National Climate Change Policy of Saint Vincent and the Grenadines

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Ministry of Finance, Economic Planning, Sustainable Development & Information Technology
Government of Saint Vincent and the Grenadines, Kingstown, Saint Vincent

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Foreword

[Foreword by Minister to be added]

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Acronyms and Abbreviations

CANARI	Caribbean Natural Resources Institute
CARICOM	Caribbean Community
CCA	Climate Change Adaptation
CCCCC	Caribbean Community Climate Change Centre
CCORAL	Caribbean Climate Online Risk and Adaptation Tool
CDEMA	Caribbean Disaster Emergency Management Agency
CSO	Civil Society Organisation
CWSA	Central Water and Sewage Agency
EIA	Environmental Impact Assessment
EPSDD	Economic Planning and Sustainable Development Division
DRR	Disaster Risk Reduction
GCF	Green Climate Fund
GEF	Global Environmental Facility
GDP	Global Domestic Product
GHG	Greenhouse Gas
GoSVG	Government of Saint Vincent and the Grenadines
IICA	InterAmerican Institute for Cooperation on Agriculture
IPCC	Intergovernmental Panel on Climate Change
MARPOL	International Convention for the Prevention of Pollution from Ships
M&E	Monitoring and Evaluation
MEA	Multilateral Environmental Agreements
NAMA	Nationally Appropriate Mitigation Action
NAP	National Adaptation Plan
NDA	National Designated Authority
NDC	Nationally Determined Contribution (to the reduction of greenhouse gas emissions under the UNFCCC Paris Agreement)
NBSAP	National Biodiversity Strategy and Action Plan
NESDP	National Economic and Social Development Plan
OECS	Organisation of Eastern Caribbean States
SDGs	Sustainable Development Goals
SIDS	Small Island Developing State
SVG	Saint Vincent and the Grenadines
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change

1. Introduction

The N*ational Climate Change Policy of Saint Vincent and the Grenadines* (SVG) provides overarching guidance for building resilience and mainstreaming climate change into the national development agenda for low carbon and sustainable growth. It lays out an institutional framework for an integrated and coordinated response that engages all stakeholders for climate change adaptation and mitigation, and seeks to enable harmonisation across sectoral policies and plans.

The Government of Saint Vincent and the Grenadines (GoSVG), Ministry of Finance, Economic Planning, Sustainable Development and Information Technology has prepared this *National Climate Change Policy* with technical assistance from the Caribbean Natural Resources Institute (CANARI) under the Organisation for Eastern Caribbean States (OECS) Regional Disaster Vulnerability Reduction Project funded by the World Bank and the Climate Investment Fund's Pilot Program for Climate Resilience. A participatory process was used to develop the *Policy* via the engagement of diverse stakeholders, including government agencies, civil society organisations (CSOs), local communities and resource user groups such as farmers and fisherfolk, and the private sector. This process was facilitated via three rounds of stakeholder consultations across SVG from December 2018 to September 2019.

The *Policy* includes an overview of the national circumstances and context, including observed and future climate change trends and impacts, and the policy framework for use in climate change planning and decision-making. It identifies priorities for action for the period 2018-2030 including specific objectives for adaptation, mitigation and cross-cutting areas. These cross-cutting areas include information management, research and monitoring, integration of disaster risk management and national security, inter-sectoral coordination, investment and economic planning and stakeholder capacity building and engagement. The *Policy* also outlines the institutional arrangements for coordination and implementation to address adaptation, mitigation and the cross-cutting areas as well as mechanisms for financing and monitoring and evaluation (M&E). See Table 1 below for the policy framework.

The Policy is aligned with the National Economic and Social Development Plan (2013-2025) as well as the draft National Adaptation Plan (2018-2030) and Nationally Determined Contributions (2015) that guide climate change adaptation and mitigation respectively. It also seeks to build on existing policies, institutional structures and initiatives across sectors to ensure an integrated, cross-sectoral approach to build climate change resilience in SVG.

Table 1. Summary Framework for the National Climate Change Policy

<table>
<tr><td colspan="2">Vision: A sustainable and thriving Vincentian society, economy and environment where all citizens are able to achieve a high level of well-being and quality of life through low carbon, resilient development.</td></tr>
<tr><td colspan="2">Goal: To achieve low carbon, resilient development using an integrated, cross-sectoral and inclusive approach to climate change adaptation and mitigation.</td></tr>
<tr><td>Adaptation objective: To reduce vulnerability to the impacts of climate change in SVG through building adaptive capacity and resilience, especially among the most vulnerable populations.</td><td>Mitigation objective: To set SVG on a low carbon and resilient development pathway through reducing net greenhouse gas emissions and enhancing carbon sinks.</td></tr>
</table>

Key areas for adaptation:	Key areas for mitigation:
1. Agriculture (crops and livestock) *Objective:* To promote climate smart and sustainable crop and livestock agriculture for food security and resilient livelihoods.	**1. Energy** *Objective:* To promote the adoption of renewable energy and energy efficiency measures for low carbon and sustainable growth.
2. Coastal and marine zone *Objective:* To ensure the productivity and resilience of the coastal and marine zone through conservation, sustainable resource use and integrated adaptation and disaster risk reduction.	
3. Education *Objective:* To build resilience to climate change and disasters in the education sector and ensure the health and safety of students and staff and continuity in operations.	**2. Forests and carbon sinks** *Objective:* To enhance the role of forests and other natural ecosystems as carbon sinks through conservation and sustainable use and management.
4. Energy *Objective:* To enhance the resilience of the energy sector to climate change and disasters and promote energy security.	
5. Finance and banking *Objective:* To ensure business continuity and build resilience to climate change and disasters in the financial and banking sector.	**3. Maritime affairs** *Objective:* To enable a sustainable, low carbon maritime transport system through the adoption of energy efficiency and resilience building measures.
6. Fisheries and aquaculture *Objective:* To promote climate smart and sustainable management of fisheries and aquaculture for food security and resilient livelihoods and marine ecosystems.	
7. Forest and terrestrial ecosystems *Objective:* To ensure the health and productivity of forest and other terrestrial ecosystems and build their resilience and ability to provide ecosystem services for adaptation and disaster risk reduction.	**4. Tourism** *Objective:* To promote low carbon and sustainable growth within the tourism sector through the adoption of renewable energy, energy efficiency and sustainable building practices.
8. Human health *Objective:* To reduce vulnerability to the adverse impacts of climate variability and climate change on human health and well-being through improved preparedness and response.	

9. Settlements, infrastructure and physical development *Objective:* To promote sustainable physical development and green infrastructure to build resilience.	**5. Transport** *Objective:* To enable a sustainable, low carbon transport system through the adoption of renewable energy, energy efficiency and resilience building measures.
10. Tourism *Objective:* To create a sustainable and thriving tourism sector and build ecological and socio-economic resilience to climate change.	
11. Water *Objective:* To ensure a safe, reliable and sustainable supply of water to the population and efficient use of water resources to build resilience.	**6. Waste management** *Objective:* To reduce greenhouse gas emissions through sustainable waste management.
12. Waste management Objective: To enable integrated waste management for a resilient, safe and healthy population and environment.	

Cross-cutting issues				
1. Capacity building and engagement of stakeholders	**2. Information management, research and monitoring**	**3. Intersectoral coordination**	**4. Integration of disaster risk management and national security**	**5. Investment and economic planning**
Objective: To build the capacity of all stakeholders, and adopt participatory and bottom up approaches, to effectively plan for and respond to climate change.	*Objective:* To ensure a comprehensive system of information management, research and monitoring and evaluation to inform climate change decision-making.	*Objective:* To establish institutional mechanisms and sectoral linkages to enable information sharing, coordination and joint implementation for an effective response to climate change.	*Objective:* To ensure the health, safety and security of all residents and visitors through an integrated approach to climate change, disaster risk management and national security.	*Objective:* To reduce the economic impacts of climate change and leverage opportunities through effective planning and investment for low carbon, climate resilient development.

2. Climate Change Trends, Impacts and Vulnerabilities

As a Small Island Developing State (SIDS), the geography, geology and socio-economic circumstances of SVG make it highly vulnerable to climate related impacts and disasters, with potential implications for human health and wellbeing, economic growth and the sustainability of natural resources and the environment. SVG lies within the Atlantic hurricane belt and has experienced significant impacts from tropical storms and hurricanes, including from Hurricane Ivan in 2004 and Hurricane Tomas in 2010. It also experiences rainfall extremes with heavy rainfall associated with trough systems, including in April 2011 and December 2013, and drought in 2009-2010, 2014 and 2019. The narrow, low lying coastal belt of the main island of St. Vincent, where the majority of the population and infrastructure is concentrated, is at significant risk from coastal erosion, sea level rise and storm surges. SVG's small open economy, which is mainly dependent on tourism, export-based agriculture and offshore business services, is also susceptible to external shocks and climate related disasters. Loss and damage in SVG from climate related disasters is estimated at over US$1 billion over the last decade and an increase in extreme weather events is expected to result in significant expenditures, which will further constrain SVG's social and economic growth[1].

SVG is already experiencing the effects of climate variability and change, particularly through damage from extreme weather events[2]. In addition, the effects of rising sea levels on exposed coastlines and development are already evident in many parts of the country including beach areas important for tourism. In the Grenadines islands which include low lying coralline islets, risks from sea level rise, storm surges and coral bleaching are high, with potentially significant impacts expected for culturally, economically and ecologically important marine protected areas such as the Tobago Cays. The Grenadines also experience water stress as they receive significantly less rainfall and are prone to drought and saltwater intrusion.

Key observed climate change trends and impacts include overall warmer days and nights, reduced and unpredictable rainfall resulting in related hydrometeorological hazards - flooding, landslides, higher intensity hurricanes, coral bleaching with rising ocean temperatures, increased prevalence of pests and diseases, and coastal erosion. Recent notable events[3] that have been associated with the changing climate include:

- A period of prolonged drought in 2009-2010 and 2014 which resulted in severe water shortages, which impacted the agricultural sector and fuelled further land degradation and loss of forest cover due to increased incidence of fires.
- Hurricane Tomas in November 2010 - the latest recorded tropical cyclone in a calendar year to strike the Windward Islands, that brought heavy rains and high winds which caused flooding, loss and destruction to several buildings, agricultural plots, livestock and the natural landscape, and resulted in displacement of persons from their homes.
- A severe weather event bringing heavy rainfall during April 11-12, 2011 which resulted in riverine and flash-flooding as well as landslides in the north eastern parts of St. Vincent.
- The 2013 Christmas Eve trough which resulted in heavy rainfall and led to intense flooding across the island. This resulted in widespread damage to roads, electricity and water

[1] GoSVG. 2015a. *St. Vincent and the Grenadines Nationally Determined Contribution*. Communicated to the UNFCCC on November 18, 2015. https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Saint%20Vincent%20and%20Grenadines%20First/Saint%20Vincent%20and%20the%20Grenadines_NDC.pdf

[2] Simpson, M. et al. (2012). *CARIBSAVE Climate Change Risk Atlas (CCRA) - Profile for St. Vincent and the Grenadines*. Summary Document, March 2012: https://www.researchgate.net/profile/Mark_New/publication/272791668_Climate_Change_Risk_Profile_for_Saint_Vincent_and_the_Grenadines/links/55fa74f708ae07629e007648/Climate-Change-Risk-Profile-for-Saint-Vincent-and-the-Grenadines.pdf

[3] Murray, R. (2014). *Disaster Risk Reduction Country Profile: Saint Vincent and the Grenadines*, 2014. NEMO – Kingstown, Saint Vincent and the Grenadines. Accessed at: http://dipecholac.net/docs/files/789-cd-svg.pdf

infrastructure, housing as well as public and private buildings. There were nine confirmed deaths and three persons noted as missing.

The estimated total loss and damage to SVG from these climate related events over the period 2010-2014 was in excess of US$600 million, equating to approximately 35% of the Gross Domestic Product (GDP) in 2014[4].

Climate models project the following trends for SVG[5]:

- an increase in average air temperature;
- reduced average (annual) rainfall;
- increased sea surface temperatures;
- potential for an increase in the intensity of tropical storms and hurricanes;
- sea level rise of 0.5 to 0.6 metres by the year 2100 across the insular Caribbean[6]; and
- ocean acidification which will continue as carbon dioxide is absorbed into the ocean, affecting calcification of shellfish and formation of coral reefs.

Table 1 provides a summary of potential impacts from climate change based on the above projections. Notably, results from sea level rise modelling conducted for SVG in 2011[7] indicate that 1 metre sea level rise places 10% of the major tourism properties at risk, along with 1% of road networks, 50% of airports and 67% of sea ports[8].

Table 1. Summary of the potential impacts of climate change based on model projections.

Climate Change Variable	Projections	Direct Impacts = Physical; Indirect Impacts = Socio-economic	Sources of data
Temperature	An increase in average atmospheric temperature. Regional Climate Model (RCM) projections indicate an increase of 2.4-3.1˚C in mean annual temperatures by the 2080s in the higher emissions scenario.	Direct: impacts on crops through increased evapo-transpiration affecting yields adversely, impacts on water availability, impacts on incidence of vector-borne diseases, heat stress on humans and livestock	Caribsave 2012

[4] GoSVG. 2015a. *St. Vincent and the Grenadines Nationally Determined Contribution*. Communicated to the UNFCCC on November 18, 2015.
[5] Simpson, M. et al. (2012). *CARIBSAVE Climate Change Risk Atlas (CCRA) - Profile for St. Vincent and the Grenadines*. Summary Document, March 2012: https://www.researchgate.net/profile/Mark_New/publication/272791668_Climate_Change_Risk_Profile_for_Saint_Vincent_and_the_Grenadines/links/55fa74f708ae07629e007648/Climate-Change-Risk-Profile-for-Saint-Vincent-and-the-Grenadines.pdf
[6] Nurse, L. et al. (2014). Small Islands. In: *Climate Change 2014: Impacts, Adaptation and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.* [Field, C., Barros, V., Dokken, D., Mach, K., Mastranda, M., et al. (eds.).] Cambridge University Press. http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap29_FINAL.pdf
[7] CARIBSAVE (2012) *CARIBSAVE Climate Change Risk Profile for St. Vincent and the Grenadines: Summary Document*. CARIBSAVE: Barbados.
[8] GoSVG. 2015a. *St. Vincent and the Grenadines Nationally Determined Contribution*. Communicated to the UNFCCC on November 18, 2015.

		Indirect: Increase in food prices, threatened livelihoods, loss of incomes, impacts on food security, impacts on energy security with increased demand for cooling.	
Precipitation	General Circulation Model (GCM) projections of rainfall span both overall increases and decreases, ranging from -34 to +6mm per month by the 2080s across three scenarios. Most projections indicate decreased rainfall. Both RCM projections indicate large decreases in total annual rainfall (-30% when driven by HadCM3[9] boundary conditions and 22% based on ECHAM4[10])	Direct impacts: Flooding, droughts, damage to infrastructure, soil erosion and loss, increased incidence of pests and diseases Indirect: damage to crops and livestock, biodiversity loss, threatened livelihoods, loss of income, increased insurance risks, impacts on food and water security	Caribsave 2012
Increase in tropical storms and hurricanes	North Atlantic hurricanes and tropical storms appear to have increased in intensity over the last 30 years. Observed and projected increases in sea surface temperatures indicate potential increased intensity of storm events but not	Direct: Damage to settlements and infrastructure, damage to crops and livestock, loss of human life, impacts on water quality via sedimentation and soil erosion Indirect: Threatened livelihoods, loss of income, increased	Caribsave 2012

[9] The Hadley Centre Coupled Model, version 3 (HadCM3) is a coupled atmosphere-ocean general circulation model developed at the Hadley Centre in the United Kingdom. It was one of the major models used in the IPCC Third Assessment Report in 2001. It is composed of two components: 1) the atmospheric model which is a grid point model with a resolution of about 300km; and 2) the ocean model (including a sea ice model) where the grid is aligned to the atmospheric model. Simulations often use a 360-day calendar, where each month is 30 days.

[10] The ECHAM4 is an atmospheric general circulation model developed by the Max Planck Institute for Meteorology in Germany. It is based on the global weather forecast model by the European Centre for Medium-Range Weather Forecasts (ECMWF). It includes a complete representation of physical processes, and allows for coupling to an advanced representation of the terrestrial biosphere and the atmospheric aerosols. The default model configuration has an atmospheric resolution up to 10 hectopascals (hPA) for study of the lower atmosphere, but it can be reconfigured to 0.01 hPA to study the upper atmosphere.

	necessarily an increase in frequency.	insurance costs, impacts on food, energy and water security	
Sea surface temperature	While limited sea surface temperature data is available for SVG for downscaled projections, GCM projections indicate increases in sea surface temperature throughout the year. Projected increases range from +0.9˚C and +3˚C by the 2080s.	Direct: Coral bleaching and die-off, algal blooms, sargassum influx, shifts in distribution of fish and marine species Indirect: Sea level rise, coastal erosion and flooding, loss of coastal vegetation, loss of coastal infrastructure, decline in reef-based fisheries, loss of income, threatened coastal and marine livelihoods	Caribsave 2012
Sea level rise	While very limited sea level data is available for SVG for downscaled projections, GCM projections indicate sea level rise of 0.5 to 0.6 metres by 2100 across the insular Caribbean	Direct: Increased coastal erosion and flooding, degradation of coastal and marine ecosystems, saltwater intrusion into groundwater resources Indirect: damage and loss of coastal infrastructure, loss of coastal vegetation, loss of income, threatened coastal and marine livelihoods, impact on food, energy and water security and tourism sector	Nurse *et al*. 2014

Across the board, it is expected that climate change will exacerbate already existing environmental concerns in SVG related to natural hazards, biodiversity loss, deforestation and land degradation, poor waste management and pollution, and put increased stress on water availability, coastal developments, public infrastructure and livelihoods.

3. Policy Context

The overarching policy context for SVG's *National Climate Change Policy* is outlined below, including relevant policies and agreements at the international, regional and national levels.

3.1 International Context

Although SVG's contribution to global greenhouse gas (GHG) emissions is minimal, like other SIDS, the impacts of a changing climate are recognised as potentially dire if no meaningful action is taken. The GoSVG has committed to addressing climate change and promoting climate resilience through several key multi-lateral environmental agreements and initiatives.

In particular, the *National Climate Change Policy* will enable SVG to fulfil its commitments under the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol and Paris Agreement to stabilise greenhouse gas emissions at a level that would prevent dangerous anthropogenic interference with the climate system and to adapt to the impacts of climate change. The Paris Agreement, which SVG ratified in June 2016 and came into force in November 2016, represents the most ambitious effort to date to cap global temperature increase at 1.5°C above pre-industrial levels and promote adaptation through appropriate financial flows, a new technology framework and an enhanced capacity building framework to support action.

SVG is also committed to supporting the achievement of the United Nations 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs). The SDGs are intended to be universal principles which embody a shared common global vision of progress towards a safe, just and sustainable planet and address a wide range of issues including poverty eradication, food security, gender equality and sustainable management of energy, water and coastal, marine and terrestrial resources. The objectives identified within this *Policy* will particularly contribute to Goal 13 to "Take urgent action to combat climate change and its impacts," while also directly and indirectly supporting the implementation of the other Goals. It will further contribute to the Sendai Framework for Disaster Risk Reduction (2015-2030) that aims to substantially reduce disaster risk and impacts on lives, livelihoods, health and the economic, environmental, physical and sociocultural assets globally and promotes an integrated approach to climate change and disaster risk reduction.

These three agreements – the Paris Agreement, the 2030 Agenda for Sustainable Development and the Sendai Framework for Disaster Risk Reduction – guide the post-2015 agendas for action and are collectively seen to provide the foundation for sustainable, low-carbon and resilient development. They serve as a means to strategically and coherently address what are considered the key issues of our time and to more effectively leverage financial resources and partnerships.

3.2 Regional Context

As a member of the Caribbean Community (CARICOM), SVG is committed to the CARICOM Liliendaal Declaration on Climate Change and Development, the Regional Framework for Achieving Development Resilient to a Changing Climate and its Implementation Plan (2011-2021)[11] and the Comprehensive Disaster Management Strategy 2014-2024[12]. The Regional Framework, which is spearheaded by the Caribbean Community Climate Change Centre (CCCCC), reflects the region's strategic direction for climate change response. It outlines four key objectives including: mainstreaming climate change adaptation into the sustainable development agendas of Members of CARICOM; promoting actions to reduce greenhouse gas emissions through energy efficiency and conservation and renewable energy sources; encouraging action to reduce the vulnerability of

[11] Documentation found here: http://www.caribbeanclimate.bz/the-regional-climate-change-strategic-framework-and-its-implementation-plan-for-development-resilient-to-climate-change-us2800000/

[12] Regional Comprehensive Disaster Management Strategy and Programming Framework 2014-2024 https://www.cdema.org/CDMStrategy2014-2024.pdf

natural and human systems in CARICOM countries to the impacts of climate change; and promoting the sustainable management of standing forests in CARICOM countries. The Comprehensive Disaster Management Strategy, which is led by the Caribbean Disaster and Emergency Management Agency (CDEMA), outlines the regional response for operationalising the Sendai Framework for Disaster Risk Reduction.

SVG is also a member of the Organisation of Eastern Caribbean States (OECS). At this sub-regional level, the OECS Commission and member states, including SVG, have been working towards a comprehensive resilience framework. This framework includes the St. George's Declaration of Principles of Environmental Sustainability in the OECS and the supporting OECS Environmental Management Strategy. Principle 8 of the St. George's Declaration addresses the causes and impacts of climate change, and a number of other topics related to energy efficiency, renewable energy and disaster risk reduction are included in its outcomes and targets. An Eastern Caribbean Regional Climate Change Implementation Plan is currently under development with the objectives of delivering large scale emission reductions; accelerating green growth in the region; delivering development co-benefits; and improving resilience to climate change impacts.

Through the alignment of its climate change response objectives, this *Policy* will facilitate the implementation of key objectives and actions agreed by CARICOM and OECS members to promote low carbon, climate resilient development regionally.

3.3 National Context

At the national level, the policy framework is set by the National Economic and Social Development Plan (NESDP), which outlines national development priorities and guides public and private sector actions and resource allocation from 2013 to 2025. Goal 4 of the NESDP calls for 'Improving Physical Infrastructure, Preserving the Environment and Building Resilience to Climate Change'. The NESDP further provides a foundation for sustainable development in SVG through its other strategic goals including: re-engineering economic growth; enabling increased human and social development; promoting good governance and increasing the effectiveness of public administration; and building national pride, identity and culture.

SVG has also developed a number of plans and strategies to specifically build climate resilience at the national level and meet its commitments under the regional and international agreements described above. As a signatory to the UNFCCC, SVG developed its Nationally Determined Contribution (NDC) in 2015 which commits the country to an economy-wide reduction in GHG emissions of 22% by 2025, compared to the business as usual scenario. The NDC also outlines priority areas for action to reduce vulnerability and adapt to climate change, including agriculture, forestry, fisheries, coastal zone, health, tourism and water resources. A new NDC is required to be submitted in 2020 as part of SVG's obligations under the UNFCCC and its Paris Agreement. SVG has prepared its draft National Adaptation Plan (NAP) and developed sectoral adaptation plans for the agriculture (crops, livestock and fisheries) and water sectors and a National Appropriate Mitigation Action (NAMA) for the transport sector.

SVG has also participated in regional initiatives which address elements of climate change and disaster risk reduction such as: the Caribbean Planning for Adaptation to Climate Change Project, Mainstreaming and Adaptation to Climate Change Project, the Special Programme on Adaptation to Climate Change Project and the current Regional Disaster Vulnerability Reduction Project and the Pilot Programme for Climate Resilience. Additionally, the GoSVG has received financing from the

Green Climate Fund (GCF)[13] toward improving the readiness of SVG to access climate financing, including strengthening the capacity of the National Designated Authority[14] and developing a country strategic framework for engagement with the GCF.

Other key existing national legislation and policies that are relevant to climate change are noted below in Table 2.

Table 2: National legislation, policies and plans for SVG relevant to climate change

Legislation:	Policies and Plans:
• Central Water and Sewerage Authority Act, 1992 • Environmental Health Services Act, No 14, 1991 • Environmental Impact Assessment Regulations (Draft, 2009) • Environmental Management Act (Draft, 2009) • Environmental Services Act No. 15 of 1991[15] • Fisheries Act, 1986 and Fisheries Regulations, 1987 • Housing and Land Development Corporation Act, 1976 • Marine Parks Act, 1991 and Marine Parks Regulations, 1998 • Maritime Areas Act No. 15 of 1993 • Montreal Protocol Act, 2003 • Montreal Protocol (Substances that Deplete the Ozone Layer) (Control) Regulations, 2005 • National Emergency and Disaster Management Act, 2006 • National Parks Act, 2002 and National Parks (Amendment) Act, 2010 • Public Health Act, 1977 • Saint Vincent and the Grenadines National Trust Act, 1969 and Amendment Act, 2007 • Shipping Act No. 11 of 2004	• Comprehensive Disaster Management Policy 2014 • Draft Marine Tourism Policy 2005 • Draft National Forest Policy 1994 • Draft National Land Policy 2014 • Draft National Physical Development Plan 2001-2021 • Draft National Water Safety Plan 2013 • Fisheries and Aquaculture Policy 2017 • Food and Nutrition Security Policy and Action Plan 2014 • Maritime Action Plan 2005 • National Adaptation Plan 2018-2030 • National Biodiversity Strategy and Action Plan (NBSAP) 2015-2020[16] • National Economic and Social Development Plan (NESDP) 2013-2025 • National Energy Policy 2009 and National Energy Action Plan 2010 • National Environmental Management Strategy and Action Plan[17] 2004-2006 • National Forest Resources Conservation Plan 1994-2003 • National Ocean Policy and Strategic Action Plan 2018 • National Parks and Protected Areas Policy 2010 • National Parks and Protected Areas System Plan 2009-2014 • National Tourism Policy 2003

[13] The GCF is the newest and largest global fund created through the Paris Agreement to support the efforts of developing countries to respond to the challenge of climate change. The Readiness and Preparatory Support programme is only one area of support under the GCF mechanism which helps countries to establish needed institutional structures, national processes and project pipelines to ensure the development of climate proofed project proposals which are based on national priorities and an open stakeholder engagement process.

[14] The National Designated Authority for the Green Climate Fund is the Economic Planning and Sustainable Development Division in the Ministry of Finance, Economic Planning, Sustainable Development and Information Technology.

[15] The Environmental Services Act No. 15 of 1991 makes provisions for the control of emissions and effluent discharge into water bodies. To date, no regulations are in place to assist with the enforcement of this Act.

[16] See https://www.cbd.int/doc/world/vc/vc-nbsap-v2-en.pdf for the National Biodiversity Strategy and Action Plan (NBSAP) 2015-2020. This revised NBSAP mirrors the Strategic Plan for Biodiversity 2011-2020 however has been customized to account for the country's unique circumstances.

Legislation:	Policies and Plans:
• Solid Waste Regulations, No. 11 of 2005 • St. Vincent and the Grenadines Forest Resource Conservation Act, 1992 • Tobago Cays Marine Parks Act, 1999 • Town and Country Planning Act, No. 45 of 1992 • Waste Management Act and Regulations, No. 31 of 2000 • Wildlife Protection Act, 1991	• St. Vincent and the Grenadines Policy Framework and Strategic Plan for Agricultural Development 2012-2018 • St. Vincent and the Grenadines National Tourism Sector Strategic Plan 2002-2006 • St. Vincent and the Grenadines Building Regulations 2005 and Building Guidelines • St. Vincent and the Grenadines National Disaster Plan 2005 • St. Vincent and the Grenadines Strategic Plan for Health 2007-2012

4. National Climate Change Policy

4.1 Vision and Goal

Vision: A sustainable and thriving Vincentian society, economy and environment where all citizens are able to achieve a high level of well-being and quality of life through low carbon, resilient development.

Goal: To achieve low carbon, resilient development using an integrated, cross-sectoral and inclusive approach to climate change adaptation and mitigation.

The vision and goal for the *National Climate Change Policy* will be achieved through the following directives and overarching objectives:

- To strengthen governance and institutional mechanisms to enable a bottom up approach and effective coordination and implementation of climate change policies and plans across all levels of society, sectors and islands within SVG;
- To build adaptive capacity and resilience, especially among the most vulnerable populations, drawing on local knowledge and practices to effectively address the impacts of climate change and related disasters;
- To reduce greenhouse gas emissions through enhanced energy efficiency, renewable energy and use of carbon sinks;
- To enhance technical and institutional capacity for research and data collection, management and sharing to inform climate change decision-making and catalyse technology change and innovation for adaptation and mitigation;
- To adopt an ecosystem-based approach in addressing climate change to ensure the conservation and sustainable use of biodiversity and natural resources that are critical to human well-being, livelihoods and development in SVG;
- To mainstream climate change adaptation and mitigation into key national development plans and budgets; and
- To mobilise adequate climate financing to support effective and timely adaptation and mitigation measures.

4.2 Guiding principles

The *National Climate Change Policy* will be guided by principles established in SVG's Constitution, its NESDP (2013-2025), the CARICOM Liliendaal Declaration on Climate Change and Development and the UNFCCC to ensure the achievement of its goal. These principles include:

- **Engagement of civil society, including vulnerable communities, and the private sector** – The importance of the engagement of civil society, including the most vulnerable and disadvantaged persons, and the private sector in all climate change decision-making processes should be recognised and facilitated to allow for integration of local and traditional knowledge and for socially inclusive policy development, implementation and evaluation.
- **Sustainable use and management of natural resources** - Recognising the value of the natural environment and balancing economic, social and environmental concerns, sustainable and ecosystem-based management will be promoted to ensure conservation and wise use of natural resources and support economic development, livelihoods and human well-being.

- **Adopting 'low regret' approaches** – Adaptation and mitigation measures which will produce low cost and effective climate change solutions, as well as economic, social and environmental benefits, should be prioritised.
- **Gender equity** – Equal consideration should be given to the rights of both men and women, and girls and boys.
- **Inter- and intra-generational equity** – The rights to and benefits of development for both current and future generations in SVG will be equitably considered.
- **Evidence based decision-making** – Policy, planning, and action should be guided by the findings of the Intergovernmental Panel on Climate Change, as well as other regional and local scientific research and local and traditional knowledge.
- **Preservation of cultural and natural heritage** – The culture and heritage of the Vincentian people should be respected and considered in the development and implementation of strategies for climate-resilient development.
- **The Precautionary Principle** – Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
- **The Polluter Pays Principle** – The costs of remedying pollution, environmental degradation and consequent adverse health effects from greenhouse gas emissions and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects should be borne by those responsible for releasing the pollutants.
- **Integrity and good governance** – Transparency and accountability should be practiced in decision-making including through strengthening public access to information and mechanisms for conflict management and social inclusion.
- **Fostering cooperation and strategic partnerships** – Cooperation and strategic partnerships will be utilised for exchanges of knowledge, best practices and innovations in climate change adaptation and mitigation from across SVG and the wider Caribbean region and for a coordinated response to address the multi-island and transboundary impacts of climate change.
- **Promoting global action to address climate change** – The need for urgent and accelerated efforts globally to address climate change, and ensure the necessary financing and technology transfer to developing countries to support these efforts, is recognised and promoted.

4.3 Priority areas and objectives

4.3.1 Adaptation

In responding to climate change, SVG will prioritise adaptation measures as a means of urgently addressing its high vulnerability and low ecological, social and economic resilience to climate change. Adaptation refers here to adjustments in natural or human systems to respond to the potential impacts of climate change, thereby reducing the risk of harm and exploiting beneficial opportunities (IPCC 2007). Measures will further seek to support priorities for national development identified under Goal 4 of the NESDP on improving infrastructure, preserving the environment and building resilience to climate change.

Adaptation objective: To reduce vulnerability to the impacts of climate change in SVG through building adaptive capacity and resilience, especially among the most vulnerable populations.

To achieve the adaptation objective, and national development goals, the priority areas outlined below will be targeted.

Agriculture (crops and livestock)

Climate change impacts and vulnerabilities: Agriculture, including crops and livestock, remains one of the most significant economic activities on Saint Vincent and contributes to food security and rural employment. In 2017, agriculture's share of GDP in SVG was 6.92%[18]. Crop and livestock farming are vulnerable to climate variability and climate change, and are especially sensitive to extended periods of drought, unevenly distributed rainfall and natural hazards when coupled with existing stresses from mono-cropping, poor soil and water management, and pests and diseases. Among the trends noted by the local farmers are longer dry periods, shorter and more intense rainfall events leading to floods and changes in fruiting patterns. Three extreme climatic events over a span of three years (droughts and tropical storm activity during 2009 – 2011) highlighted the vulnerability in this sector. Drought conditions have led to water stress and heat stress in livestock, while flooding, landslides and accelerated soil erosion associated with severe weather resulted in loss of crops, livestock and agricultural infrastructure. Lower crop yields and increases in pests and diseases are also expected. Climate variability and change will potentially threaten food security, household income and livelihoods through agricultural damage, increased food prices and disruptions to food supplies, and can lead to negative psychosocial impacts among farmers and fishers (IICA, 2014).

Additionally, crops and livestock also contribute to GHG emissions from the use of fossil fuel-derived nitrogen fertilizers, the digestive process of ruminant animals such as cattle, sheep and goats and manure waste management.

Objective: To promote climate smart and sustainable crop and livestock agriculture for food security and resilient livelihoods.

Sub-objectives, which are aligned with those identified in the Policy Framework and Strategic Plan for Agricultural Development (2012-2018), draft NAP and draft NAP – Agriculture, include:

- To review and strengthen institutional, policy and legal frameworks for agricultural reform and for adaptation to changing climatic conditions, including updating the Agricultural Policy Framework and Strategic Plan 2012-2018 and the Agricultural Ordinance 1951.
- To develop a long-term research programme on climate change impacts and adaptation options focused on crops and livestock, including development of research facilities and technical resources for in situ seed-bank and tissue-culture centres for the preservation of plant genetic information[19] as well as research on crop and livestock water requirements in a changing climate, and ensure data is integrated into the National Agricultural Marketing Information System (NAMIS).
- To build the capacity of farmers through education and awareness on climate change impacts, capturing and sharing local and traditional farming knowledge, training and access to micro-financing for agri-business development and implementing climate smart practices, and strengthening farmer organisations to effectively engage in decision-making and resource management.
- To improve early warning systems and response mechanisms for agricultural risk and disaster management, including via collection and use of meteorological data, expanded insurance schemes for farmers and food stores for disasters and disruptions to food supplies (imported and local).

[18] See https://www.statista.com/statistics/731177/share-of-economic-sectors-in-gdp-in-st-vincent-and-the-grenadines/
[19] http://adaptation-undp.org/explore/caribbean/saint-vincent-and-grenadines

- To implement appropriate soil and water management practices on farms to reduce impacts from extreme weather like droughts, floods and landslides, including low tillage, buffer zones and other techniques for soil and water conservation, improved rainwater harvesting for irrigation purposes and increasing the allocation of groundwater recharge areas across the islands to support irrigation programmes.
- To identify and test climate smart agricultural practices and technologies for scale up including:
    - Identification of crops that are productive under emerging climatic conditions and for which there is a ready market, and development of stress tolerant varieties and adaptive farming measures (e.g. mixed farming using a combination of tree crops and vegetable or root crops, hydroponics and aquaponics).
    - Identification of measures to help livestock cope with increased heat stress (e.g. provision of shade houses in pastures, enhanced nutrition and feeding programme and a programme to breed animals with a greater ability to withstand higher temperatures).
- To promote ecosystem-based approaches for adaptation and disaster risk reduction in the agriculture sector, including agroforestry and other integrated crop-livestock-forestry systems.
- To promote sustainable land management to protect key agricultural lands and supporting ecosystem services, such as soil and water protection, pollination and nutrient cycling, with the involvement of rural communities and the wider society.

Coastal and marine zone

Climate change impacts and vulnerabilities: The coastal and marine zone in SVG, which comprises various beaches, mangroves, coral reefs and seagrass beds and lagoons, is of critical importance to economic development including the rapidly growing tourism sector. Climate change will pose a significant risk to this zone due to sea level rise; extreme weather including storms and storm surges; increased sea surface temperatures resulting in coral bleaching; ocean acidification; and influx of sargassum. Potential impacts include decreased productivity of coral reefs, fisheries and mangroves, with adverse impacts on food supply and associated livelihoods, and loss of biodiversity and ecosystem services such as coastal protection. These climate change impacts will compound existing threats from habitat loss and degradation due to coastal development, pollution and sand mining, overexploitation of fish and other marine species, and invasive species such as the Lionfish (*Pterois* spp.).

Objective: To ensure the productivity and resilience of the coastal and marine zone through conservation, sustainable resource use and integrated adaptation and disaster risk reduction.

Sub-objectives, which are aligned with the draft NAP, National Ocean Policy (2018) and National Biodiversity Strategy and Action Plan (2017), include:

- To update and enforce legislation and regulations related to the coastal and marine zone, including building codes and zoning, to enable adaptation, disaster risk reduction and sustainable physical development.
- To establish new institutional arrangements for effective coordination and collaboration across the 29 government agencies with roles and responsibilities for coastal and marine zone management and development.
- To climate proof coastal infrastructure to prevent further damage and degradation using ecosystem-based solutions, including conservation and restoration of coral reefs, seagrass beds, mangroves, and littoral coastal vegetation that act as natural coastal defences, and revetments and sea walls where necessary.

- To build technical and organisational capacity, including enhancing awareness, access to resources and action for effective coastal and marine resource management within government, civil society and the private sector.
- To establish and maintain coastal and marine systematic observation, research and information management systems, including mechanisms for monitoring changing sea levels, currents and sedimentation patterns, ocean acidification and influxes of sargassum and invasive species, to guide decision-making and development of coastal, shoreline and marine management plans.
- To adopt integrated, ecosystem-based approaches[20] that take into account the range of uses of coastal and marine resources, including for biodiversity conservation and marine protected areas, fishing, diving and other recreational uses, yachting and shipping.
- To strengthen the system of protected areas, including coastal and marine ecosystems, for effective conservation and sustainable use and building resilience to multiple stressors.

Education

Climate change impacts and vulnerabilities: The education sector, which encompasses state-owned primary and secondary schools, vocational schools and tertiary institutions including campuses for the University of the West Indies and US-based universities, is highly vulnerable to climate change. In particular, it is vulnerable to extreme weather events such as hurricanes, storms and flooding that can result in loss and damage of infrastructure, health and safety issues for over 35,000 students and disruptions to scheduled activities. Several educational facilities also serve as emergency shelters across SVG[21], which can lead to long-term disruptions for students, post-disaster events.

Objective: To build resilience to climate change and disasters in the education sector and ensure the health and safety of students and staff and continuity in operations.

Sub-objectives, which are aligned with the draft NAP, NESDP and national Comprehensive Disaster Management Policy, include:

- To mainstream climate change adaptation and disaster risk reduction considerations into educational policies and plans, including development of education continuity plans to address increased risk of disruptions and damage.
- To advance knowledge, skills and education related to climate change, its impacts and potential responses through development of a curriculum for primary, secondary, vocational and tertiary level schools and demonstration projects.
- To enable a coordinated and effective response for climate change adaptation and disaster risk management in schools through awareness raising, training and drills on key vulnerabilities and relevant adaptation and disaster preparedness and response measures for administrators, teachers, students and other stakeholders in the education sector.

[20] See the Voluntary Guidelines for the Design and Effective Implementation of Ecosystem-Based Approaches to Climate Change Adaptation and Disaster Risk Reduction under the Convention of Biological Diversity: https://www.cbd.int/doc/decisions/cop-14/cop-14-dec-05-en.pdf

[21] GoSVG. 2014. Comprehensive Disaster Management Policy. National Emergency Management Organisation, Kingstown, St. Vincent.

- To integrate climate proofing considerations in the construction of new infrastructure and retrofitting of existing infrastructure within the education sector, especially for school buildings earmarked as emergency shelters.

Energy

Climate change impacts and vulnerabilities: SVG has an energy mix with approximately 81% petroleum base, 18% hydro power and about 1% solar[22]. This reliance on imported fossil fuels puts SVG at risk from fluctuations in global oil prices and disruptions in power supply when fuel imports are affected by extreme weather events. Climate change will compound these risks as more frequent and extreme weather events will lead to further disruptions in fossil fuel supplies while at the same time higher temperatures leads to a greater demand for energy to cool homes and businesses. Climate change also impacts on the hydroelectric supply, as increased rainfall variability and dry spells will lead to greater fluctuations in river levels and reduced ability to supply hydroelectricity particularly in the dry season.

Objective: To enhance the resilience of the energy sector to climate change and disasters and promote energy security.

Sub-objectives, which are aligned with those identified in the draft NAP, the National Energy Policy and Action Plan and NESDP, include:

- To assess the vulnerability of the energy supply and distribution infrastructure to climate change and related disasters and identify priority measures to reduce these vulnerabilities.
- To mainstream climate change adaptation and disaster risk reduction considerations into policies, legislation and regulations for the energy sector, including updating the National Energy Policy (2009) and National Energy Action Plan (2010).
- To diversify energy sources and promote the use of renewable energy technologies to enable an affordable, decentralised and secure energy supply, including wind, solar photovoltaic, solar hot water and geothermal energy.
- To promote energy efficiency among key energy consumers, such as households, industry, hotels, restaurants and public buildings, through adoption of standards and guidelines for energy efficiency, conduct of energy audits and provision of fiscal incentives to implement energy efficiency technologies and green building practices.
- To integrate climate proofing considerations into the construction of new infrastructure and retrofitting of existing infrastructure for energy supply and distribution.

Finance and banking

Climate change impacts and vulnerabilities: The financial and banking sector is an important and growing sector for SVG, representing about 6% of GDP[23]. It is vulnerable to climate change, especially extreme weather events such as hurricanes, storms and storm surges that result in loss and damage of infrastructure, including buildings and telecommunications that support financial institutions, and declining productivity of economically important sectors such as tourism, construction, manufacturing and agriculture and associated investments. The costs associated with

[22] Only St. Vincent has indigenous hydro resources, which are exploited for electricity generation. The other Grenadines islands are supplied by privately owned electricity systems on the basis of diesel plants (NEAP 2010)

[23] Inter-American Development Bank (IDB). 2013. Private sector assessment of St. Vincent and the Grenadines. Commissioned by IDB with funding from the Compete Caribbean Programme. http://www.caribank.org/uploads/2014/11/2014-St.-Kitts-and-Nevis-PSAR.pdf

disaster recovery would also have an impact on the financial health of insurance companies and lending institutions.

Objective: To ensure business continuity and build resilience to climate change and disasters in the financial and banking sector.

Sub-objectives, which are aligned with the draft NAP and NESDP, include:

- To research and assess fiscal vulnerabilities and the costs and benefits of climate change impacts for financial and banking services and identify potential measures for adaptation and disaster risk reduction.
- To mainstream climate change adaptation and disaster risk reduction considerations into legislation, regulations, policies and plans for the financial and banking services.
- To enhance education and awareness among shareholders, suppliers, employees and other stakeholders about fiscal vulnerabilities and mobilise for adaptation actions.
- To provide innovative financial products and services to support climate smart practices and build resilience to climate change and disasters.
- To integrate climate proofing considerations into the construction of new infrastructure and retrofitting of existing infrastructure within the financial and banking sector, especially related to telecommunications and electricity supply as key supporting services.

Fisheries and aquaculture

Climate change impacts and vulnerabilities: Fishing is an important part of the social, cultural and economic fabric of SVG, especially in the islands of the Grenadines. Approximately 7% of the total labour force is engaged directly or indirectly in the fisheries sector, which creates employment for an estimated 2,500 fishers and more than 500 others in supporting services (NBSAP, 2017). The fisheries sector is predominantly small-scale and artisanal, targeting reef, slope and shelf fisheries using handlines, longlines, fish pots, spear guns, trammel nets and fish aggregating devices (FADs). A traditional whaling industry operates out of Barrouallie in St. Vincent and Bequia in the Grenadines, targeting mainly short-finned pilot whales and humpback whales, respectively. There is also a nascent aquaculture industry with introduction of tilapia fish, mariculture and seaweed farming.

Current and potential impacts of climate variability and change include coral bleaching, ocean acidification and degradation of mangroves and seagrass beds affecting fish habitats, changing catch and fishing seasons due to changes in sea temperatures and ocean currents, and damage to fishing gear, landing sites, aquaculture farms and other infrastructure and reduced fishing days due to extreme weather, rough seas and sargassum influxes. This will adversely affect food security and fisheries-related livelihoods. Further, climate change impacts will compound existing threats from coastal development, habitat loss and degradation, overfishing, pollution and invasive species such as the Lionfish (*Pterois* spp.).

Objective: To promote climate smart and sustainable management of fisheries and aquaculture for food security and resilient livelihoods and marine ecosystems.

Sub-objectives, which are aligned with those identified in the Agriculture Policy Framework and Strategic Plan (2012-2018) and draft NAP, include:

- To review and strengthen the policy and legal framework for fisheries governance to mainstream climate change adaptation and disaster risk management, including revising the

Fisheries Act of 1989 and regulations and updating and formalising the draft Fisheries and Aquaculture Policy and Action Plan (2012).

- To develop a long-term research and monitoring programme on:
    - commercial fisheries, including climate change impacts and adaptation options related to ocean acidification, sargassum influxes and shifts in ocean currents, temperature and salinity regimes that affect fish distribution and migration; and
    - aquaculture, including seaweed farming and other forms of mariculture, with a focus on assessing and reducing impacts on freshwater resources and associated biodiversity and ecosystem services.
- To build the capacity of fisherfolk and aquaculturists through education and awareness on climate change impacts, capturing and sharing local and traditional fishing knowledge, training and access to micro-financing for development of climate smart practices and alternative livelihoods, and strengthening fisherfolk organisations to effectively engage in decision-making and resource management.
- To improve early warning systems and response mechanisms for disaster risk management, including via safety at sea training, insurance schemes and social protection funds for fisherfolk.
- To identify and test climate smart practices and technologies, including climate smart FADs and associated management plans, to address reduction in fishing days and income generation due to extreme weather, rough seas and other climate change impacts.
- To promote sustainable management of fisheries and supporting ecosystems, including coral reefs, mangroves and seagrass, through ongoing stock assessments, species specific management and adoption of local fisheries management areas, marine protected areas and an ecosystem approach to fisheries for adaptation and disaster risk management in collaboration with coastal and fishing communities.

Forest and terrestrial resources

Climate change impacts and vulnerabilities: Tropical forests cover approximately 29% of the land area in SVG, including Coastal dry woodlands, Elfin woodlands, Montane rainforest and Littoral forest. Natural forest comprises about 70% of this area, with planted forest and agro-forested areas representing about 25% and 5%, respectively. The majority of these forests are located on St. Vincent, with only a few areas of natural forest cover[24] in the Grenadines. Forests are negatively impacted by coastal development, bushfires and clearing of land for cultivation. Projected increases in temperature and decreases in rainfall due to climate change could have significant consequences for forests and other terrestrial biodiversity in SVG. These include further changes to forest dynamics and loss of biodiversity; salt water intrusion affecting coastal vegetation such as mangroves; storm damage affecting integrity of the forest structure and canopy in turn reducing ecosystem health and services; and increasing risk of forest fires. Projected warming could also result in displacement and, ultimately, complete loss of cloud forest. Potential adverse impacts on forest-based enterprises and livelihoods, food security and the delivery of ecosystems services such as watershed protection, coastal protection, and soil stabilisation are also significant.

Objective: To ensure the health and productivity of forest and other terrestrial ecosystems and build their resilience and ability to provide ecosystem services for adaptation and disaster risk reduction.

[24] GoSVG, Sustainable Development Unit 2017. *Saint Vincent & the Grenadines Revised National Biodiversity Strategy and Action Plan* 2015-2020

Sub-objectives, which are aligned with the draft NAP and National Biodiversity Strategy and Action Plan, include:

- To review and strengthen the legal and policy framework for forest and sustainable land management, including updating the Forest Resource Conservation Act of 1992 and National Forest Resources Conservation Plan (1994-2003) and developing a National Forest Policy to integrate adaptation and disaster risk reduction considerations.
- To build the capacity of forest managers and resource users for integrated and sustainable forest resource management, including training on integrated watershed management, 'ridge to reef' and other ecosystem-based approaches for adaptation and disaster risk reduction.
- To establish a baseline and a comprehensive research and monitoring programme to assess the status, health and climate change vulnerability of species, habitats and ecosystem services within forests and other terrestrial ecosystems to support adaptation, as well as conservation and sustainable management.
- To strengthen and enhance the resilience of forest-based enterprises and livelihoods through education and awareness on climate change impacts and training and access to micro-finance for small business development and climate proofing their enterprises.
- To implement programmes of afforestation, reforestation and agro-forestry to address forest loss and degradation, enhance the resilience of forests and related ecosystems and provide other co-benefits, including carbon sequestration (i.e. enhancing carbon sinks), environmentally sustainable harvesting of forest products and disaster risk reduction (i.e. through reduced erosion, flooding and landslides).
- To strengthen the system of protected areas, including forest and terrestrial ecosystems, for effective conservation and sustainable use and building resilience to multiple stressors.
- To promote sustainable land use planning and management, including via institutionalisation of a land management mechanism and Land Use Policy and updating zoning laws and institutionalisation.

Human health

Climate change impacts and vulnerabilities: Climate change will impact significantly on the public health of residents and visitors to SVG, affecting economic productivity, livelihoods and wellbeing. Changing rainfall patterns and rising temperature and humidity are likely to provide favourable conditions for vector-borne diseases such as dengue, malaria and leptospirosis. Additionally, the appearance of new mosquito-borne viruses, such as chikungunya and zika, are of considerable concern. Dry spells and resultant high dust or pollutant levels can affect air quality and increase the likelihood of respiratory illnesses among residents of SVG. Heat stress and related illnesses are projected to increase, particularly in the elderly and infirm, with increasing air temperatures. Extreme weather patterns are likely to compromise sanitation systems and freshwater availability, increasing the potential for outbreaks of communicable diseases like gastroenteritis and cholera. In addition to the direct threat of injury or death from climate related natural hazards such as floods, physical and capital damage to health facilities may arise, along with displacement of persons and loss of shelter and the associated psychological and sociocultural impacts. Impacts on the agricultural sector may also indirectly affect human health in terms of nutritional requirements and supply.

Objective: To reduce vulnerability to the adverse impacts of climate variability and climate change on human health through improved preparedness and response.

Sub-objectives, which are aligned with the draft NAP, include:

- To mainstream climate change and disaster risk reduction and management considerations into health sector planning and programmes, including development of a sectoral adaptation plan, with emphasis on vulnerable populations such as the disabled, elderly, pregnant women and youth.
- To develop and implement a health education and promotion campaign for both citizens and visitors, including a focus on climate change impacts on human health and preventative measures.
- To establish and maintain a climate-linked health early warning system so that citizens and visitors can take the necessary precautions in their day-to-day activities.
- To establish a robust vector control programme with surveillance for vector borne diseases that are climate sensitive, including dengue, chikungunya and zika, and strengthening of the Vector Control Unit for effective disease prevention and response.
- To enhance existing water quality monitoring programmes to take into account floods, droughts and waste disposal and accidental leakage into water bodies, and surveillance and response mechanisms for water borne diseases.
- To introduce improved climate resilient water and sewage treatment systems for residential and commercial use to reduce health risks from poor hygiene and sanitation.
- To conduct research to link the epidemiology of diseases with climate data and projections for SVG to enhance understanding of climate change impacts on human health.
- To improve access to health services via provision of community health services and mobile health clinics with trained staff and equipment to perform primary health care, including for asthma patients and persons suffering from heat stress.

Settlements, infrastructure and physical development

Climate change impacts and vulnerabilities: With over 90% of infrastructure in SVG concentrated in a narrow coastal belt less than eight meters above sea level, climate change poses a particularly high risk due to sea level rise, storm surge and more extreme weather. This infrastructure includes the island's main communication, transport and emergency response structures - roads, airports, telecommunication, financial and technical support centres. The effects of climate change are also projected to have major implications for future land use and development in SVG. It is estimated that with 1m of sea level rise[25]:

- 1% of SVG's total land area would be lost;
- 2% of agricultural land would be lost;
- 1% of the population will be displaced;
- 10 % of tourism resorts damaged or lost, with beach assets lost or greatly degraded at many more tourism resorts; and
- 3% of land and 7% of agricultural land affected by storm surge.

[25] CARIBSAVE (2012) *CARIBSAVE Climate Change Risk Profile for St. Vincent and the Grenadines: Summary Document*. CARIBSAVE: Barbados. https://www.researchgate.net/profile/Mark_New/publication/272791668_Climate_Change_Risk_Profile_for_Saint_Vincent_and_the_Grenadines/links/55fa74f708ae07629e007648/Climate-Change-Risk-Profile-for-Saint-Vincent-and-the-Grenadines.pdf

Objective: To promote sustainable physical development and green infrastructure to build resilience.

Sub-objectives, which are aligned with those identified in the draft NAP and National Physical Development Plan: Methodological Framework Report (2013), include:

- To strengthen and harmonise policies, legislation and regulations concerning physical development and land use zoning to enable integrated adaptation and disaster risk reduction, sustainable land management and enhanced energy, food and water security, including development of a National Resilient Infrastructure Plan.
- To adopt a more robust process for planning and development controls to reduce risks of climate change impacts on new infrastructural projects, including through the effective use of environmental and social impact assessments (ESIAs) and revision and enforcement of building codes.
- To integrate green infrastructure and climate proofing considerations into the design of new physical infrastructure, particularly emergency response structures, and encourage businesses and home owners to retro-fit existing buildings and other infrastructure through fiscal incentives.
- To promote adoption of ecosystem-based management, including a "ridge-to-reef" approach, to reduce the impacts of coastal erosion, flooding and excessive run-off and siltation on coastal settlements and infrastructure.
- To conduct hazard and risk assessments in highly vulnerable locations (e.g. on low lying coasts and steep hillsides), including modelling and mapping to determine priorities for action to inform early warning systems and local adaptation and disaster plans.
- To enable relocation of settlements inland from vulnerable coastal areas, where deemed necessary, with the active involvement of the affected communities in planning and decision-making.

Tourism

Climate change impacts and vulnerabilities: The tourism sector has become an important and rapidly growing source of employment and revenue for SVG, contributing 22.3% to GDP[26] in 2016. More frequent and extreme climate events (e.g. heat waves, droughts, floods, tropical storms) due to climate change will continue to adversely affect the tourism sector. Current and potential impacts include infrastructure damage, degradation of coastal and marine assets such as beaches, coral reefs and fisheries, disruptions in business and higher operating expenses (e.g. insurance, backup water and power systems, evacuations and other disaster response and recovery requirements). In addition, sea level rise poses major threats to coastal development. Climate models from 2011 indicate that 1 metre of sea level rise places 10% of the major tourism properties at risk, along with 1% of road networks, 50% of airports and 67% of sea ports[27]. Water quality and supply, which is critical for tourism and related livelihoods, is also likely to be severely impacted by climate change.

Objective: To create a sustainable and thriving tourism sector and build ecological and socio-economic resilience to climate change.

[26] World Travel & Tourism Council 2017. *Travel and Tourism Economic Impact 2017*, Saint Vincent and the Grenadines. World Travel & Tourism Council - London, UK. Accessed at: https://www.wttc.org/-/media/files/reports/economic-impact-research/countries-2017/stvincentandthegrenadines2017.pdf

[27] GoSVG. 2015a. *St. Vincent and the Grenadines Nationally Determined Contribution*. Communicated to the UNFCCC on November 18, 2015.

Sub-objectives, which are aligned with those identified in the draft NAP and NESDP, include:

- To enhance the institutional and regulatory framework for coordinated and effective management of the overall tourism product, including updating the Tourism Master Plan, building codes and standards to enable adaptation and disaster risk reduction and institutional strengthening of the National Parks, Rivers and Beaches Authority and SVG Tourism Authority.
- To conduct a comprehensive vulnerability assessment to identify the key climate change impacts and vulnerabilities and appropriate adaptation measures for the tourism sector and develop a sectoral adaptation plan.
- To diversify the tourism product across SVG through greater emphasis on agro-tourism, heritage tourism and eco-tourism in close collaboration with the private sector, including hotel, dive and tour operators.
- To climate proof tourism related assets and infrastructure (e.g. hotels, guesthouses and beaches) using revetments, sea walls and ecosystem-based solutions, including conservation and restoration of coral reefs, forests and mangroves that act as natural defences.
- To promote the adoption of integrated water resource management strategies among hotel and tour operators, including rainwater harvesting, water efficient technologies and use of desalination and wastewater treatment plants powered by renewable energy, through education and awareness, concessions and other fiscal incentives.
- To promote renewable energy and energy efficiency within the tourism sector for enhanced energy security and co-benefits related to climate change mitigation, disaster risk reduction and environmental health.

Water

Climate change impacts and vulnerabilities: Climate projections suggest that SVG is likely to become more water stressed in the future due to climate-induced temperature increases, overall decrease in rainfall, lengthening of dry seasons, more intense rainfall events, more intense hurricanes and sea-level rise. Reduced rainfall would severely impact the water supply of rivers and streams and is of particular concern for the Grenadine islands, which have a very high dependence on rainwater for freshwater supply and are already stressed during the dry season. Increases in rainfall variability and intensity means that SVG is vulnerable to droughts, but also to the effects of torrential rains such as landslides and the contamination of water supplies. This will compound problems in watersheds already affected by land degradation due to squatting, poor agricultural practices, deforestation and excessive use of agrochemicals. It is also expected that there will be a negative impact on the generation of hydroelectricity and potable water as a result of adverse changes in the rainfall pattern, landslides and increased soil erosion.

Objective: To ensure a safe, reliable and sustainable supply of water to the population of SVG and efficient use of water resources to build resilience.

Sub-objectives, which are aligned with those identified in the draft NAP, draft NAP - Water Sector and draft Water Safety Plan for SVG, include:

- To strengthen the policy and legal framework for integrated water resources management and mainstreaming of climate change adaptation, including formal adoption of the National Water Policy and Water Safety Plan and updating relevant water resources legislation and standards for water infrastructure operations.
- To enhance institutional arrangements for water resources management via creation of a National Water Resources Management Agency to serve as an independent regulatory agency, with CWSA overseeing water supply and distribution systems.

- To formalise the national hydro-meteorological data management system and improve data collection and sharing within the existing system managed by CWSA in collaboration with the Meteorological Office.
- To emphasise demand side management for efficient water use, including through adjustments in water pricing, the development of water user groups and uptake of water conservation technologies through additional fiscal incentives.
- To improve water security through implementation of rainwater harvesting systems, wastewater recycling, exploration of groundwater resources and other technological innovations (e.g. solar powered Reverse Osmosis desalination plants) to provide additional water supplies, particularly for the agricultural and tourism sectors.
- To protect key water catchments and groundwater resources through upgrading and enforcing land use zoning and regulations for development and pollution and sewage management, promoting green infrastructure and watershed management, including reforestation or afforestation, in collaboration with the agricultural and forestry sectors and rural communities.
- To enhance existing water quality monitoring programmes taking into account the range of water resources, including groundwater, residential and communal rainwater tanks and desalination plants, for improved pollution management, sanitation, hygiene and water safety.
- To enhance the water supply system through improved harnessing and distribution systems to accommodate competing uses, and promotion of renewable energy and energy efficiency to provide a decentralised and secure energy supply for water supply and distribution.
- To enhance disaster risk reduction and response mechanisms, including via insurance for key water infrastructure and development of disaster response plans for access to safe drinking water, hygiene and sanitation.

Waste management

Climate change impacts and vulnerabilities: Waste management in SVG, which includes the collection, disposal and treatment of industrial and municipal wastes, largely involves landfilling using a small number of landfills and incineration. While open burning of waste is prohibited, indiscriminate and improper disposal of waste remains an issue. It is estimated that approximately 15% of waste is disposed at unmanaged dump sites (SWMU, 2002). Sewage treatment, including of wastewater, primarily involves septic tanks and soak away systems. There are currently no municipal-scale sewage treatment plants in SVG. Recycling or waste-to-energy processes are also used to a very limited extent for waste management. Climate change impacts on the sector, including from more extreme weather, can result in damage and loss of infrastructure, handicapping of waste management services and associated health implications for the population.

Objective: To enable integrated waste management for a resilient, safe and healthy population and environment.

Sub-objectives, which are aligned with those in the National Adaptation Plan and NESDP, include:
- To implement an integrated waste management regime which considers a 'reduce, reuse, recycle' approach[28].

[28] UNEP 2010. Natural Environmental Summary (NES) St. Vincent & the Grenadines. http://www.pnuma.org/publicaciones/FINAL%20NES%20St%20Vincent%20and%20Grenadines%20Nov%2020 10-%20edited.pdf

- To build technical and organisational capacity, particularly in the Solid Waste Management Unit (SWMU) and service providers, for integrated waste management including new technologies and methods for waste reduction, recycling, landfilling and other forms of waste disposal.
- To climate proof sewage and solid waste treatment facilities, including through adoption of wastewater recycling, upgrading of drainage and storage for overflows and renewable energy technologies to provide decentralised power and reduce disruptions in a disaster event.
- To conduct research and pilot initiatives related to disaster waste management, including identifying temporary waste collection / disposal sites and removing and safely disposing of large amounts of debris post-disaster.
- To develop a strategy and response mechanism for hazardous waste management in a disaster event.

4.3.2 Mitigation

While SVG's contribution to global greenhouse gases is insignificant, the country will seek to minimise its greenhouse gas emissions as part of its commitment to low carbon and climate resilient development. It will emphasise mitigation activities that strategically provide adaptation co-benefits as well as health, livelihood and environmental benefits that are in line with SVG's vision for development. It will also use opportunities to enhance the functioning of its natural ecosystems as carbon sinks.

Mitigation objective: To set SVG on a low carbon and resilient development pathway through reducing net greenhouse gas emissions and enhancing carbon sinks.

To achieve the mitigation objective, and related sustainable development goals, the following priority areas outlined below will be targeted.

Energy

Emissions and opportunities: SVG is heavily dependent on the importation of fossil fuels to supply the production, transformation, handling and consumption of energy commodities, with the transport sector in particular noted as a major consumer. Combustion of fossil fuels for electricity generation and transport are the main sources of carbon dioxide (CO_2) emissions, making these key targets for climate change mitigation. Addressing energy security and energy efficiency are also priorities as heavy reliance on imported fossil fuels puts SVG at risk from fluctuations in global oil prices and makes the country vulnerable to disruptions in power supply when fuel imports are affected by extreme weather and other events.

Objectives: To promote the adoption of renewable energy and energy efficiency measures for low carbon and sustainable growth.

Sub-objectives, which are aligned with those identified in the NDC, National Energy Policy and Action Plan and the NESDP, include:

- To enhance the institutional arrangements for implementation and monitoring of climate change mitigation measures for energy production and supply, including through updating the National Energy Policy (2009) and National Energy Action Plan (2010) to reflect commitments in the NDC.
- To build capacity within the public and private sector for design and implementation of renewable energy and energy efficiency technologies for climate change mitigation and energy security, including via strengthening staff capacity and enhancing private sector engagement and investment.
- To promote the use of renewable energy and related low carbon technologies through:
  - Implementing a programme for the installation of grid-connected solar photovoltaic and wind power systems by independent power producers, including farmers, hotels and industrial plants.
  - Providing innovative financing mechanisms, including concessions and tax breaks, that encourage installation of solar hot water heaters in the commercial and residential sectors.
  - Demonstrating and testing the viability of geothermal resources on St. Vincent for electricity generation.
  - Scaling up the installation of microgrid systems integrating solar photovoltaic, wind power and battery storage in the Grenadines islands.
- To enhance energy efficiency through:
  - Adopting standards and guidelines for the construction of energy efficient buildings

- Promoting energy audits for key energy consumers, such as hotels, industrial plants and public buildings, to improve understanding of energy consumption patterns and inform the design of appropriate energy efficiency measures.
- Setting energy performance standards for importation and sales of major energy consuming equipment and appliances (used by residential and commercial sectors).
- Implementing education and awareness programmes to promote efficient energy use across all sectors of the economy.

Forests and carbon sinks

Emissions and opportunities: SVG's forests and other natural ecosystems, including seagrass beds, not only play a critical role in providing ecosystem services such as groundwater recharge and coastal protection but make an important contribution to mitigation as carbon sinks. These carbon sinks help to capture and store CO_2 over the long-term and so facilitate climate change mitigation. Ensuring the integrity and structure of forests is also key, especially in reducing current emissions from deforestation and forest degradation in SVG.

Objective: To enhance the role of forests and other natural ecosystems as carbon sinks through conservation and sustainable use and management.

Sub-objectives, which are aligned with the NDC, National Biodiversity Strategy and Action Plan and NESDP, include:

- To strengthen the institutional and legal framework governing ecosystem management with a view to promoting the conservation and sustainable use and management of key ecosystems, including tropical forests, coastal wetlands and mangroves, and seagrass beds, through participatory processes that engage government, civil society and private sector stakeholders.
- To explore the potential for carbon sequestration through expanding forests and terrestrial ecosystems, including coastal wetlands and mangroves, through afforestation, reforestation and ecosystem restoration and rehabilitation.
- To assess, identify, and promote economic opportunities for mutually reinforcing conservation strategies, including non-extractive resource activities and the development of markets for sustainable use of non-timber forest products and marine resources.

Maritime affairs

Emissions and opportunities: As a multi-island State, maritime transport and ship registry are significant activities for SVG, which depends largely on sea transport for the intra-state movement of people and cargo as well as for international trade. There is heavy reliance on fossil fuel energy sources for maritime transport, including gasoline, diesel and lubricants, which contributes increasingly to GHG emissions as 'the main trends in the Caribbean maritime sector are the increasing vessel sizes and consolidation among shipping lines.'[29] SVG's maritime infrastructure, including fleets, shipping lanes and ports, are also likely to be adversely impacted by climate change due to sea level rise, hurricanes, storm surge and rough seas.

Objective: To enable a sustainable, low carbon maritime transport system through the adoption of energy efficiency and resilience building measures.

[29] See http://www.caribank.org/wp-content/uploads/2016/05/Study_Transformation-of-Caribbean-Maritime-Port-Services-Industry.pdf

Sub-objectives, which are aligned with those identified in the NDC, National Energy Policy and Action Plan and National Ocean Policy, include:

- To mainstream climate change considerations into maritime affairs, including via updating and implementing relevant policies, legislation and regulations such as the National Ocean Policy and the Shipping and Marine Pollution Bill, which incorporates the Annex VI regulations on preventing air pollution and GHG emissions from ships under the International Convention for the Prevention of Pollution from Ships (MARPOL).
- To reduce the fuel consumption of ships by providing guidance to shipping industry and public on fuel consumption rates for various boat models and best practices in managing fuel consumption, and incentivising the use of more fuel-efficient technologies for ships.
- To upgrade maritime infrastructure through investment (e.g. via Climate Levy or other finance), preventive maintenance and establishing formal requirements for infrastructure design to enhance service life and disaster resilience (e.g. survives storm surge from Category 5 hurricane)[30].

Tourism

Emissions and opportunities: As the fastest growing economic sector in SVG, tourism contributes significantly to GHG emissions through land use change and coastal development for hotels and tourism-related activities and infrastructure, high energy use for electricity and transport by air, land and sea, and waste generation. It is projected that GHG emissions from tourism and the commercial sector will increase by 201% from approximately 48,000 tons in 2010 to 144,000 tons in 2025[31]. The majority of this increase will be due to increasing electricity demand, including for air conditioning, lighting, cooking and refrigeration[32].

Objective: To promote low carbon and sustainable growth within the tourism sector through the adoption of renewable energy, energy efficiency and sustainable building practices.

Sub-objectives, which are aligned with those identified in the NDC and NESDP, include:

- To integrate climate change mitigation considerations into the institutional and regulatory framework for the tourism sector, including updating the Tourism Master Plan and building codes and standards for tourism-related operations.
- To conduct a comprehensive assessment of greenhouse gas emissions and identify appropriate mitigation measures for the tourism sector.
- To increase the adoption of renewable energy and energy efficiency measures within the tourism sector for enhanced energy security and climate change mitigation, including deployment of small-scale solar, wind and hydroelectric power systems and desalination and waste treatment plants powered by renewable energy.
- To promote sustainable building practices among hotels and other tourism-based enterprises in constructing new building and facilities and retrofitting existing ones, including reducing construction waste, using environmentally-friendly materials and maintaining natural vegetation, through education and awareness, concessions and other fiscal incentives.

[30] Government of St Vincent and The Grenadines (GoSVG). 2013. *Rapid Damage and Loss Assessment (DaLA) December 24-25, 2013, Floods*. https://reliefweb.int/sites/reliefweb.int/files/resources/SVG_Rapid_DaLA_Report.pdf
[31] GoSVG. 2015b. *Second National Communication on Climate Change for Saint Vincent and the Grenadines*. Kingstown: Ministry of Health, Wellness and the Environment. https://unfccc.int/resource/docs/natc/vctnc2.pdf
[32] Ibid

Transport

Emissions and opportunities: Air and land-based transport have the fastest growing demand for energy in SVG and contribute to GHG emissions through the heavy reliance on fossil fuel energy sources, including gasoline, diesel, avgas (used domestically) and lubricants. The importation of used vehicles is a major concern, given their lower fuel operating efficiencies[33]. GHG emissions in the transport sector are expected to rise 88% from approximately 137,000 tons in 2010 to 257,000 tons in 2025[34]. SVG's transport infrastructure is also likely to be impacted by climate change and related disasters. The majority of road infrastructure, as well as the international airport and small airports, is found within the narrow coastal zone and highly vulnerable to sea level rise and hurricanes and storm surge due to climate change.

Objective: To enable a sustainable, low carbon transport system through the adoption of renewable energy, energy efficiency and resilience building measures.

Sub-objectives, which are aligned with those identified in the NDC, NAMA for Transport and the National Energy Policy and Action Plan, include:

- To formally adopt and implement the NAMA for Transport for a coordinated and effective response to climate change mitigation.
- To reduce the fuel consumption of motor vehicles via providing guidance to public on fuel consumption rates for frequently imported car models, revising the vehicle taxation system to incentivise the use of newer and more fuel-efficient technologies for motor vehicles.
- To scale up the use of hybrid and electric vehicles in SVG, and explore options for use of biofuels in vehicles based on a national production chain, as part of a low carbon transport system.
- To promote sustainable transport measures that increase ridership on public transport, improve road conditions and traffic management.
- To improve air and land-based transport infrastructure through investment (e.g. via Climate Levy or other finance), preventative maintenance and establishing formal requirements for new infrastructure design with respect to expected service life and disaster resilience requirements (e.g. survives 100 year flood, 7.0 seismic event)[35].

Waste management

Emissions and opportunities: The waste sector contributes emissions from non-energy sources, including emissions from landfills and wastewater. In SVG, solid waste disposal is limited to a small number of landfills. The disposal and treatment of industrial and municipal wastes by landfilling, recycling, incineration or waste-to-energy can produce emissions of GHGs (including CO_2, methane (CH_4), and non-methane volatile organic compounds (NMVOCs). Indirect nitrous oxide (N_2O) emissions can also result from the treatment of sewage sludge and incineration of medical wastes (SNC, 2015). Open burning of waste is prohibited, but it is estimated that approximately 15% of waste is disposed at unmanaged dump sites (SWMU, 2002).

Objective: To reduce greenhouse gas emissions through sustainable waste management.

[33] GoSVG. 2015a. *St. Vincent and the Grenadines Nationally Determined Contribution*. Communicated to the UNFCCC on November 18, 2015. https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Saint%20Vincent%20and%20Grenadines%20First/Saint%20Vincent%20and%20the%20Grenadines_NDC.pdf

[34] GoSVG. 2015b. *Second National Communication on Climate Change for Saint Vincent and the Grenadines*. Kingstown: Ministry of Health, Wellness and the Environment. https://unfccc.int/resource/docs/natc/vctnc2.pdf

[35] Government of St Vincent and The Grenadines (GoSVG). 2013. *Rapid Damage and Loss Assessment (DaLA) December 24-25, 2013, Floods*. https://reliefweb.int/sites/reliefweb.int/files/resources/SVG_Rapid_DaLA_Report.pdf

Sub-objectives, which are aligned with those identified in the NDC, National Energy Policy and Action Plan and NESDP, include:

- To reduce GHG emissions, and other air pollution, through integrated waste management that uses a 'reduce, reuse, recycle' approach[36] focused on:
    - Reduction in use of fossil-fuel derived plastics through banning Styrofoam and single use plastics and public education and awareness on alternatives to plastics.
    - Reduction in ozone depleting and high global warming potential (GWP) refrigerant gases (e.g. HFCs and HCFCs) through adopting relevant controls and standards for phase out of these gases.
    - Promotion and development of recycling processes and facilities.
    - Exploration of alternate methods of landfilling and alternate uses for scrap materials (metals, used tyres, etc.).
    - Promotion of wastewater recycling and renewable energy and energy efficient technologies for sewage and wastewater treatment plants.
- To implement a composting programme for the commercial sector to address GHG emissions, including operating a central composting facility and targeting the tourism, agriculture and other key sectors that produce and utilise organic waste.
- To conduct research and pilot initiatives related to waste-to-energy technologies that can be used on both a small scale (e.g. biodigesters to produce energy on farms) and large scale (e.g. biogas from landfill).

4.3.3 Cross-cutting areas

This section highlights five key cross-cutting areas which are critical to the achievement of the goal and directives of this *Policy*. Their execution will support the implementation of the objectives identified under both the priority areas for adaptation and mitigation.

Capacity building and engagement of stakeholders

Current issues and opportunities: Limited human, financial and technical resources have been noted as a critical issue across the various priority areas and sectors. Capacity building aimed at different levels, including the local, sectoral and national levels, is seen as a key need for mainstreaming climate change into the priority areas and for effective planning and implementation. Government agencies, particularly the EPSDD as the climate change focal point and agency coordinating the process for the Ministry of Finance, Economic Planning, Sustainable Development and Information Technology, would require enhanced staff capacities and resources to effectively understand, coordinate and implement climate change adaptation and mitigation measures. While civil society is implementing a number of on the ground projects related to CCA, challenges are noted in terms of organisational capacity, particularly related to legal and accounting expertise and sustainable financing. The private sector's capacity to engage in policy planning and implementation is also constrained by lack of human and technical resources.

Objective: To build the capacity of all stakeholders, and adopt participatory and bottom up approaches, to effectively plan for and respond to climate change in SVG.

Sub-objectives, which are aligned with those identified in the draft NAP, NDC and NESDP, include:

[36] UNEP 2010. Natural Environmental Summary (NES) St. Vincent & the Grenadines.

- To assess the human and technical resource capacity needs for climate change adaptation and mitigation across government agencies and key partners in civil society and the private sector and develop a capacity building programme to effectively respond to the identified needs.
- To develop and implement an integrated and sustained climate change education and awareness campaign, targeting schools, key resource users (e.g. farmers, fisherfolk, hotel and tour operators) and the wider public.
- To enhance mechanisms for participatory, inclusive and transparent planning and decision-making processes that engage government, civil society and the private sector in the climate change response, including at the national and local levels.
- To document and share best practices and innovations in engaging civil society and private sector in climate change adaptation and mitigation for scale up and replication, including ongoing work in coral reef and mangrove restoration, waste management and using solar powered desalination plants.
- To enable public-private partnerships to facilitate information sharing, training, financing and deployment of innovative technologies and practices to support climate change responses.

Information management, research and monitoring

Current issues and opportunities: A comprehensive system of research, monitoring and information management for climate change is needed to provide reliable data for decision-making and to foster experimentation and innovation. Currently, key baseline data on current conditions and comprehensive assessments of climate change trends, impacts and vulnerabilities are unavailable and, where data generation is taking place, there is limited dissemination of this information across sectors. There is no central repository for accessing or contributing available data and information, including by civil society or the private sector who may be interested in implementing and investing in climate change measures. An effective system to collect and report on data necessary to develop the GHG inventory is also lacking as well as decision support tools e.g. GIS which can help support vulnerability mapping, modelling and analysis for both adaptation and mitigation.

Objective: To ensure a comprehensive system of information management, research and M&E to inform climate change decision-making.

Sub-objectives, which are aligned with those identified in the draft NAP and NDC, include:

- To develop climate modelling and systematic observation, research and monitoring systems to determine climate change trends and patterns and inform assessments of current and potential impacts in SVG.
- To conduct vulnerability and capacity assessments to identify the key climate change impacts and vulnerabilities for each of the priority sectors and appropriate measures, including collection of local / indigenous knowledge and gender-disaggregated information.
- To establish a research and development programme for climate smart technologies and practices relevant for various sectors, including agriculture and fisheries, energy efficiency and renewable energy, preservation of historical sites, water and soil conservation and waste management.
- To enhance decision support tools for effective and integrated climate change planning and decision-making by government, civil society and the private sector, including geographic information systems (GIS) and other tools.
- To establish a climate change database / information system as part of a national information management system for sharing climate-related data and information across sectors and various stakeholders to support effective decision-making implementation over the long term.

Intersectoral coordination

Current issues and opportunities: Ensuring effective coordination and information sharing to support a multi-sectoral, multi-stakeholder and integrative approach to address climate change and build resilience is critical. This will require robust and highly integrated institutions to coordinate and manage this process as well as the definition of key roles and responsibilities and clear communication of the same to all stakeholders. Currently, coordination is low and the governance structure to oversee climate change planning, implementation and financing among sectoral stakeholders needs to be strengthened. Coordination should also seek to factor in civil society and the private sector given the lack of a participatory mechanism to consistently engage these stakeholders in climate dialogue.

Objectives: To establish institutional mechanisms and sectoral linkages to enable information sharing, coordination and joint implementation for an effective response to climate change.

Sub-objectives, which are aligned with those identified in the draft NAP and NDC, include:

- To operationalise a national coordinating mechanism, including a National Climate Change Committee (NCCC), comprised of the key implementing agencies for climate change adaptation and mitigation and relevant civil society and private sector representatives across the various sectors in St. Vincent and in the Grenadines.
- To increase the human resources and institutional capacity within the EPSDD in the Ministry of Finance, Economic Planning, Sustainable Development and Information Technology to effectively serve as the NCCC secretariat and enable a coordinated, multi-sectoral response to climate change.
- To designate climate change focal points in the relevant GoSVG ministries and agencies with clear roles and responsibilities for climate change, including supporting the NCCC to monitor implementation of sectoral vulnerability and risk assessments, measures for adaptation and mitigation, and mobilise climate financing.
- To create a database of all ongoing climate change programmes and projects in SVG to enhance coordination and avoid duplication of efforts, and integrate into a national information management system.
- To establish systems and procedures for mainstreaming climate change, including in budgeting and procurement systems and development planning in GoSVG ministries and agencies.
- To review and update the policy and legal framework to enable an integrated and multi-sectoral approach to climate change adaptation and mitigation across SVG.

Integration of disaster risk management and national security

Current issues and opportunities: Climate change has the potential to exacerbate natural disasters, such as droughts, floods, landslides, hurricanes and storm surges, through changing rainfall patterns, more extreme weather and sea level rise. The impacts on lives, infrastructure and livelihoods in SVG will be significant given the small size of the islands and economic dependence on climate-sensitive sectors like agriculture and tourism. National security impacts must also be taken into account, particularly migration, resettlement and threats to law and order triggered by climate related disasters and related issues of food, water and energy security. Increasing resilience to multiple hazards and disasters, including extreme climate events, will be critical to ensure the viability of the people and economy and require integrating disaster risk management and national security considerations into climate change responses. Increased investment in monitoring, forecasting and

early warning systems for disaster risk reduction and in response plans and coordinating mechanisms post-disaster events will also be necessary.

Objectives: To ensure the health, safety and security of residents and visitors through an integrated approach to climate change, disaster risk management and national security.

Sub-objectives, which are aligned with those identified in the Comprehensive Disaster Management Policy (2014), draft NAP and NDC, include:

- To enhance the institutional and legal framework for an integrated and coordinated approach to climate change, disaster risk management and national security, including:
    - Reviewing and updating SVG's Comprehensive Disaster Management Policy and current legislation to address existing and emerging disasters and national security concerns.
    - Strengthening institutional arrangements and networks for coordination from community to national levels, including the National Emergency Council, the Emergency Executive Committee, and District and Community Disaster Committees.
- To establish and maintain early warning systems for key hazards, including droughts, floods, heatwaves, hurricanes and storm surge that are climate related, to enable effective disaster preparedness and response, with a focus on vulnerable communities and sectors.
- To update risk and vulnerability assessments and maps for natural hazards on an ongoing basis, including droughts, floods, heatwaves, hurricanes and storm surge that are climate related, to support evidence based decision making.
- To establish a national, standardised process for monitoring and reporting on the impacts of climate related hazards across sectors and identifying priority actions to avert, minimise and address loss and damage in SVG.
- To integrate relevant data, maps and vulnerability and impact assessment reports on natural hazards, including climate related hazards, into the national information management system to enable knowledge sharing and effective decision-making for disaster risk management and related security concerns.
- To promote comprehensive disaster management that addresses all aspects of disaster risk management in an integrated manner including risk reduction, preparedness, response, recovery and rehabilitation through investment in capacity building and implementation of best practices within government, civil society and the private sector.

Investment and fiscal planning

Current issues and opportunities: Limited funding is available through the Government to support the added responsibilities and measures needed to adapt to climate change or to explore key mitigation measures. The majority of the funding for climate change planning and implementation is sourced through multi-lateral donors such as the Green Climate Fund under the UNFCCC and the World Bank's Global Environmental Facility, through bi-lateral donors such as the European Union and North American governments, and through regional programmes with CCCCC and sub-regional programmes with the OECS. The ability to access and mobilise these donor funds in a timely manner, however, is a challenge. Additional mechanisms for financing key investments in climate change adaptation and mitigation will need to be identified and developed, including public-private partnerships and fiscal measures, such as tax incentives. This includes mechanisms to enhance timely mobilisation of any funds accessed.

Objectives: To reduce the economic impacts of climate change and leverage opportunities through effective planning and investment for low carbon, climate resilient development.

Sub-objectives, which are aligned with those identified in the draft NAP, NDC and NESDP, include:

- To build capacity for assessment of the costs and benefits of climate change impacts for economic development and potential opportunities for investment and application of screening tools for development planning (e.g. the Caribbean Climate Online Risk and Adaptation Tool (CCORAL)[37]), among GoSVG ministries and agencies.
- To mainstream climate change considerations into the annual development of budgets for all GoSVG ministries and reporting on annual performance, including specific adaptation, mitigation and resilience building initiatives.
- To mobilise available climate finance, including new opportunities through the Green Climate Fund, for climate change project development and implementation with the involvement of government, civil society and private sector actors.
- To promote private sector actions and investment to support climate change adaptation and mitigation, including through use of fiscal measures such as concessions, subsidies and levies and public-private partnerships.
- To integrate a system for tracking investments in climate change adaptation and mitigation and their economic, environmental and social impacts into the national monitoring, evaluation and reporting on climate change.

4.4 Loss and Damage

This *National Climate Change Policy* will facilitate an integrated and coordinated approach in addressing loss and damage associated with the impacts of climate change and related disasters. In particular, this approach will require building capacity within the GoSVG to effectively monitor and report nationally and globally on current and potential impacts and actions to avert, minimise and address loss and damage, and establishing institutional arrangements to implement these activities.

SVG's approach recognises and is aligned with the UNFCCC's Warsaw International Mechanism for Loss and Damage, which assists developing countries that are highly vulnerable to the impacts of climate change through enhancing knowledge and action for comprehensive risk and disaster management. This will further support implementation of Article 8 on loss and damage under the Paris Agreement.

4.5 Gender Considerations

This *National Climate Change Policy* seeks to enable an inclusive process, with an emphasis on building the capacity of vulnerable groups to contribute towards climate change responses in SVG and enhancing local resilience. As an important driver of vulnerability to climate change, gender needs to be taken into account.

For example, women are more likely to work in lower paying jobs or to be unemployed compared to men in SVG. According to the national census in 2012, 39% of households in SVG were headed by a female and 43.1% of these females were not employed[38]. Women also comprised about 50.8% of those living in poverty according to the 2007/2008 Country Poverty Assessment[39]. This lack of

[37] The Caribbean Climate Online Risk and Adaptation Tool (CCORAL) is an online support system and toolbox for climate resilient decision-making developed by the Caribbean Community Climate Change Centre (CCCCC). It includes tools for screening budgets, legislation, policies and projects/programmes using a climate change lens and identifying gaps and opportunities for adaptation and building resilience.

[38] GoSVG. 2012. *Population and Housing Census for Saint Vincent and the Grenadines*. Kingstown, St. Vincent.

[39] GoSVG. 2008. *St. Vincent and the Grenadines Country Poverty Assessment 2007/2008: Living Conditions in a Caribbean Small Island Developing State*. Final Report. Submitted by Kairi Consultants Ltd.

resources can constrain women and their dependents from adapting or recovering from climate related impacts and disasters. In contrast, men may be more vulnerable to certain impacts from climate change due to the nature of their work and exposure levels. For example, men are disproportionately represented in construction, farming and fishing sectors where there is greater exposure to extreme weather events, including hurricanes, storm surge, rough seas and heat stress, and associated health, economic and environmental impacts. Notably, though, women are less well represented than men in the political and decision-making process in SVG. While 50% of administrative heads are women, only about 13% of parliamentary seats in government and about 25% of seats on public and private sector boards are held by women[40].

Sectoral and cross-sectoral responses to climate change therefore need to be designed to be sensitive to differences in how women and men are impacted by and address climate change and promote gender equality and gender-responsive measures. In particular, gender-disaggregated information will need to be collected and analysed as part of vulnerability and capacity assessments and analysis of options for adaptation, mitigation and building resilience in SVG.

4.6 Implementation Framework

4.6.1 Institutional arrangements

The EPSDD in the Ministry of Finance, Economic Planning, Sustainable Development and Information Technology will have overall responsibility for coordinating implementation of this *National Climate Change Policy*. This includes catalysing and supporting implementation and monitoring of activities by the various bodies and stakeholders, who serve the following key functions identified below:

- National government (line ministries and agencies) and local government (town and village councils) - Government agencies will be key in mainstreaming adaptation and mitigation into the development agenda and leading on planning, implementation, M&E and resource mobilisation.
- CSOs – Civil society will play an important role in awareness raising, planning, implementation including community mobilisation, M&E and resource mobilisation for adaptation and mitigation.
- Private sector (registered corporations and small and micro enterprises) - The private sector will be important in planning, implementation, M&E and financing of adaptation and mitigation.
- Academic and research institutions - Academic and other technical agencies will play an important role in research, M&E and information management to inform climate change planning and implementation.
- Regional and international multilateral agencies - These agencies will be key for technical support and financing for adaptation and mitigation.
- Media (broadcast, print and social media) - The media will be important in implementation including awareness raising, advocacy and public engagement for an effective climate change response.

National Climate Change Committee

[40] World Bank. (2017). *Gender Data Portal – St. Vincent and the Grenadines*. Available at http://datatopics.worldbank.org/gender/country/st.-vincent-and-grenadines

A National Climate Change Committee should be established as a technical advisory body that enables implementation of the *National Climate Change Policy*. The purpose of the NCCC will be to coordinate and steer national implementation to:

- ensure effective climate change mainstreaming in all relevant sectors;
- guide the development of related legislation and plans, including the Climate Change Strategy and Implementation Plan, NAP and NDC;
- lead the prioritisation of the budgeting process for climate change;
- facilitate the dissemination and sharing of information related to climate change between sectors; and
- to oversee monitoring and evaluation of implementation of the *Policy* and ensure periodic reviews and updating of the *Policy* as needed.

The NCCC will be chaired by the Director of Planning in the Ministry of Finance, Economic Planning, Sustainable Development and Information Technology as the line ministry that serves as SVG's climate change focal point, including for the UNFCCC, GCF and GEF. The NCCC will have a broad composition including representatives from the key implementing agencies for climate change adaptation and mitigation in SVG, including within the Ministry of Agriculture, Forestry, Fisheries and Rural Transformation, Ministry of Finance, Economic Planning, Sustainable Development and Information Technology, Ministry of Health, Ministry of Housing, Informal Settlements, Lands and Survey and Physical Planning, Ministry of National Security, Air and Sea Port Development, Ministry of Tourism, Sports and Culture and Ministry of Transport, Works, Urban Development and Local Government, and relevant representatives from civil society, private sector and academia and research institutions. The NCCC will meet at defined and regular intervals to discuss key strategic issues.

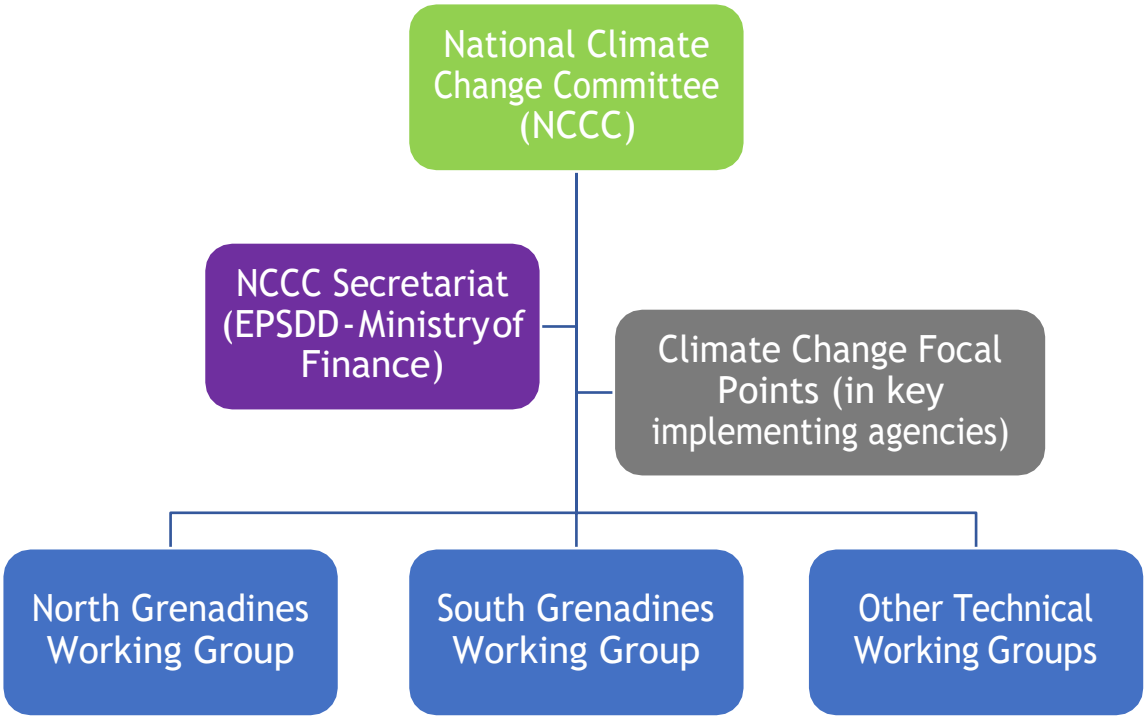
The NCCC's secretariat will be the EPSDD in the Ministry of Finance, Economic Planning, Sustainable Development and Information Technology, which holds responsibility for cross-sectoral coordination, information gathering and mobilisation of stakeholders for climate change response in SVG, including monitoring, reporting and verification (MRV) of climate change and national communications and biennial update reports to UNFCCC. It will also be responsible for liaising with regional bodies with respect to climate change, including the Caribbean Community Climate Change Centre (CCCCC), the Caribbean Disaster and Emergency Management Agency (CDEMA) and OECS.

The NCCC will also have the authority to create thematic working groups to address technical areas or concerns, including a North Grenadines Working Group to coordinate climate change actions in Bequia and Mustique and a South Grenadines Working Group to coordinate actions in Canouan, Mayreau, Palm Island, Petit St. Vincent and Union Island. The working groups will be able to nominate members from government, civil society and the private sector as well as other institutions to support its work as needed. The working groups will report to the NCCC, with the chairs of the North and South Grenadines Working Groups serving as representatives for the Grenadines Islands on the NCCC and facilitating coordination and knowledge exchange among the islands.

Sectoral Focal Points

To facilitate inter-sectoral coordination, Climate Change Focal Points will be appointed from the relevant GoSVG ministries and agencies to serve on the NCCC and facilitate implementation of the *National Climate Change Policy*. These focal points will have defined roles and responsibilities for addressing the impacts of climate change in each priority sector. This will include supporting the NCCC to monitor implementation of sectoral vulnerability and risk assessments and adaptation and mitigation measures, and mobilise climate financing.

Fig. 1. Proposed institutional arrangements for implementing the National Climate Change Policy



4.6.2 Resource mobilisation

The potential costs of climate change adaptation and mitigation are significant, and the GoSVG will be required to mobilise the requisite resources to build adaptive capacity and resilience and enable low carbon growth as outlined in this Policy.

In mobilising financial resources, the GoSVG will explore scaling up of existing funding sources as well as access to new funding sources at the domestic, regional and international levels. Domestic sources will be explored including budgetary allocations from government revenue, domestic sources of private revenue (including environmental and other fines, fees and revenues such as licenses and tariffs for non-environmentally friendly or high-greenhouse gas emitting activities), seed financing from domestic stakeholders, funds from voluntary markets (e.g. carbon market offset for visitors and donations) and private finance sources. These funds will be allocated via:

- direct budget support (to achieve high level transformative changes in policy and practice);
- sector support (to provide additional support for mainstreaming of climate change actions into programmes);
- project support (for implementation of initiatives to deliver specific results); and
- extra-budgetary support.

Regional and international sources will be identified, including bilateral financing from donor countries, multilateral funds such as the Adaptation Fund, GCF and GEF, and private investments (recognising that these are often stimulated by public financing).

Strengthening the role and capacity of civil society and the private sector to leverage funding for climate resilient and low carbon activities is also a priority.

4.6.3 National Climate Change Strategy and Implementation Plan

The GoSVG will develop a *National Climate Change Strategy and Implementation Plan* to operationalise this Policy. The *Strategy* will identify specific actions that must be undertaken to achieve the objectives outlined under each priority area. It will also identify the relevant lead and supporting stakeholders responsible for executing this action. The *Implementation Plan* will serve as a foundation to determine the budgetary requirements associated with climate change response, and include a monitoring and evaluation plan, and will therefore be a critical step towards implementation of the *Policy*. The *Implementation Plan* shall be reviewed annually by the NCCC and revised and updated as required. The review should align with the annual review process established under the NESDP to capitalise on opportunities to harmonise related or mutually supporting activities.

4.7 Monitoring, evaluation and review

Monitoring, evaluation and review are integral to ensure effective policy implementation. It also ensures that the provisions of the *National Climate Change Policy* remain relevant to current and emerging needs, that lessons learned from the implementation process are captured, and that there is full transparency and accountability in the overall process. In order to achieve this, the NCCC and EPSDD will be responsible for the following activities, in collaboration with all other relevant stakeholders to:

- ensure that monitoring of implementation of the *National Climate Change Policy*, Strategy *and Implementation Plan* is continuous and informs adaptive management by implementing agencies and organisations;
- conduct annual reviews of the *Implementation Plan* and a comprehensive review of the *National Climate Change Policy* every five years, with effective engagement of stakeholders in the process;
- revise or develop a new *Implementation Plan* following five year review of the *Policy* as needed;
- ensure that the review of the implementation of the *National Climate Change Policy* is linked to and integrated with other national, regional and international monitoring and reporting requirements.