and Nevis Third National Communication to the UNFCCC and development of this NDC, further stakeholder consultations on adaptation were held. Using a participatory approach, a range of stakeholders were identified, and prioritized additional adaptation needs not included in the National Climate Change Adaptation Strategy.

Multi-criteria analysis was used to prioritize adaptation measures based on (i) contribution to social equity, (ii) ease of implementation/feasibility, (iii) sustainability, scalability, and replicability, (iv) effectiveness and impact and (iv) potential environmental risks.

The National Climate Change Adaptation Strategy and more recent stakeholder consultations focused on adaptation have identified the agriculture, coastal and marine ecosystems, human health, tourism and water resources as the priority areas and sectors for adaptation. Cross-cutting areas including inter-sectoral coordination, stakeholder capacity building, research and monitoring and evaluation are critical to supporting adaptation efforts and are also priority areas for adaptation. Programs of action for each of these priority areas have been developed and specific actions and activities to be implemented in the short, medium, and long term have been identified.

Priority programs of actions were developed to fulfill adaptation projections. Inter-sectoral coordination is essential to establish linkages between sectors and build stakeholder capacity for effective coordination and implementation of climate change adaptation. Information management, research and monitoring, and evaluation will support comprehensive adaptation planning and decision-making. Climate smart agriculture will integrate technology to ensure food and nutrition security and resilient rural livelihoods. Integrated water resources management provides safe and reliable water supply for the country and build resilience to climate change. Disease prevention will improve public health through enhanced disease prevention and response. Integrated coastal zone management will build the resilience of coastal and marine ecosystems and associated livelihoods to climate change disasters. Lastly, climate proofing for tourism will increase sustainable tourism through adaptation and disaster risk reduction.

In addition to the above priority programs of action, more recent stakeholder engagement has identified priority adaptation actions for the key sectors and cross-cutting areas that complement actions identified in the National Climate Change Adaptation Strategy. Table 1 details additional adaptation measures not included in the National Climate Change Adaptation Strategy but identified in 2021 stakeholder consultations and included in the St. Kitts and Nevis Third National Communication to the UNFCCC.

Table 1: Key Sectors/Areas and Priority Adaptation Actions identified in 2021 Consultations

Sector/Area	Priority Adaptation Actions
National Readiness	● Integrate adaptation into relevant national legislation ● Provide training and guidance on mainstreaming adaptation into sectoral governance and management ● Improve capacities for sectoral, evidence-based adaptation planning ● Monitor and evaluate implemented adaptation ● Public Education and Awareness for General Population
Settlements and Infrastructure	● Develop and implement national land development policy ● Protect key natural and built assets in low-lying areas ● Retrofit public buildings and infrastructure with climate-smart technology ● Update building codes to account for increased climate hazards
Public Health	● Increase safe water storage measures in households ● Develop program to address mental health issues in the aftermath of disasters ● Develop and implement urban heat response plan including urban greening measures
Vulnerable Groups and Community-Based Adaptation	● Catalyze development of community-based organizations to improve adaptive capacity of communities ● Identify and scale up previous successful community coping strategies ● Develop information access points for early warning systems in rural communities
Coastal and Marine Ecosystems	● Develop and implement seasonal and post-storm beach and nourishments monitoring program ● Develop and implement emergency response plan for sargassum stranding ● Model and map coastal assets to support adaptation planning
Freshwater Resources	● Identify and support methods to expand water supply and storage capacities ● Improve operational efficiencies
Agriculture	● Expand SMART aquaponics and aquaculture systems ● Develop alternative livelihoods and training and diversify away from at-risk crops ● Introduce drought resistance technologies and species in animal husbandry

Tourism	● Conduct beach replenishment and install coastal protection measures to prevent beach erosion ● Expand marine tourism and eco-tourism sectors ● Develop and implement emergency response plans for hotels and resorts and business community

Adaptation progress, results and barriers

The St. Kitts and Nevis Department of Environment, with oversight from the National Climate Change Committee has the overall responsibility for coordinating implementation of the National Climate Change Adaptation Strategy. An Adaptation Sub-Committee of the National Climate Change Committee has been established to facilitate this process and is comprised of key implementing agencies from the public sector as well as relevant civil society organizations and private sector representatives.

St. Kitts and Nevis has made some progress on its adaptation objectives and priorities. As detailed in Table 4, implementation of a variety of adaptation measures has begun. These include pilot projects in the agriculture and water sectors and training exercises to increase capacities in conducting and using vulnerability assessments. Many of these activities were able to be completed through establishing synergies with other funded projects.

However, most of the adaptation measures identified in the National Climate Change Adaptation Strategy have yet to be implemented. Limited funding and inadequate technical and human resources are consistently identified as significant barriers to implementing adaptation measures.

The Department of Environment has not yet started to track the results of adaptation measures that have been implemented but has plans to engage in monitoring and evaluation. Support and capacity building for monitoring and evaluation of adaptation measures is needed. Improvements in data and information collection and sharing as well as improved inter-sectoral collaboration is also needed.

Aside from increasing resilience to climate change impacts, there have been additional benefits associated with the thus far limited implementation of the Strategy. These include enhanced collaboration across Ministries; increased public awareness and collaboration with key sectors and stakeholders; behavioral change by some stakeholders; and increased recognition of climate change and risks.

Table 2: Adaptation Progress, Results and Barriers

Sector/Area	Adaptation Progress and Results	Barriers
Agriculture	• 3 pilot projects have been implemented: using organic mulch; forage banking to provide feed for livestock during dry periods; and use of shade houses to intensify production	• Lack of funding to implement identified adaptation actions • Available technical and human resources have been completely inadequate for any level of implementation of adaptation actions • Less than 50% of the adaptation actions identified in the National Climate Change Adaptation Strategy have been integrated into annual operational plans or have been implemented
Disaster Risk Reduction	• Enhanced data collection and availability for adaptation decision making and planning • Maintains a spatial database of critical infrastructure and hazard mapping • Implement land reclamation and other techniques to reverse Coastal erosion • Revise National Multi Hazard Disaster Management and Response Plans	• Lack of funding and human resources to implement identified adaptation actions • Less than 50% of the adaptation actions identified in the National Climate Change Adaptation Strategy have been integrated into annual operational plans or have been implemented
Environment	• Establishment of mechanisms for coordinated and multi-sectoral approaches for adaptation • Establishment of early warning systems in Sandy Point • Small scale stabilization of transportation network with ecosystem-based approaches	• Need for greater coordination between different agencies to implement the National Climate Change Adaptation Strategy • Need additional human resources to ensure conservation and sustainable use and management of forest and terrestrial ecosystems
Health	• Revised the National Multi-Hazard Health Disaster Management Plan, 2019 • Conducted training exercises and undertaking health facilities assessment utilizing the PAHO Green Checklist and the Safe Hospital Checklist assessments tools • Developed health sector disaster and emergency plans	• Lack of funding to implement identified adaptation measures • Competing responsibilities of health workers • Lack of formal arrangements for collaboration with other sectors

	• Adopted Guidelines and vulnerability assessment templates for assessing the health sector	• Less than 50% of the adaptation actions identified in the National Climate Change Adaptation Strategy have been implemented

Sector/Area	Adaptation Progress and Results	Barriers
Tourism, Settlements and Infrastructure	• Telecommunication companies have moved utility lines below ground • Coastal protection projects have been implemented for some key transportation networks • Coastal engineering to reduce coastal erosion has been implemented in South Frigate Bay	• Lack of funding to implement identified adaptation measures • Available technical and human resources have been completely inadequate for any level of implementation of adaptation actions • Less than 50% of the adaptation actions identified in the National Climate Change Adaptation have been implemented
Marine Resources	• Establishment of a Coastal Zone Management Unit • Integration of climate change, ecosystem-based adaptation and disaster risk reduction into legislation, regulations and policies • Vulnerability assessment for fisheries, marine resources and related livelihoods • Invested in research and practices for integrated coastal zone management, 'ridge to reef' and watershed management, ecosystem approaches to fisheries and marine spatial planning • Establishment of a Protected Area System Plan and sustainable financing mechanism • Coral reef early warning system installed at Paradise Reef	• Need sustainable financing to implement additional measures • Less than 50% of the adaptation actions identified in the National Climate Change Adaptation have been implemented
Water	• Data collection has been facilitated through installation of meteorological equipment by the Disaster Management Department • Re-establishment of some rain-fed sources for agricultural purposes • Outfitting of learning institutions with water storage tanks or retrofitting of existing cisterns	• Lack of funding to implement identified adaptation actions. • Available technical and human resources have been completely inadequate for any level of implementation of adaptation actions. • Less than 50% of the adaptation actions identified in the National Climate Change Adaptation Strategy have been integrated into annual operational plans or have been implemented.

	• Monitoring of flood water and damage in flood prone areas	

Loss and Damage

St. Kitts and Nevis is already experiencing loss and damage from climate change and is projected to continue to experience loss and damage despite mitigation and adaptation measures. Based on projections of changes to climate hazards and resultant risks, climate change is likely to result in increased levels of both economic and non-economic loss and damage. International support to avert, minimize and address loss and damage in St. Kitts and Nevis is needed.

St. Kitts and Nevis notes that no guidance has been provided to include loss and damage as a component of NDCs. Information on experienced and projected loss and damage is provided with the purpose of increasing the visibility and profile of loss and damage and its importance for St. Kitts and Nevis; strengthening action and support for loss and damage; providing inputs for the global stocktake and promoting learning and understanding from experiences with loss and damage thus far.

Information is drawn from St. Kitts and Nevis' Third National Communication to the UNFCCC, the Economic Commission for Latin America and the Caribbean Assessment of the Economic Impact of Climate Change on the Coastal and Marine Sector in St. Kitts and Nevis, Damage Assessments from the National Emergency Management Agency and the Climate Analytics Climate Impact Explorer.

Experienced and projected loss and damage

The increasing intensity of tropical cyclones and resultant damages have been strongly linked to the drivers of climate change. In the 1989-2017 period, St. Kitts and Nevis has experienced impacts from twelve tropical cyclones, amounting to over US$700 Million in damages. These storms have affected all sectors of the country, with particularly severe impacts for agriculture, critical infrastructure, transportation, housing, tourism, electricity, and water. These extreme events have also resulted in deaths, heavy coastal erosion, negative health impacts, displacement of thousands of residents, loss of personal effects, soil erosion, saltwater intrusion in fresh water supplies and other forms of non-economic loss and damage.

Projections of the relative change in annual expected damages from tropical cyclones highlight the importance of limiting the global average temperature increase, but also indicate that increased levels of loss and damage is likely inevitable. Depending on the global warming scenario, annual damages from tropical cyclones in St. Kitts and Nevis may increase by approximately 7-12% by 2040 and by approximately 8-33% by 2080. The relative change in 1-in-100-year expected damages from tropical cyclones is expected to increase by 5-9% by 2040 and by 6-23% by 2080, meaning that the risk of extreme damages is projected to increase substantially. These projections do not consider non-economic loss and damage and the potential irreversible losses associated with extreme events.

Table 3: Overview of economic and non-economic loss and damage due to extreme events in St. Kitts and Nevis

Extreme Event	Economic loss and damage (total estimated damages, USD)	Non-economic loss and damage (non-exhaustive)
Hurricane Hugo, 1989	$41 Million	1 death, heavy shoreline erosion, cases of gastro-enteritis due to poor water quality
Hurricane Luis, 1995	$197 Million	Soil erosion
Hurricane Georges, 1998	$445 Million	5 deaths, ~3,000 people displaced from their homes
Hurricane Jose, 1999	$3.8 Million	
Hurricane Lenny, 1999	$41.9 Million	Coastal erosion, loss of personal effects, ~100 people displaced from their homes
Hurricane Omar, 2008	$11 Million	54 people displaced, coastal erosion
Hurricane Earl, 2010	$3 Million	Beach and coastal erosion
Subtropical Storm Otto, 2010	$20.1 Million	Beach erosion
Hurricane Irma, 2017	$19.7 Million	
Hurricane Maria, 2017	$7.9 Million	Beach erosion, eroded cliffs, salt water intrusion into fresh water supply

Air temperatures and precipitation patterns in St. Kitts and Nevis have already been affected by climate change. Historical air temperatures show substantial increases in the number of warm days and nights for St. Kitts and Nevis during the 1980-2011 period. Both the maximum number of consecutive dry days and extreme rainfall measures have been increasing. These changes have led to increased drought with negative effects on agriculture, decreased water security and flash flooding.

Projections of relative change in precipitation indicate an expected decline in rainfall. Depending on the scenario, precipitation in St. Kitts and Nevis may decrease by 2-3% by 2040 and by 2-11% by 2080. St. Kitts and Nevis is particularly vulnerable to low and unreliable rainfall and extended drought periods. Dry conditions that are projected will likely make rain-fed agriculture difficult and increase food insecurity. Decreased availability and competition for freshwater will likely increase water insecurity, leading to water shortages and increased rationing of water.

Projections also indicate an increase in extreme rainfall intensity and increased severity of flash floods. Beyond the economic damages to infrastructure associated with flooding, loss and damage in the health sector may also increase. Vector-borne diseases such as dengue and

chikungunya as well as water-borne diseases may increase in frequency. Mental health issues related to trauma of extreme events – including tropical cyclones and flooding- may also increase, along with loss of social cohesion in the aftermath of disasters.

Air temperatures are projected to increase, with 0.8-1.1C increase by 2040 and 0.9-2.3C by 2080, again depending on the scenario. There is potential for high to extremely high risks for heat waves between July and October. Changes to air temperatures are related to the expected decline in labor productivity due to heat stress. Labor productivity in St. Kitts and Nevis is expected to decline by approximately 3% by 2040 and between 3-10% by 2080 due to higher temperatures. Increased incidents of heat stress, heat stroke and heat-related mortality among vulnerable populations may also increase due to rising air temperatures.

Coastal and marine resources are projected to face significant negative effects as global temperatures rise. Projections of the effects of climate change on the coastal and marine sector range between US$1.5 – 2.1 billion by 2050, due to sea level rise, coral reef decline and increased sea surface temperatures. Sub regional models project summer sea surface temperatures to increase by 1.46C by 2100. Higher sea surface temperatures and ocean acidification are projected to be accompanied by increased salinity, less oxygenation and lower primary production. These changes are likely to result in extensive economic and non-economic loss and damage including declines in fisheries and tourism and associated livelihoods; biodiversity and coral reef loss; and declines in coastal and marine ecosystem services such as coastal protection from storm surges.

Sea level rise poses a significant risk for St. Kitts and Nevis. Sub regional models project sea levels in the vicinity of St. Kitts and Nevis to rise between 0.3-1.2 meters by 2100 under various emissions scenarios. Low elevation settlements within St. Kitts and Nevis are projected to be frequently flooded by storm surge events with substantial impacts on housing and infrastructure. Critical sectors including tourism, agriculture and water are also projected to be negatively affected through coastal erosion, loss of beaches and coastal lands and saline intrusion into freshwater lenses. These impacts will increase the costs associated with development and maintenance of coastal defenses and coastal infrastructure, including critical transportation, housing and utility infrastructure. Flooding and inundation associated with sea level rise may also increase human mobility - including displacement, migration and relocation of communities – resulting in economic costs and also non-economic loss and damage. This includes loss of culture, lifestyle, traditions and heritage; negative impacts on physical health, mental and emotional well-being; loss of sense of place and identity and declines in self-determination, dignity and sovereignty.

Gender and social inclusion

St. Kitts and Nevis recognizes climate change has differentiated impacts on the lives of women and men. Mitigation actions present the possibility to close gender gaps by, for example, increasing the participation of diverse women and men in new labor markets, their insertion in non-traditional roles, or by making their production processes more efficient and increasing their income generation capacity. Meanwhile, women and men experience differentiated vulnerabilities in the face of climate change that vary depending on their position in existing value chains, and their access to information and investment resources, among other variables.

To align the NDC implementation actions with the national development goals on gender equality and Decision 3/CP.25 on the enhanced Lima Work Programme on gender and its gender action plan, St. Kitts and Nevis is committed to mainstreaming gender equality in its Implementation Plan and Financial Strategy. Actions to ensure a cross-sectoral approach include strengthening coordination with national gender stakeholders; increasing institutional capacities on gender mainstreaming; conducting sectoral gender analysis to inform the design and implementation of climate actions; and collecting and assessing sex-disaggregated data in its monitoring and evaluation systems.

In addition, the Government of St. Kitts and Nevis is committed to the development of children, youth, differently abled and elderly persons by encouraging their involvement in the decision-making process on climate change matters. The Government recognizes the value in including children, youth, differently abled, and elderly persons in future planning processes by providing opportunities for participation in feedback and consultations. Such efforts will increase access to adequate resilient infrastructure and planning, including sustainable energy. (reference the new gender policy somewhere in here)

Means of Implementation

The Federation of St. Kitts and Nevis anticipates fully implementing the NDC through access to multilateral and bilateral support including through the Green Climate Fund, multilateral agencies, and bilateral arrangements with development partners. These funds will be used to leverage the limited national resources and technical capacities that are available for responding to climate change. To access the required amount of funding needed, international support in the form of grants and concessional finance mechanisms will be required.

The St. Kitts and Nevis NDC Implementation Plan and Financing Strategy describes in more detail the mitigation and adaptation measures expected to be implemented for this NDC. The Strategy lays the groundwork to reduce and adapt to the effects of climate change and translate the NDC target to real actions, interventions, and support identifying potential funding sources and mechanisms to help achieve the NDC target.

Support needs for Mitigation

The indicative cost for the identified mitigation measures through 2030 is *637 million USD*. The mitigation measures considered in the indicative cost to achieve the target for 2030 for this NDC are listed in Table 4.

Table 4: Indicative Financial Support Needed to Implement Mitigation measures

Mitigation Measure	**Estimated Budget (USD)**
35.7 MW of utility-scale solar PV capacity for Saint Kitts	$70,000,000[1]
6.6 MW of wind power capacity in Saint Kitts	$19,000,000
25 MW of geothermal power capacity (10 MW in Nevis and 15 MW in St. Kitts)	$186,000,000
Improvement in transmission and distribution lines to reduce losses in both islands	$391,000,000
Two solar PV plants of 0.75 MW each to supply two desalination plants	$6,000,000
5% reduction in the power demand by introducing Solar Water Heaters	$20,000,000
Penetration of EVs reaching 2% of the vehicle fleet	$15,000,000

[1] Excluded from the indicative NDC costs of 637 million USD as the plant is already being constructed and financed by a private party with an expected commercial operation date in 2023.

In addition to funding, adequate infrastructure, knowledge, and a conducive policy framework need to be in place to prepare for the interventions, especially for an increase in EVs on the islands. Though the country is small and home and office charging options should be sufficient for ordinary travel purposes, a sufficiently dense network of charging ports is needed to overcome psychological barriers like range anxiety, and to increase the visibility of EVs. Furthermore, a policy framework that considers equity while incentivizing greater adoption of EVs will need to be developed.

Skills training will be needed to facilitate the e-mobility transition. Maintenance and report of EVs needs more sophisticated equipment and background knowledge than for ICEVs. This technology for maintenance and testing will need to be imported, and the demonstration of how to use them will need to be a part of the skills training for mechanics. Similarly, firefighters and first responders need additional training for extinguishing fires on lithium-ion batteries, such as the right type of equipment to use for extrication operations and where to impact the vehicle.

St. Kitts and Nevis welcomes initiatives of the Organization of Eastern Caribbean States Commission supporting decarbonization of the regional energy and transport sectors through projects like the Solar Challenge, and intends to engage with such regional initiatives to support the implementation of this NDC.

Support needs for Adaptation

The cost of achieving the St. Kitts and Nevis National Climate Change Adaptation Strategy is estimated at *127 million USD*. Further information on the complete mitigation and adaptation measures can be found in the Implementation Plan and Financing Strategy for Saint Kitts and Nevis' NDC and the St. Kitts and Nevis Water Sector Adaptation Plan.

International support is needed to implement the priority adaptation measures as well as the full range of adaptation actions identified in the National Climate Change Adaptation Strategy and Third National Communication. The costs of adapting to the impacts of climate change are significant and are recognized as an additional burden on St. Kitts and Nevis due to unchecked greenhouse gas emissions by large emitters. The responsibility for financing and mobilizing resources for adaptation should therefore be borne in large part by large emitters and not by diverting local resources from core development priorities that are also affected by climate change.

St. Kitts and Nevis requires scaling up of existing funding sources as well as access to new regional and international funding sources for adaptation. Indicative budgets for implementation of the priority adaptation programs are listed in Table 5. Additional funding and support are needed for the full range of adaptation measures that have been identified by St. Kitts and Nevis to respond to the impacts of climate change, including support and capacity building for monitoring and evaluation of adaptation.

Table 5: Indicative Financial Support Needed to Implement Adaptation for Priority Programs of Action

Program of Action	Estimated Budget (USD)
Inter-sectoral coordination and stakeholder capacity building	$755,000
Information management, research and M&E for decision-making	$8,000,000
Climate smart agriculture	$14,230,000
Integrated water resources management	$70,850,000[2]
Climate change and disease prevention	$4,950,000
Integrated coastal zone management	$12,900,000
Climate proofing tourism	$15,450,000

Given the projected increases in loss and damage for St. Kitts and Nevis, support is required to avert, minimize and address loss and damage. Averting loss and damage can be supported through mitigation efforts on the global scale to limit global average warming to 1.5°C and through support for national mitigation efforts. Minimizing loss and damage can be achieved through supporting adaptation goals that have been identified by St. Kitts and Nevis. Addressing loss and damage requires separate support from that provided for mitigation and adaptation.

Initial support is needed to develop a national loss and damage strategy that complements existing policies and strategies related to climate change. The national loss and damage strategy will make use of the comprehensive risk management framework - recognized by UNFCCC in Decision 2/CP.19 - to identify appropriate measures related to risk assessment, risk reduction, risk transfer and risk retention as well as other measures to address both avoidable and unavoidable loss and damage that may be experienced. Such measures have already begun to be identified in an ad hoc manner and include the need for providing retraining for those in livelihoods affected by climate change impacts. However, development of a comprehensive loss and damage strategy is a critical first step in addressing loss and damage holistically. Following development of a loss and damage strategy, further support needs for loss and damage will be clarified and detailed.

[2] The costs from the Integrated Water Resources Management were taken from the St. Kitts and Nevis Water Sector Adaptation Plan.

Information to facilitate Clarity, Transparency and Understanding (ICTU)

ICTU Guidance	ICTU Input
1. Quantified 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 mitigation target is against the 2010 greenhouse gas emissions.
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	St. Kitts and Nevis' greenhouse gas emissions in 2010 were estimated to be 253 $GgCO_2e$.
c. For strategies, plans and actions referred to in Article 4, paragraph 6, of the Paris Agreement, or policies and measures as components of nationally determined contributions where paragraph 1(b) above is not applicable, Parties to provide **other relevant information**	Not applicable.
d. **Target** relative to the reference indicator, expressed numerically, for example in percentage or amount of reduction	St. Kitts and Nevis pledges a 61% total CO_2 emissions reduction against a 2010 base year.
e. Information on **sources of data** used in quantifying the reference point(s)	The sources of data used in quantifying the reference points are as follows: ● The Intended Nationally Determined Contributions for the Federation of St. Kitts and Nevis ● St. Kitts Electric Company Limited (SKELEC) annual reports ● Nevis Electric Company Limited (NEVLEC) annual reports ● Deloitte report on Technical Assistance for Power Sector Development in St. Kitts and Nevis, 2017 ● International Energy Agency (IEA) ● International Renewable Energy Agency (IRENA) report on Assessment of cost-effective mitigation options to inform the update of the NDC, 2021

f. Information on the circumstances under which the Party may **update** the values of the reference indicators	The 2010 base year data may be recalculated and updated through continuous methodological improvement and inclusion of the AFOLU, IPPU and Waste sectors. Information on updates may be included in the Biennial Update Reports and National Communications.
2. Time frames 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 CMA;	The target is an expansion of efforts from the first NDC and addresses the 2021-2030 period.
b. Whether it is a **single-year or multi-year** target, as applicable.	A single-year target for 2030.
3. Scope and coverage	
a. General **description of the target**;	St. Kitts and Nevis' economy-wide target will reduce CO_2 emissions by 61% by 2030 relative to 2010, mostly conditional upon adequate international financial and capacity building support through the following interventions: ● Transition to 100% renewable energy in power generation* ● Improve efficiency in transmission and distribution of electricity ● Electrification of 2% of the total vehicle ● Development of EV infrastructure *35 MW of renewable energy will be sourced from a solar farm that will be constructed through private capital, beyond which, all other interventions are conditional.
b. **Sectors, gases, categories and pools** covered by the nationally determined contribution, including, as applicable, consistent with IPCC guidelines;	Sectors: ● All sectors, with a focus on the energy sector (power generation and transportation) Gases: ● Carbon dioxide (CO_2)

c. How the Party has taken into consideration **paragraphs 31(c) and (d)** of decision 1/CP.21;	As per paragraph 31(c) of decision 1/CP.21, St. Kitts and Nevis is only covering carbon dioxide emissions due to insufficient data availability for the other greenhouse gases. St. Kitts and Nevis is focusing on the energy sector as it is a major contributor of greenhouse gas emissions in the country and has the largest potential for emissions reduction.
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.	The National Climate Change Adaptation Strategy for St. Kitts and Nevis (2018) includes mitigation co-benefits where possible, by prioritizing adaptation measures that minimize greenhouse gas emissions and enhance natural ecosystems functioning as carbon sinks. Additional mitigation co-benefits within adaptation projects will be captured through the data collection framework and GHG inventory, and reported in the respective sectors.
4. Planning Process	
a. Information on the **planning processes** that the Party undertook to prepare its NDC and, if available, on the Party's implementation plans, including, as appropriate:	
i. Domestic **institutional arrangements**, public **participation** and engagement with **local communities** and **indigenous peoples**, in a **gender**-responsive manner;	The Department of Environment of St. Kitts and Nevis co-led three sessions to present, discuss and validate the methodology used for the technical analysis to set the mitigation target(s). These sessions were held with key national stakeholders to gather feedback and ensure that the analysis aligned with national plans and priorities. Participants included energy and power sector stakeholders from public organizations such as representatives from the Department of Environment -- Ministry of Environment and Cooperatives, Ministry of Public Infrastructure -- Energy unit, Nevis Electricity Company Limited (NEVLEC), St. Kitts Electricity Company (SKELEC), Traffic Department, Inland Revenue Department, as well as other relevant policy makers. The first validation session was held in February 2021, and the last one in June 2021. National stakeholders prepared feedback and comments, including the Department of Environment, the Energy Unit, and both utilities to ensure accuracy for setting the mitigation target(s).

	During the planning process a review on the gender aspects of the NDC and gender-responsive considerations for the NDC Implementation Plan and Financing strategy was performed by the NDC-P Support Unit to support a gender-responsive implementation of the NDC.
ii. **Contextual matters**, including, inter alia, as appropriate:	
1. **National circumstances**, such as geography, climate, economy, sustainable development and poverty eradication;	**Geography:** St. Kitts and Nevis is a small island developing state comprising two islands of the Lesser Antilles in the Eastern Caribbean Sea. St. Kitts, the larger island, is 37 km long with an area of 176 km^2. Nevis is almost circular in shape with an area of 93 km^2. The estimated population of St. Kitts and Nevis in 2020 was 53,821, with about 20% of the total population residing in Nevis. **Climate:** St. Kitts and Nevis has a tropical maritime climate with an average temperature of 27.8 degrees Celsius with low seasonal variations. The wet season is from August to September. Precipitation is strongly related to altitude; mountain ranges receive an annual average of 2,500-4,000 mm, and coastal areas receive an annual average of 1,061 mm. The islands lie in the northeast trade wind belt; hurricane season is between June to November, where low-pressure systems and tropical disturbances pass through the area. St. Kitts and Nevis is vulnerable to climate change -- localized events of extreme rainfall, hotter days and nights, sea-level rise and extensive droughts suggest a more extreme climate throughout the region. These unprecedented threats are compounded by a limited capacity to forecast climate hazards. Climate data in the Caribbean face challenges related to a lack of sufficient weather and climatological stations, automated reporting of weather stations, and monitoring of critical variables for long timescales of 30 years or more. **Economy:** St. Kitts and Nevis is classified as a high-income country and had a GDP of USD 1.053 billion in 2019 (World Bank). The country has continued to make strides in economic progress. Between 2015 and 2019 the nation's GDP per capita increased from US $18,000 to US $19,000. This economic advancement comes despite major setbacks by disasters including hurricanes Maria and Irma in September 2017, and the strongest El Niño event from 2014 to 2016 in the past century. The tourism industry is

	the main economic contributor, and is a strategy to diversify away from an economy historically reliant on agriculture, especially the sugar industry until 2005. Construction, banking and export-oriented manufacturing are growing and significant sectors. In 2016, the tourism sector contributed about 7.2% to the total GDP.
2. **Best practices** and experience related to the preparation of the NDC;	The revised NDC builds on existing data and the revision process engaged more stakeholders than for the first NDC, including the utilities companies for both St. Kitts and Nevis, the Ministry of Tourism and Transport. In addition, the revision process included collaboration with a suite of international partners with diverse expertise to deliver a more comprehensive and robust NDC as well as an Implementation Plan and Financing Strategy.
a. **Other** contextual aspirations and priorities acknowledged when joining the Paris Agreement;	
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, paragraphs 16–18, of the Paris Agreement;	St. Kitts and Nevis is not part of an agreement to act jointly under Article 4 of the Paris Agreement.
c. How the Party's preparation of its NDC has been informed by the outcomes of the **global stocktake**, in accordance with Article 4, paragraph 9, of the Paris Agreement;	The first global stocktake will take place in 2023 and St. Kitts and Nevis is committed to implementation, monitoring and evaluation to inform the progress on the targets proposed in the NDC.
d. Each Party with an NDC 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 NDC;	St. Kitts and Nevis considered all social, economic and environmental impacts of the mitigation and adaptation measures in developing the NDC targets
ii. **Specific projects**, measures and activities to be	Please see 3(d) above.

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 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 assumptions were based on a sectoral breakdown of emissions provided in the Second National Communication, which used the 1996 IPCC Guidelines that have since been supplanted by the 2006 IPCC Guidelines. In accordance with the Second National Communication, it was assumed that 60% of all emissions come from power generation, 30% from transportation, and 10% from remaining activities. There is no historical emissions inventory for the IPPU and Waste sectors, and the AFOLU emissions were only available through an estimation based on neighboring countries, therefore, the emissions estimate is possibly an under-estimation of real emissions. In addition, the methodological approach considers emissions factors calculated by the UNFCCC technical team.
b. Assumptions and methodological approaches used for **accounting** for the implementation **of policies and measures or strategies** in the nationally determined contribution;	See 5(a) above. St. Kitts and Nevis will also apply specific assumptions and methodologies where relevant, when accounting for the progress of various policies and measures in its Biennial Update Report or Biennial Transparency Report. The identification and revision of suitable mitigation options was conducted through a consultative process with key national stakeholders such as the Department of Environment, the Energy Unit and representatives from both utilities. Mitigation options were identified from the first NDC as well as other national plans, on-going projects, and current investment plans of the Government.

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;	See 5(a) above.
d. **IPCC methodologies and metrics** used for estimating anthropogenic greenhouse gas emissions and removals;	St. Kitts and Nevis' emissions for CO_2 will be derived using the 2006 IPCC Guidelines.
e. **Sector-, category- or activity-specific** assumptions, methodologies and approaches consistent with IPCC guidance, as appropriate, including, as applicable:	
i. Approach to addressing emissions and subsequent removals from **natural disturbances** on managed lands;	Not applicable.
ii. Approach used to account for emissions and removals from **harvested wood products**;	Not applicable.
iii. Approach used to address the effects of **age-class** structure in forests;	Not applicable.
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;	Please see 5 (a-e).
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;	Not applicable.

iii. For **climate forcers** included in nationally determined contributions not covered by IPCC guidelines, information on how the climate forcers are estimated;	Not applicable.
iv. **Further technical information**, as necessary;	Not applicable.
g. The intention to use **voluntary cooperation under Article 6** of the Paris Agreement, if applicable.	St. Kitts and Nevis currently does not use any market mechanism but is willing to explore its potential under the UNFCCC process.
6. How the Party considers that its NDC is fair and ambitious in light of its national circumstances	
a. How the Party considers that its NDC is **fair and ambitious** in the light of its national circumstances;	St. Kitts and Nevis' revised NDC is fair and ambitious. The revised NDC target of a 61% reduction of greenhouse emissions against base year 2010 is consistent with the IPCC Special Report on the Impacts of Global Warming of 1.5 ℃. This special report shows pathways that limit global warming to 1.5 ℃ with no or limited overshoot. Pathways that describe a 40-50% reduction in net anthropogenic GHG emissions by 2030 compared to 2010 levels, and net anthropogenic CO_2 emissions reaching net zero around 2050.
b. Fairness considerations, including reflecting on equity;	Please refer to 6(a) above.
c. How the Party has addressed **Article 4, paragraph 3**, of the Paris Agreement;	The emissions reductions are a strengthening of the indicative ambitious 2030 NDC target submitted in 2016. Compared to the absolute emissions target in the first NDC, this revised NDC represents a significant enhancement of ambition. Under the targets proposed in this revised NDC, St. Kitts and Nevis expects its total emissions to decrease from 253 $GgCO_2e$ (2010 estimate) to 124 $GgCO_2e$ within the energy sector. This translates to an effective 61% emissions reduction against the 2010 base year emissions. In addition to the increase in mitigation ambition, the submission of this revised NDC is an enhancement in the following ways: ● St. Kitts and Nevis has moved from a BAU approach to a base year approach ● St. Kitts and Nevis has strengthened the adaptation, loss and damage, and gender components of the NDC

	While national efforts are underway and will continue to be exerted toward emission reduction, in accordance with the obligation of developed countries under the UNFCCC Convention and the Articles of the Paris Agreement, St. Kitts and Nevis anticipates implementing the NDC through access to multilateral and bilateral support including through the Green Climate Fund, multilateral agencies and bilateral arrangements with development partners. These funds will be used to leverage the limited national resources and technical capacities that are available for combating climate change.
d. How the Party has addressed **Article 4, paragraph 4**, of the Paris Agreement;	The ambition of this target has to be considered amidst the backdrop of the country's small, open economy and limitations in natural, financial, technological and human resources to implement the measures necessary to achieve the intended emissions reductions.
e. How the Party has addressed **Article 4, paragraph 6**, of the Paris Agreement;	As a SIDS considering Article 4, paragraph 6, St. Kitts and Nevis has the option to prepare and communicate strategies, plans and actions reflecting its special circumstance. In light of the country's commitment to limiting increases in global average temperatures to well below 1.5 ℃ above pre-industrial levels, it has submitted a quantifiable target as outlined in 1(b) above. This revised NDC also includes a comprehensive adaptation component that communicates the adaptation activities and actions that the country will undertake.
7. How the NDC contributes towards achieving the objectives of the Convention as set out in its Article 2	
a. How the NDC contributes towards achieving the objective of the Convention as set out in its Article 2;	See 6(a) above. St. Kitts and Nevis considers the ambitious nature of this revised NDC to be in line with Article 2 of the Convention.
b. How the NDC contributes towards Article 2, paragraph 1(a), and Article 4, paragraph 1, of the Paris Agreement.	See 6(a) above.