



# ST. CHRISTOPHER (ST. KITTS) & NEVIS NATIONAL BIODIVERSITY STRATEGY & ACTION PLAN

2014-2020



PREPARED BY THE MINISTRY OF SUSTAINABLE DEVELOPMENT

July 2014

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## **Preface**

The Federation of St. Christopher (St. Kitts) and Nevis (GSKN) is proud of its biodiversity heritage and the approaches that have been undertaken to manage this critical resource. However, macroeconomic and livelihood challenges, influenced largely by external factors require that the Government of St. Kitts and Nevis play closer attention to biodiversity conservation and design mechanisms and structures to ensure resilience, continued productivity and sustainability.

Accordingly, on 1<sup>st</sup> July, 1993, the GSKN ratified the United Nations Convention on Biological Diversity. In 2004, the Government made a public declaration of its commitment to biodiversity management in SKN, and to the UNCBD through the submission of its first Biodiversity Strategy and Action Plan (NBSAP).

Generally, the 2004 NBSAP has served the country well as it has established a programmatic approach for the management of biodiversity. However, the socioeconomic landscape of the country has changed and it is now time to evaluate its impact and to fashion its application as an environmental management and development tool going forward. While the National Goals and Objectives have remained unchanged, actions necessary to achieve the vision required adjustments to address new and emerging challenges facing biodiversity in SKN. Also, it is necessary to align progress in biodiversity management with the Aichi targets.

The development of the 2014-2020 NBSAP was ably spearheaded by the Department of Physical Planning and Environment in the Ministry of Sustainable Development with technical support from the Biodiversity Steering Committee and the Consultant Team. The GSKN wishes to recognize the effort of its Ministry of Sustainable Development and its Department of Physical Planning and Environment in positioning SKN globally while honoring its responsibility to inform, educate and guide the country on matters to do with the environment and sustainable development.

Special recognition and appreciation must go to the Global Environmental Facility (GEF) and the United Nations Environmental Programme (UNEP) for financial and technical support respectively; to the Federal Government of St. Kitts and Nevis for political direction, technical and financial support and to all stakeholders who participated at various levels toward ensuring continued access to and promotion of the equitable sharing of SKN's biodiversity resources.

Right Honourable Dr. Denzil L. Douglas  
Minister Sustainable Development

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# **Chapter 1: Situational Analysis**

## Chapter 1: Situational Analysis

### 1.0 Geographical summary

<p><b>Location &amp; Size:</b> Total landmass 269 square kilometers, St. Kitts is 176 square kilometers (68 sq. mi) in size located at Latitude 17 degrees 15 minutes North and Longitude 62 degrees 45 minutes west. Nevis is 93 square kilometers (36 q. mi) and located at Latitude 17 degrees 10 minutes North, Longitude 62 degrees 35 minutes</p>
<p><b>Population:</b> Approximately 46,000 (2010 population census est.)</p>
<p><b>Climate:</b> Classified as tropical marine. Steady northeast trade winds and tropical oceanic cyclonic movements. Mean temperature of approximately 27O Celsius Seasonal and diurnal variations in temperature are small. Rainfall is mainly orographic and increases in amount and frequency with altitude. Rainfall is unevenly distributed between years and between months with a reliable wet period from August to November and driest months January to April. Relative humidity level is usually low in the dry season and high in the wet season. The mean value is 76 percent but ranges from 70 percent in March to 78 percent in September, October and November. Prevailing wind is northeast trade with mean speeds ranging from 15- 30 kilometers per hour (kph).</p>
<p><b>Topography:</b> St Kitts is oriented northwest southeast, about 80 km long and 16 km wide. Generally it rises from the coastline towards its mountain cluster in the center. The highest point is Mount Liamuiga, rising with a pronounced crater to 1,156 meters (m). Nevis lies on the inner volcanic arc of the Lesser Antilles and is comprised of nine distinct volcanic centers strung out southwest to northwest along a parallel of the inner volcanic arc. The central Nevis Peak is the most imposing of these centers, rising to 985 meters in altitude, giving the island a conical appearance</p>
<p><b>Geology:</b> St Kitts is composed almost exclusively of volcanic rocks of andesite or dacite mineralogy. Its geology is similar to that of other volcanic islands in the Lesser Antillean Archipelago. St Kitts had since undergone numerous and considerable changes in elevation but is now relatively stable. Nevis is a volcanic island that began its formation in mid-Pliocene times (approximately 3.45 million years ago). However, the island comprises a number of discrete eruptive centers that range in age from mid-Pliocene to Pleistocene.</p>
<p><b>Vegetation:</b> Five types: Rainforest, Dry Evergreen Forest, Dry Scrub Land Palm Break, Elfin Woodland. Disturbed low lands as a result of farming.</p>
<p><b>Economy:</b> Tourism dependent, financial services, manufacturing, construction, agriculture, etc</p>





Figure 1 Map of SKN

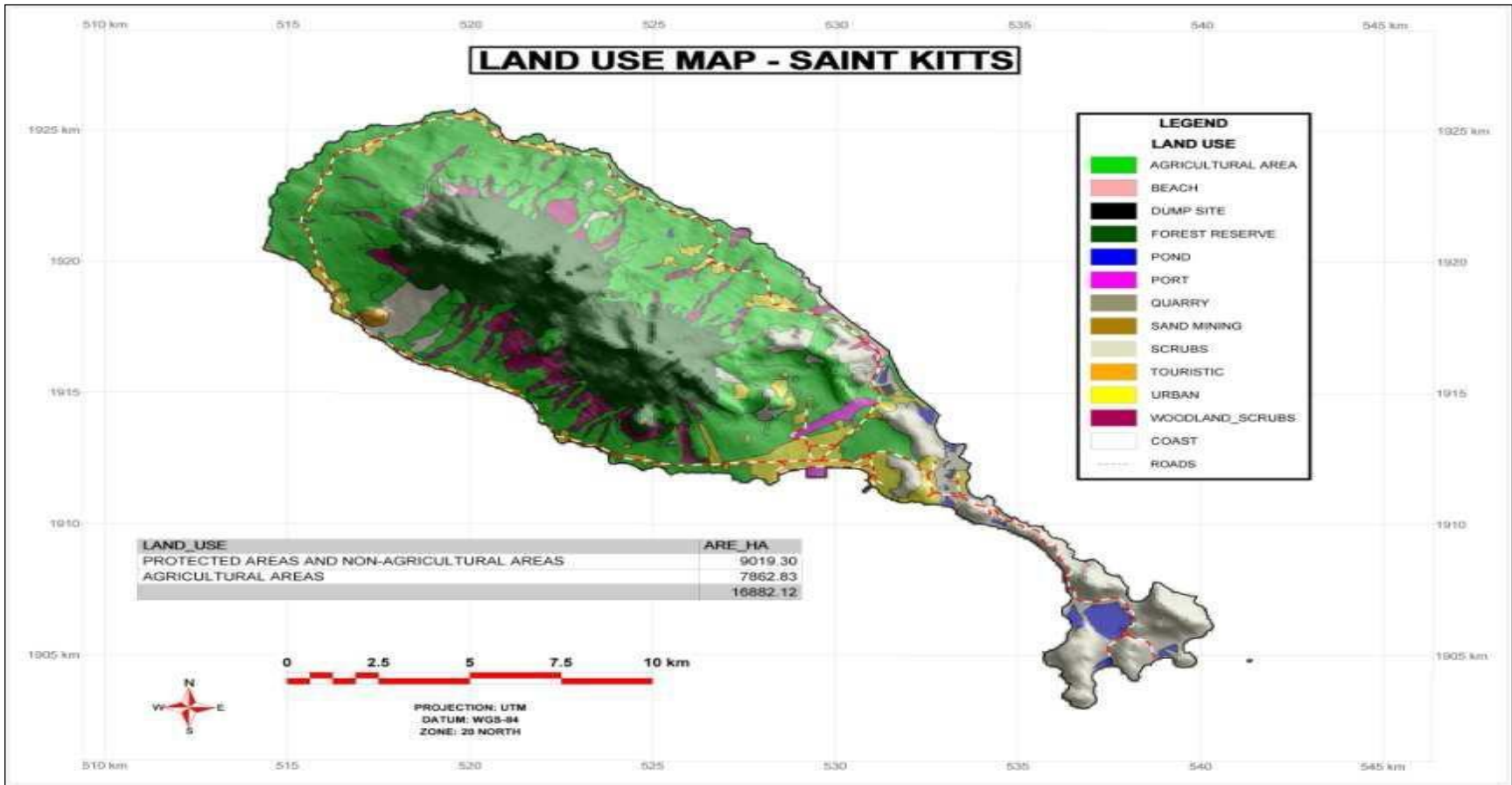


Figure 2: Land use map of St. Kitts

## 1.1 Terrestrial Biodiversity

The vegetation of SKN can be classified into four distinct zones as shown in table 1 below. Table 2 summarizes the main vegetative types

Vegetation Zone	Description	Vegetative Types
<b>Halophytic</b>	<ul style="list-style-type: none"> <li>• Coastal location</li> <li>• Mangroves &amp; wetlands</li> </ul>	<ul style="list-style-type: none"> <li>• Coconut palms</li> <li>• Sea grape</li> <li>• Seaside mahoe</li> <li>• Manchineel</li> <li>• Indian Almond</li> <li>• Tamarind</li> <li>• Sea lavender</li> <li>• Mangrove trees</li> <li>• Water lilies</li> </ul>
<b>Xerophytic</b>	<ul style="list-style-type: none"> <li>• Dry woodland</li> <li>• Grassland</li> <li>• Cactus scrub</li> </ul>	<ul style="list-style-type: none"> <li>• Button mangrove</li> <li>• Braceletwood</li> <li>• White cedar</li> <li>• Fleshy herbaceous</li> <li>• Aloes and herbs</li> <li>• Wild frangipani</li> <li>• Casha</li> </ul>
<b>Cultivated Belt</b>	<ul style="list-style-type: none"> <li>• Fertile</li> <li>• Native and introduced plants</li> <li>• Agriculture crops</li> <li>• Etc</li> </ul>	
<b>Mesophytic</b>	<ul style="list-style-type: none"> <li>• Mountain forest</li> </ul>	<ul style="list-style-type: none"> <li>• Ferns</li> <li>• Mountain cabbage palm</li> <li>• Spiny palm</li> <li>• Spaniah ash</li> <li>• Wild mango</li> <li>• Orchids</li> <li>• Bromeliads</li> <li>• Etc</li> </ul>

Table 1: Vegetation/Forest diversity of St. Kitts and Nevis

Vegetation Type	Common Name	Scientific Name
<b>Shrubs</b>	Sugar Apple	<i>Annona squamosa</i>
	Soursop	<i>Anonas muricata</i>
	Castor Oil Plant	<i>Ricinus communis</i>
	Indigo	<i>Indigofera suffruticosa</i>
	Barbados Cherry	<i>Malpighia emarginata</i>
	Barricada Bush	<i>Jatropha gossypifolia</i>
<b>Medicinal Herbs</b>	White top	<i>Parthenium hysterophorous</i>
	Rabbit meat	<i>Leonotis nepetifolia</i>
	Donkey rub down	<i>Rhynchosia minima</i>
	Broom	<i>Sida spp</i>
	White lady	<i>Thunbergia fragans</i>
	Nutgrass	<i>Cyperus rotendus</i>
<b>Seasonal Herbs</b>	Onion	<i>Allium cepa</i>
	Chives	<i>A. Schoenoprasum L.</i>
	Thyme	<i>Thymus vulgaris</i>
<b>Root &amp; Tuber Crops</b>	Sweet potato	<i>Ipomea batatas</i>
	Dasheen	<i>Colocasia esculenta</i>
	Yam	<i>Dioscorea alata</i>
	Cassava	<i>Manihot esculenta</i>
	Tannia	<i>Xanthosoma sagittifolium</i>
	Eddoe	<i>Colocasia sp.</i>
<b>Legumes</b>	Peanuts	<i>Arachis hypogaea</i>
	String beans	<i>Phaseolus vulgaris</i>
	Pigeon peas	<i>Cajanus cajan</i>
<b>Trees</b>	Flamboyant	<i>Delonix regia</i>
	Frangipani plant	<i>Plumeria rubra</i>
	Boabab Tree	<i>Adasonia digitata</i>
	Cashew	<i>Anacardium Occidentale</i>
	Saman	<i>Samanea saman</i>
	Pawpaw	<i>Carica papaya</i>
	Hog Plum	<i>Spondias mombin</i>
	Glirriciddy	<i>Gliricidia sepium</i>
	Banana	<i>Musa L.</i>
	Mango	<i>Mangifera indica cv Julie</i>
	Pineapple	<i>Ananas cmosus</i>
	Avocado	<i>Persea Americana</i>
	Grapefruit	<i>Citrus. sinesis</i>
	Orange	<i>Citrus paradist</i>
	Lime	<i>Citrus. aurantifolia</i>
	Breadfruit	<i>Artocarpus altillis</i>
Wax apple	<i>Syzygium samarangense</i>	
Indian jujube	<i>Zizyphus mauritiana</i>	

Table 2: Vegetation types in St. Kitts and Nevis

## 1.2 Fauna

The Biodiversity Review of St. Kitts and Nevis “Report on Rapid Assessment of Causes and Consequences of Biodiversity Loss” was prepared as part of the revision of the 2004 NBSAP. This Report detailed the number of terrestrial, aquatic and marine faunal species recorded in SKN. These are summarized in the table below.

Species Type	Number	Examples
Seabirds	9	Brown Pelican, Brown Booby, Frigate Bird, etc
Shorebirds	24	Great Blue Heron, Cattle Egret, Spotted Sandpiper , etc
Terrestrial birds	44	Rock Dove, Red-necked Pigein, Ground Dove
Mammals	15	African Green Vervet Monkey, Cattle, Sperm whale, etc
Reptiles & Amphibians	14	Green Turtle, Ground Lizard, Mountain Chicken, etc
Invertebrates	17	Millepede, Red Dragon Fly, Caribbean Cray Fish
Marine & Aquatic		
- Demersal	9	Doctor Fish, Grunts, Snapper, etc
- Coastal pelagic	3	Gars, Ballahoo, Jacks.
- Ocean Pelagic	4	Dolphin, Tuna, Mackerel, Conch

Table 3: Summary of SKN's faunal biodiversity



Figures 3a&b: Mammals (Green Vervet Money & White Tail Deer) of SKN

### 1.2.1 Marine and Aquatic Biodiversity

The Department of Marine Resources (DMR) of the Ministry of Agriculture and Marine Resources on St. Kitts and the Fisheries Department on Nevis has responsibility for fisheries management in SKN. The aim of the DMR is to ensure that fishers are provided with the necessary support, such as training, technical advice and economic concessions, so that the country can be provided with adequate supplies of good quality fish and fishery products. While doing so, the department endeavours to ensure that all fishing activity is done in a manner that promotes the sustainability of the species. In their management efforts they organize and support the operations of the Newtown and Old Road Fisheries Complexes on St. Kitts and fishers in general.

The DMR is cognizant of the tremendous amount of work needed to realize national and international targets and goals relating to biodiversity conservation. The St. Kitts Sea Turtle Monitoring Network (SKSTMN) collaborates with the DMR on the turtle monitoring and protection at several sites around the island. The SKSTMN is a community based nonprofit organization founded in January 2003. It monitors nesting sea turtle populations & acts as an advocate for the strengthening of sea turtle protection laws in the Federation. Data gathered is being used to promote conservation in order to improve laws & change long-standing attitudes regarding the importance of sea turtles not only to the island's ecosystem but the economy. SKSTMN is a member of the Wider Caribbean Sea Turtle Conservation Network (WIDECAST).

The main fish species in the waters of SKN can be categorized as demersal, coastal pelagic and ocean pelagic. These are outlined in table 4 below.



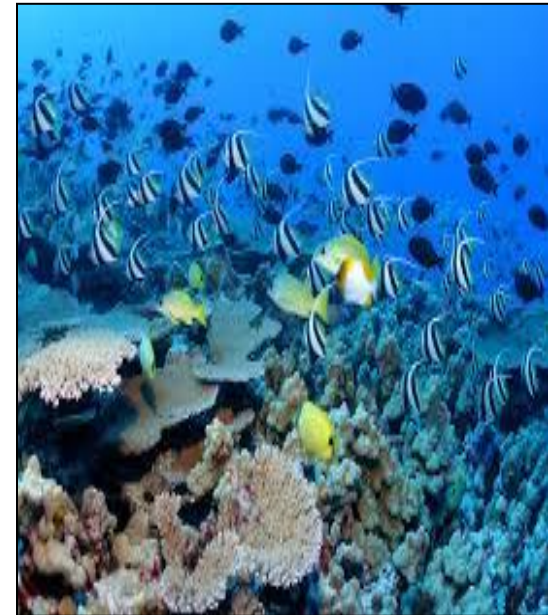
Figures 4a&b: Marine species of SKN

## Management Applied to Main Fisheries in SKN

Specie	Management Objectives	Approach
<b>Queen Conch</b>	to rebuild the conch stocks and identify target and limit reference points for the fishery in order to stabilize the net incomes of the operators and to ensure sustainable harvests	Promoting co-management. Current regulations impose size restrictions; minimum shell length and meat weight; harvesting only of flared lip conchs permitted; and provision for a close season.
<b>Spiny Lobster</b>	rebuild the lobster stocks and identify target and limit reference points for the fishery in order to stabilize the net incomes of the operators in the fishery; to ensure that harvesting does not exceed its MSY; and to promote co-management	Current regulations impose minimum-size limits, restrict fishing gear; and prohibit the taking of berried females or moulting individuals.
<b>Demersal species</b>	to rebuild the reef, bank and deep slope fish stocks and to identify target and limit reference points for the fishery, in order to stabilize the net incomes of the operators; maintain biological diversity; and ensure that the MSY is not exceeded in any of the species of this multi-species fishery.	This involves the promotion of co-management. Current regulations set size restrictions on meshed gears (traps must be made from wire not less than 2 inch mesh size).
<b>Ocean pelagics</b>	to promote the sustainable development of the commercial long line and sport fisheries for large pelagic species; to develop capacity for optimizing the catches of large pelagics inhabiting or migrating through the EEZ; to establish management linkages with international regulatory bodies, such as ICCAT, in	Currently there are no regulations controlling the harvest of large pelagics for commercial fishing within national waters, but attention is normally paid to the management recommendations from

	order to access vital information to properly manage these fishes.	ICCAT
<b>Coastal pelagics</b>	to identify target and limit reference points for the fishery in order to maintain and improve the net incomes of the fishers and operators in the fishery, and to preserve the traditional nature of community involvement in this fishery while ensuring that all capture is done in a sustainable manner.	Current regulations govern only net mesh size. Catches of pelagics are seasonal. Larger pelagics are harvested by commercial and sport fishermen, mainly by trolling, during the months of January to June.

Table 4: Management approaches to main fisheries in SKN



Figures 5 a, b&c: Photographs of SKN's marine biodiversity



## 1.2.2 Sponges and Corals

Sponges and coral reefs are an integral part of the overall health of the marine environment. Coral reefs in SKN and the wider Caribbean are under threat due to ocean pollution, land based sources of pollution, sand mining, over fishing, increased sea surface temperatures and storm damage.

<b>Sponges</b>	
Encrusting Sponges	<i>Demospongia sp. Ulosa hispida</i>
Borrowing Sponge	<i>Adocia carbonaria, Cliona sp.</i>
Trumpet Sponge	<i>Agelus sp.</i>
Fluorescent Sponge	<i>Callyspongia plicifera</i>
Barrel Sponge	<i>Xestospongia muta</i>
Stinker Sponge	<i>Ircinia faciculata</i>
Candle Sponge	<u><i>Verongia fistularis. V. Longisima. V. Gigantean</i></u>

Table 5: Sponges of St. Kitts and Nevis

<b>Soft Corals</b>	
Encrusting corals	<i>Mandraxis decactus, Mandraxis mirabilis, Siderastrea sidereal</i>
Star corals	<i>(Montastra annularis, Montastra cavernosa)</i>
Plate corals	<i>Mycetophyllia sp.)</i>
Lettuce corals	<i>Agaricia agaricites, Agaricia fragiles</i>
Finger corals	<i>Porites porites, Porites asteroides</i>
Pillar corals	<i>Dendrogyra cylindricus</i>
Flower corals	<i>Eusmilia fastigiata</i>
Brain corals	<i>Diplora sp.</i>
Black corals	<i>Cuidarian (Antipathes sp.</i>
Fire corals	<i>Hydrozoan (Millepora sp.</i>
Soft corals	<i>Sea Fans (Gorgonia sp.</i>
Ascadians	<i>Sea Squirts (Clavelina sp.</i>

Table 6: Corals of St. Kitts and Nevis

## 1.3 Threats to Biodiversity Sustainability

Several factors pose immediate threats to biodiversity resources in SKN. These include:

- Private land ownership
- Climate change and sea level rise
- Invasive species and disease
- Unsustainable resource base
- Wild fires

- Ecosystem loss
- Pollution
- Recreational pressure and human disturbance

While these threats may appear sector specific, for the most part the impact may be felt across all sectors of biodiversity management. Cross-cutting issues include weak legislative and inadequate institutional frameworks.

#### 1.4 Causes of Biodiversity Loss

<sup>1</sup>The main causes of biodiversity loss in SKN are summarized in the table below. For the purposes of this report the threat level is described as high, moderate and low.

Cause	Summary	Threat Level
<b>Human settlements</b>	i. Settlement pattern in SKN has been mostly coastal. The closure of the sugar industry in 2005 has made 'new' lands available for human settlement development.	Moderate
	ii. Informal settlements (squatting) in vulnerable and ecological sensitive areas resulting in deforestation and soil erosion.	Moderate
	iii. Land clearance resulting in habitat disturbance, fragmentation and loss.	Moderate
	iv. Settlement growth places stress on infrastructure, services and available resources.	High
<b>Mining</b>	i. Traditional construction practices results in significant sand mining from ghauts and beaches.	High
	ii. Severe beach sand mining has resulted in coastal erosion and habitat loss.	High
	iii. Indiscriminate beach sand mining increases exposure level to storm surge and flooding of coastal low lands.	Moderate
<b>Demographic changes</b>	i. The population of SKN has been relatively stable. The present population does not exceed the carrying capacity of the natural resource base.	Low
	ii. Household sizes have been decreasing as a result of increased access to affordable shelter and land.	Moderate
	iii. Increased shelter distribution has resulted in more pollution and solid waste	High

<sup>1</sup> Report on Rapid Assessment of Causes and Consequences of Biodiversity Loss, 2013

	<p>generation.</p> <p>iv. Insufficient public education and awareness of the value of biodiversity resources</p>	Moderate
<b>Economic activities</b>	<p>i. The closure of the sugar industry has resulted in various forms of land degradation.</p> <p>ii. The operations of the sugar industry resulted in soil and ground water pollution.</p> <p>iii. The closure of the sugar industry has freed up lands for non-sugar agriculture.</p> <p>iv. Formal and informal farming on upper slopes have resulted in deforestation and soil erosion.</p>	<p>High</p> <p>Moderate</p> <p>High</p> <p>High</p>
<b>Land degradation</b>	<p>i. Land degradation is prevalent in low lying areas, particularly on Nevis (Bath Village &amp; Indian Castle).</p> <p>ii. Extraction of coastal resources – sand, gravel, rocks.</p> <p>iii. Poor farm (grazing) management practices lead to denudation and soil erosion.</p> <p>iv. Closure of the sugar industry has resulted in unmanaged vegetative succession.</p> <p>v. Guinea grass intrusion into the forest leads to habitat loss as a result as it provides fuel for fires.</p>	<p>High</p> <p>High</p> <p>High</p> <p>High</p>
<b>Pollution</b>	<p>i. Increased cruise and cargo vessel traffic in the Caribbean Sea and the territorial waters of SKN results in the disposal of bilge/ballast water and sea borne waste. Bilge/ballast water has the potential to introduce disease and invasive fish species that affect marine biodiversity. e.g the Lion Fish.</p> <p>ii. Land based sources of pollution threatens coastal and marine biodiversity.</p> <p>iii. There is an increased incidence of illegal solid waste disposal in St. Kitts.</p>	<p>High</p> <p>High</p> <p>High</p>
<b>Invasive species</b>	<p>i. The deliberate or accidental introduction (release of ship ballast water and importation of plants) of alien species places stress on ecological resources and threatens native species. The lion fish is the most recent documented marine invasive that threatens near shore and reef fish</p>	High

	species.	
<b>Natural hazards</b>	i. Extreme weather events (hurricanes), flooding, drought and bush fires affect the biodiversity of SKN.	High
	ii. Though on a relatively small scale, landslides on steep forested slopes result in marginal habitat disturbance.	Low
	iii. The passage of storms results in coastal erosion, siltation of reefs, disruption of sea grass beds and breeding grounds.	High
	iv. Hurricanes result in vegetation removal and habitat destruction.	High
<b>Livelihood practices</b>	i. Unregulated cutting of trees for charcoal production results in watershed degradation, habitat loss and soil erosion on slopes.	Moderate
	ii. Exploitation of ferns and shrubs from the forest for landscaping results in soil erosion and habitat disturbance.	High
	iii. Loss of agricultural lands to development.	Moderate
	iv. Inadequate development of germplasm banks and repository for the safe storage of local genetic material.	High
	v. Market demands – preference for foreign (species) food	High
<b>Tourism</b>	i. Increased tours to the rainforest threaten localized biodiversity mainly through habitat disturbance and plant take.	High
	ii. Exceeding the carrying capacity of trails, beaches and dive sites result in ecosystem stress and degradation.	Moderate
	iii. Resort development results in land clearing, land reclamation and habitat disturbance and loss.	Moderate
	iv. Influx of foreign cultures and new norms reduce the significance of some biological resources and traditional knowledge leading to their loss	Low

Table 7: Summary of approximate causes for biodiversity loss in SKN

## 1.5 Value of Biodiversity

For a Small Island Developing State (SIDS) such as the Federation of St. Christopher (St. Kitts) and Nevis, with a limited exploitable natural resource base, the biological diversity is of extreme physical and socio-economic importance. The Federation's biodiversity performs essential ecological functions/services, provides resources and significant benefits to residents and visitors alike.

These include but are not limited to the following:

- **Ecosystem services:**

- Protection of water resources
- Soils formation and protection
- Nutrient storage and recycling
- Pollution breakdown and absorption
- Carbon sequestration
- Contribution to climate stability
- Maintenance of ecosystems
- Drought mitigation
- Recovery from unpredictable natural events



- **Biological resources:**

- Food & beverages
- Medicinal resources
- Wood products
- Ornamental plants
- Breeding stocks, population reservoirs
- Future resources
- Diversity in genes, species and ecosystems



- **Social benefits:**

- Research and development
- Education and monitoring
- Intellectual stimulation
- Recreation and tourism
- Cultural values

The biodiversity resources of the SKN have an important role to perform in the economic transformation process. This is even more critical given that the cost of replacing these (if possible) would be extremely expensive. It therefore makes economic and development sense to embrace and promote sustainable land management and wider sustainable development strategies at the national level.

## **Exhibit 1-Biodiversity and Research-The Green Vervet Monkey**

**By Selen Uman**

**Contributing Reporter**

**Yale Daily News**

**Tuesday, October 18, 2011**

**Small Caribbean monkeys are some of Yale's newest collaborators on the forefront of scientific research.**

The St. Kitts vervet monkeys' tendency to eat everything from ripe fruit to vegetable crops has been a problem for local residents ever since the primates arrived on the Caribbean island of St. Kitts three centuries ago. Lacking resources, the federation's government has made only irregular attempts to control the highly observant and intelligent animals. Although scientists can control the monkey population by using them for research in facilities such as the Yale professor-run St. Kitts Biomedical Research Foundation, this practice has generated criticism from animal rights activists.

The Biomedical Research Foundation, founded by Yale psychology and neurosurgery professor Eugene Redmond, uses the monkeys in research on stem cells or gene therapy to cure Parkinson's disease, said Bijan Stephen '13, who worked as a summer research assistant at the foundation. Stephen said in an email that the foundation was testing stem cell treatments on monkeys with an "animal model" of Parkinson's disease.

Monkey overpopulation is a serious problem in St. Kitts, Redmond wrote in an email to the News. The large number of monkeys on the island makes it easier for the foundation to get healthy specimens. Besides research, he said the foundation also helps control the monkey population in non-lethal ways.

Without the monkeys, he wrote, important scientific research would be impossible to conduct. The foundation conducts its research on the island of St. Kitts, but many other labs in North America, such as one at McGill University in Montreal, Canada, use monkeys from St. Kitts.

Redmond said the Yale lab follows the appropriate guidelines and only uses monkeys in cases of clear need.

"The facility is accredited by the Association for Assessment and Accreditation of Laboratory Animal Care, International, the same organization that inspects and accredits the major American universities and biomedical research institutions in America, including Yale," Redmond wrote. "For projects to be accepted there have to be compelling potential public health benefits as well as no alternatives to the use of the monkeys."

## Exhibit 2: Impact of Coastal Defense Systems on sea crabs

Great Land crab (*Cardisoma guanumi*) is a species of crab common to SKN. This crab spends its adult life on the land but migrates to the coastline to hatch its young in the shallow nearshore waters. As they mature the young crabs migrate to the land where they grow to adulthood to repeat the cycle. Although not as popular now, in the past local crab meat was regarded as a delicacy. Crabs have been used also as fish bait. The Caribbean coast of SKN has been severely impacted by storm surge associated with the annual cycle of hurricanes. Of note, hurricanes Georges in 1998, Lenny in 1999 and Omar in 2008 resulted in significant coastal erosion and damage to the island main road at Old Road, New Guinea, and Charlestown. Under the World Bank funded Post Georges Disaster Mitigation Project, GSKN constructed coastal defence structures at several impacted sites. These revetments make it virtually impossible for the crabs to cross from land to sea. Over the past several years there has been an observed decline in the number of crabs crossing the road in areas where they were previously common such as Old Road and New Guinea. The result is a decrease in the crab population and the corresponding loss in social and economic benefits.



## 1.6 Consequences of Biodiversity Changes

Diversity at all organizational levels, ranging from genetic diversity within populations to the diversity of ecosystems in landscapes, contributes to global biodiversity. However, for the purposes of this report the discussion here is focused on species diversity, because the causes, patterns and consequences of changes in diversity at this level are relatively easily observed and documented. Species diversity has functional consequences because the number and kinds of species present determine the organism traits that influence ecosystem processes.

<sup>2</sup>The quality and character of species traits may mediate energy and material fluxes directly or may alter abiotic conditions within an ecosystem. Limiting resources, habitat disturbance and micro climate changes regulate process and production rates that are vital for ecosystem functioning. The universal aspects of species diversity that determine specie characteristics include the following:

- Number of species present (species richness),
- Relative abundances (species evenness),
- Particular species present (species composition),
- Interactions among species (non-additive effects), and
- Temporal and spatial variations in these properties.

Changes in biodiversity alter the functional traits of species in an ecosystem in ways that directly influence ecosystem goods and services. Influences might be positive (for example, increased agricultural, fisheries or forestry production) or negative (for example, loss of harvestable species or species with strong aesthetic and cultural values). Variations in species traits affect ecosystem processes directly through changes in biotic controls and indirectly through changes in abiotic controls, such as availability of limiting resources, disturbance regime, or micro/macroclimate variables.

Changes in the profile of biodiversity of SKN may alter ecosystem processes and adversely impact the resilience of ecosystems to environmental change. This has profound consequences for the goods and services that residents of and visitors to SKN derive from the environment. The wider ecological and societal consequences of a changing biodiversity should be minimized to preserve options for future solutions to local, regional and global environmental problems.

The following effects and relationships that impact biodiversity have been observed in SKN, more visible since the closure of the sugar industry.

- i. Vegetation succession (from sugar cane to guinea grass and shrubbery mainly) is causing a retreat of the forest line in some areas because of grass fires. Grass

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<sup>2</sup> Extract from Nature review article – Consequences of Changing biodiversity



fires also adversely impact arboreal species (habitat loss and disturbance) and soil organisms.

- ii. Observed increases in the mongoose population, particularly on the South East Peninsula have resulted in an observed decline in birdlife in that landscape as the mongoose eats the bird eggs.
- iii. Dramatic increases in the monkey population throughout SKN severely impacts agricultural output and profitability as they destroy crops. Like the mongoose, monkeys also disturbs breeding and nesting sites for birds; a factor that affect pollination.
- iv. Land allocation, mainly for resort development throughout SKN has resulted in changes in several sensitive ecosystems. Land preparation activities including but not limited to dredging, infilling, excavation and grading have led to the removal of plants and habitat disturbance (both aquatic and terrestrial).
- v. Land based sources of pollution carried by storm water runoff into the near shore marine environment affects water quality and the health of coral reefs. The net result has been an observed reduction in near shore pelagic.

## CHAPTER II

### REVIEW OF THE 2004 NBSAP

## Chapter 2: Review of the NBSAP 2004

### 2.0 Introduction

In 1993 the GSKN took a decisive step to address biodiversity issues by ratifying the United Nations Convention on Biological Diversity (UNCBD). However, it was not until 2004 that the first NBSAP was developed. The 2004 NBSAP outlined the actions to be taken by the GSKN toward meeting its obligations under the Convention. It was developed based on the following thematic areas:

- Socio-economic issues;
- Tourism and Biodiversity;
- Marine and Coastal Biodiversity; and
- Agriculture and Forestry Biodiversity.

Generally the NBSAP relied on the following principles:

- Conserving natural resources for SKN generations, both present and future.
- Conserving national biodiversity as a basis for sustainable development and achieving integration with the different sectors of the country.
- Establishing National Protected Areas including all vital ecosystems, and endangered species.
- Employing economics-based, scientific management of protected areas, and supporting ecotourism in SKN.
- Implementation of relevant legislations and international and regional agreements, in addition to raising ecological awareness.
- Cooperating with international organizations and donors to implement projects in the area of management of protected areas.

The main objectives of the NBSAP included the following:

- Management of natural resources, and the other numerous elements, should be based on scientific grounds in order to ensure continuity of the natural ecological balance and prevent deterioration of ecosystems, and protecting creatures from loss or extinction.
- Developing SKN's scientific and technological capacity in areas of biodiversity conservation.
- Development, executive and administrative capacities that attain intended goals, and proceeding with research and studies.
- Mobilizing national efforts to conserve biodiversity with all its ecological, biological, and genetic elements, in order to ensure sustained survival and optimal use.
- Setting the plan of action aiming at involving civil society, individuals or NGOs in biodiversity conservation.
- Establishing legislative basis and economic and social incentives that support conservation of biodiversity and sustainable development of natural resources.
- Integrating national action with regional and international action, and utilizing the bulk of scientific and technical expertise concerned with

conserving resources of biodiversity; including gene resources.

The key principles of the NBSAP included:

- Biodiversity is ecologically and economically significant, and is a corner stone of sustainable development.
- Conservation of biodiversity is a tool for developing natural resources, now and in the future, for the benefit of sustainable national development.
- Biodiversity is part of SKN's natural heritage and conserving it is a national and international obligation.
- Successful biodiversity conservation efforts rely on scientific studies and environmental monitoring of internal and external interactions.
- Building of national capacity, implementation and sound management of biodiversity conservation programs and public awareness.
- Implementation of environmental legislations and observing relevant international conventions.

Generally the implementation of the 2004 NBSAP in SKN has been met with mixed results. About 80% of the NBSAP objectives were achieved between 2004 and 2013. Table 8 outlines the challenges to BDC identified during the preparation of the 2004 NBSAP and the responses by the GSKN during the implementation period.

<b>Challenges</b>	<b>Responses</b>
Poverty	GSKN undertook a Country Poverty Assessment Survey in 2007-2008. The incidence of object poverty is trending downwards.
Tourism ventures	Foreign Direct Investment inflows fluctuated between 2004 and 2012. Recently there has been an upsurge in tourism related investment activities in SKN.
Lack of public awareness & education	The DPPE has appointed a public relations/education officer to assist in the dissemination of information on the environment. However, there remains the need to effectively programme training, education and awareness in the work plan of the DPPE and other key agencies.
Traditional Medicine	There is increasing recognition of the value of traditional plants for medicinal purposes. There is a wider variety of local herbal medicines and treatment options.
Pollution	The establishment of the Solid Waste Management Corporation has resulted in a more systematic collection of household waste. A general decline in indiscriminate/illegal dumping has resulted in improved vector control. Also, there has been a general decline in ravine and land based shoreline and marine pollution.
Cultural attitudes	There appears to a general increase in stewardship for the environment. However much more work is required in this regard at the community level.
Unsustainable development	GSKN through the DCPB has established policies to

practices	promote the orderly use of land. EIA's are required for project approval. Guidelines for Mainstreaming SLM into national development have been prepared and disseminated to key stakeholders. Mainstreaming however MUST be an ongoing process.
Overgrazing	Generally the incidence of overgrazing has been halted on the South East Peninsula of St. Kitts as the domestic livestock animals such as cattle and goats have been relocated. While there are remaining hotspots, the problem does not appear to be as acute.
Monoculture sugar cane cultivation	Lands previously cultivated have been earmarked for other uses including non sugar agriculture, housing, resort development, etc. With the exception of the Lower Coastal Section of the Basseterre Valley, no significant conservation easements have been designated on the former sugar lands.
Infrequent research	No significant change
Agro-processing	There has been a slight increase in agro processing activities in SKN. The Department of Agriculture and the Taiwanese Agricultural Mission have established agro processing facilities.
Severe hurricanes	With the exception of Hurricane Omar in 2008, no major extreme weather event has impacted the Federation between or during the NBSAP implementation period. The annual hurricane and extreme weather threat remains real.
Recreational activities	Generally, ecotourism and recreational activities have been taking place in a sustainable manner.
Introduction of alien species	The lion fish has been introduced. There are also other alien invasive species which affect agricultural crops such as the coconut.

Table 8: Summary of update on the 2004 NBSAP implementation

For the most part the targets established in the 2004 NBSAP have been programmed with the implementation of other national, regional and international sustainable development initiatives. Furthermore, there is widespread recognition of the need for an integrated approach in the implementation and review of MEAs. It is therefore useful to consider the strategic review based on cross cutting issues and aggregate outcomes of these sustainable development programmes rather than adopt a mere myopic appraisal of the NBSAP.

## 2.1 Summary of Interventions

Sustainable development initiatives in SKN have been supported by primarily by financing provided by the Global Environment Facility (GEF) through the implementation of the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Convention to Combat Desertification (UNCCD) and the United Nations Convention on Biological Diversity (UNCBD).

<sup>3</sup>Several pieces of legislation have been enacted by the GSKN which contribute both directly and indirectly to the goals and objectives of the CBD in SKN. The National Conservation and Environment Management Act (Bill), NCEMA was drafted in 2005 with the view to replace the National Conservation and Environmental Protection Act, 1987 (NCEPA). Once enacted, NCEMA will provide improved provisions for environmental management with a greater focus on biodiversity protection and conservation.

The International Trade in Wild Fauna and Flora Act, 2009 was passed to facilitate SKN's compliance with the obligations under the Convention on International Trade in Wild Flora and Fauna or CITES. This Act also has the objective of conserving and managing the wild flora and fauna of SKN.

The Biosafety Act was enacted in 2012 and addresses the movement, transit, handling and use of all genetically modified organisms that may have adverse effects on the conservation and sustainable use of biological diversity.

SKN has also undertaken an Assessment of Capacity Building Needs and Country Specific Priorities in biodiversity management in 2010 as an enabling activity for the CBD. The main objective of this project was to examine *ex situ* and *in situ* conservation strategies for national biodiversity resources. The main outputs from this project were:

- (i) Management Frameworks for Biodiversity Threat Mitigation in St. Kitts and Nevis
- (ii) Incentive Measures for the Promotion of Biodiversity Conservation in St. Kitts and Nevis.
- (iii) Implementation of General Measures for the Conservation and Sustainable Use of Biodiversity in St. Kitts and Nevis.
- (iv) St. Kitts and Nevis Second National Report on Biodiversity to the Convention on Biodiversity.
- (v) A Compilation of Traditional Knowledge for the Protection and Conservation of Biodiversity in St. Kitts and Nevis

A number of national policies which also contribute to the protection of conservation of biodiversity have been implemented. GSKN established a Ministry of Sustainable Development in 2005 to ensure that national development activities were guided by the principles of environmental sustainability. To assist in fulfilling this mandate the key agencies with responsibility for physical planning, development control and environmental management activities were included in the Ministry of Sustainable Development.

Through active collaboration between the key agencies of the Ministry, capacity building initiatives were undertaken for Development Control Officers in the area of the Review of Environmental Impact Assessments. This was done to ensure that environmental issues including BDC were considered in the project approval and monitoring

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<sup>3</sup> The Stocktaking Report prepared as part of the NBSAP review summarizes the mechanisms and systems that affect the implementation of the UNCBD.

processes.

In 2003 the GSKN established the Central Forest Reserve (CFR) as a protected area. This initiative was among the activities implemented under the Organization of Eastern Caribbean States, OECS Protected Areas and Alternative Livelihoods, OPAAL Project. The CFR covers an area of approximately 1250 acres and represents the last remaining stand of undisturbed tropical forest on the island of St. Kitts. Nevis Peak on the island of Nevis has been earmarked under administrative order to be declared a protected area. The objective of managing these protected areas is to protect and conserve important species of plants and animals which are endemic to SKN.

Under the IWCAM project, the GSKN has designated the lower coastal section of the Basseterre Valley as a protected area. The project sought to demonstrate the proper management and protection of a critical aquifer and well-field through a parallel process of mitigation of threats from contaminants, on-the-ground protection, and improved user-resource management.

Additionally, in July 2010 the GSKN through the MSD formally commenced the implementation of the SLMP. The key project outputs included:

- i. Guidelines on Mainstreaming Sustainable Land Management into National Development.
- ii. The Strategic Framework for Investment Planning and Resource Mobilization for Sustainable Land Management Interventions
- iii. Review of Legislation, Regulation, Policy & Institutional Framework for SLM
- iv. Report on knowledge Management for SLM: Databases on Land Use, Land Tenure, Land Degradation and Land Zoning
- v. SLMP GIS Training Needs Assessment
- vi. Training Manual for Managing Land Resources in St. Kitts & Nevis

Prior to the designation of the CFR and the lower coastal section of the Basseterre Valley as protected areas, Brimstone Hill National Park Fortress on St. Kitts and the Bath Hotel on Nevis were the only two effectively declared sites in the Federation. A summary of protected areas initiatives in SKN is presented in Chapter 3, section 3.8 below.

The major issues for sustainable development in St. Kitts and Nevis continue to be the following.

(a) There is no comprehensive national policy or plan that addresses sustainable development. However, the increased emphasis on sustainable development interventions to meet national development priorities should provide the supporting framework for the articulation of a national policy or plan.

(b) The Ministry of Sustainable Development provides a general institutional coordinating mechanism for sustainable development in SKN. However, there is need for greater inter agency cooperation and collaboration at the national level to make the model more effective.

(c) Data management systems for sustainable development are inadequate. Additionally, insufficient research capacity affects the availability and quality of data that is relevant to sustainable development.

(d) Insufficient capacity for the design and management of sustainable development interventions. The Strategic Framework for Investment Planning and Resource Mobilization for Sustainable Land Management Interventions developed under the SLMP can be used to further sustainable development activities in SKN.

SKN is in the final stages of the process for declaring its first marine protected area. The establishment of these protected areas form part of the Protected Areas Systems Plan for St. Kitts and Nevis that was developed as a component of the OPAAL project. These initiatives also represent the contribution of St. Kitts and Nevis to the CBD Programme of Work on Protected Areas. Other important interventions that support the implementation of CBD since 2004 are summarized in the table below.

Programme/Policy Instrument		Targets	Lead Agency
National Scope			
1	National Adaptation Strategy	<ul style="list-style-type: none"> <li>• Maintenance of macro-economic stability to reduce vulnerability and facilitate investment;</li> <li>• Improvement competitiveness in the production and export of goods and services;</li> <li>• Adoption of social policies to support economic development and protect the most vulnerable;</li> <li>• Promotion of a sustainable development agenda;</li> <li>• Restructuring and transformation of the economy;</li> <li>• Development of appropriate legal and regulatory frameworks; and,</li> <li>• Efficient provision of public goods (such as education and health).</li> </ul>	DEPPSIP
2	National Environmental Management Strategy	<ul style="list-style-type: none"> <li>• Foster Sustainable Improvement in the Quality of Life</li> <li>• Integrate Social, Economic and Environmental Considerations into National Development Policies, Plans and Programmes.</li> <li>• Improve on Legal and Institutional Frameworks for Environmental Management.</li> <li>• Ensure Meaningful Participation by Civil Society in Decision Making.</li> <li>• Ensure Meaningful Participation By</li> </ul>	DPPE & DPPNRE



		<p>The Private Sector</p> <ul style="list-style-type: none"> <li>• Use Economic Instruments for Sustainable Environmental Management</li> <li>• Foster Broad-based Environmental Education, Training and Awareness</li> <li>• Address the Causes and Impacts of Climate Change</li> <li>• Minimize and Manage the Causes and Impacts of Disaster</li> <li>• Prevent and Control Pollution and Manage Waste</li> <li>• Ensure the Sustainable Use of Natural Resources</li> <li>• Protect Cultural and Natural Heritage</li> <li>• Protect and Conserve Biological Diversity</li> <li>• Recognize Relationships between Trade and Environment</li> <li>• Promote Cooperation in Science and Technology</li> <li>• Manage and Conserve Energy</li> <li>• Negotiate and Implement Multi-lateral Environmental Agreements</li> </ul>	
3	Agricultural Strategic Plan (2005-2009)	<ul style="list-style-type: none"> <li>• Expand the development of non-sugar agriculture and increase its contribution to the country's Gross Domestic Product (GDP).</li> <li>• Development of a market-led approach toward increasing productivity, with an emphasis on crop and livestock production.</li> <li>• Development of farmer groups, strengthening the programming of services to farmers, and maximizing irrigation applications in production.</li> </ul>	DOA
4	National Physical Development Plan (2005)	<ul style="list-style-type: none"> <li>• Highlights a general framework that targets sustainable development in the context of land use planning.</li> <li>• Identify appropriate physical planning and land use strategies that allow for sustainable exploitation of the natural resource base and to direct the use of public sector and private industry resources for planned and orderly development.</li> </ul>	DPPE
5	UNCCD National Action Plan (NAP)	<ul style="list-style-type: none"> <li>• To identify the factors that are contributing to desertification and practical measures necessary to</li> </ul>	DPPE & DPPNRE

		<p>combat desertification and mitigate the effects of land degradation and drought.</p> <ul style="list-style-type: none"> <li>• To specify the respective roles of government, local communities and land users and the resources available and needed.</li> <li>• To include specific measures to prepare for and mitigate the effects of land degradation and drought.</li> <li>• Based on the circumstances and requirements specific to the country, the national action programme should include, as appropriate, inter alia, the following priority strategies as they relate to combating desertification and mitigating the effects of drought in affected areas and to their populations: <ul style="list-style-type: none"> <li>✓ Promotion of alternative livelihoods and improvement of national economic environments with a view to strengthening programmes aimed at the eradication of poverty and at ensuring food security;</li> <li>✓ Demographic dynamics;</li> <li>✓ Sustainable management of natural resources;</li> <li>✓ Sustainable agricultural practices;</li> <li>✓ Development and efficient use of various energy sources;</li> <li>✓ Institutional and legal frameworks;</li> <li>✓ Strengthening of capabilities for assessment and systematic observation, including hydrological and meteorological services; and</li> <li>✓ Capacity building, education and public awareness.</li> </ul> </li> </ul>	
6	National Biodiversity Action Plan (NBSAP)	<ul style="list-style-type: none"> <li>• Management of natural resources, and the other numerous elements, should be based on scientific grounds in order to ensure continuity of the natural ecological balance and prevent deterioration of ecosystems,</li> </ul>	DPPE & DPPNRE

		<p>and protecting creatures from loss or extinction.</p> <ul style="list-style-type: none"> <li>• Developing SKN's scientific and technological capacity in areas of biodiversity conservation.</li> <li>• Development of executive and administrative capacities that attain intended goals, and proceeding with research and studies.</li> <li>• Mobilizing national efforts to conserve biodiversity with all its ecological, biological, and genetic elements, in order to ensure sustained survival and optimal use.</li> <li>• Setting the plan of action aiming at involving civil society, individuals or NGOs in biodiversity conservation.</li> <li>• Establishing legislative basis and economic and social incentives that support conservation of biodiversity and sustainable development of natural resources.</li> <li>• Integrating national actions with regional and international actions, and utilizing the bulk of scientific and technical expertise concerned with conserving resources of biodiversity, including genetic resources.</li> </ul>	
7	National Communications on Climate Change	<ul style="list-style-type: none"> <li>• To provide an update on national programmes and priorities to reduce green house gases and the implementation of adaptation measures to minimize the effects of sea-level rise.</li> </ul>	DPPE & DPPNRE
8	National Capacity Self Assessment	<ul style="list-style-type: none"> <li>• To identify and analyze priorities and needs at the country level for capacity development related to the implementation of the UNCBD, UNFCCC, and the UNCCD.</li> </ul>	
<b>Regional &amp; International Scope</b>			
9	St. George's Declaration of Principles on Environmental Sustainability	<ul style="list-style-type: none"> <li>• Foster Improvement in the Quality of Life</li> <li>• Integrate Social, Economic and Environmental Considerations into National Development Policies, Plans and Programmes</li> <li>• Improve on Legal and Institutional Frameworks to support Sustainable Development.</li> </ul>	DPPE & DPPNRE

		<ul style="list-style-type: none"> <li>• Ensure Meaningful Participation by Civil Society in Decision Making</li> <li>• Ensure Meaningful Participation by the Private Sector</li> <li>• Use Economic Instruments for Sustainable Environmental Management</li> <li>• Foster Broad-based Environmental Education, Training and Awareness</li> <li>• Address the Causes and Impacts of Climate Change</li> <li>• Principle 9: Prevent and Manage the Causes and Impacts of Disasters</li> <li>• Prevent and Control Pollution and Manage Waste</li> <li>• Ensure the Sustainable Use of Natural Resources</li> <li>• Protect Cultural and Natural Heritage</li> <li>• Protect and Conserve Biological Diversity</li> <li>• Recognize Relationships between Trade and Environment</li> <li>• Promote Cooperation in Science and Technology</li> <li>• Manage and Conserve Energy</li> <li>• Negotiate and Implement Multilateral Environmental Agreements</li> <li>• Coordinate Assistance from the International Donor Community towards the Organization of Eastern Caribbean States Region</li> <li>• Implementation and Monitoring</li> </ul>	
10	Barbados Programme of Action (BPOA)	<ul style="list-style-type: none"> <li>• Presents a basis for action in 14 agreed priority areas and defines a number of actions and policies related to environmental and development planning that should be undertaken by SIDS with the cooperation and assistance of the international community.</li> <li>• Identifies priority areas and indicates the specific actions that are necessary to address the special challenges faced by SIDS. In fulfilling those actions, several cross- sectoral areas are identified, for example, capacity-building, including human resource development; institutional development at the national, regional</li> </ul>	DPPE, DEPPSIP

		and international levels; cooperation in the transfer of environmentally sound technologies; trade and economic diversification; and finance.	
11	Mauritius Strategy for Implementation (MSI) & (MSI +5)	<ul style="list-style-type: none"> <li>• Further the implementation of the BPOA.</li> <li>• Measure progress in implementing the BPOA.</li> </ul>	DPPE, DEPPSIP

Table 9: Summary of select interventions that support CBD implementation in SKN

Table 10 below summarizes the BPOA priority areas for SKN, the national actions, policies and measures that have been initiated or are yet to be implemented.

	PRIORITY AREAS	NATIONAL ACTIONS, POLICIES & MEASURES	COMMENTS
1	<b>Climate change and sea level rise</b>	<p>a. Ensure early ratification of or accession to the United Nations Framework Convention on Climate Change, the Montreal Protocol on Substances that Deplete the Ozone Layer and other related legal instruments.</p> <p>b. Monitor survey and collect data on climate change and sea level rise.</p> <p>c. Formulate comprehensive adjustment and mitigation policies for sea level rise in the context of integrated coastal area management.</p> <p>d. Assess the effects and the socio-economic implications of the impact of climate change, climate variability and sea level rise on SIDS.</p> <p>e. Map areas vulnerable to sea level rise and develop computer-based information systems covering the results of surveys, assessments and observations as part of the development of adequate</p>	<p>GSKN ratified the UNFCCC in 1993 and acceded to the Montreal Protocol in 1992.</p> <p>DPPE in collaboration with the WSD and MO has established several weather stations on St. Kitts. However there needs to be greater emphasis on data collection.</p> <p>The DCPB and the DPPNRE impose a setback for coastal developments in SKN. There is a need to develop a CZMP for SKN.</p> <p>No assessment of this kind to date has taken place.</p> <p>A Beach Analysis &amp; Monitoring System (BAMS) was developed for the DPPE. The DPPE conducts beach monitoring activities mainly to assess changes in beach</p>

		<p>response strategies, adaptation policies and measures to minimize the impact of climate change, climate variability and sea level rise.</p> <p>f. Improve public and political understanding of the potential impacts of climate change.</p> <p>g. Formulate comprehensive strategies and measures (including the preparation, facilitation and collection of information) on adaptation to climate change that would contribute to a better understanding of the range of issues associated with the development of methodologies to facilitate adequate adaptation to climate change.</p> <p>(j) Promote a more efficient use of energy resources in development planning and use appropriate methods to minimize the adverse effects of climate change on the sustainable development of those resources.</p> <p>(k) Increase participation in the bilateral, regional and global research, assessment, monitoring and mapping of climate impacts, including the adoption of oceanographic and atmospheric measures and policies and the development of response strategies.</p>	<p>morphology.</p> <p>There is a need to mainstream climate change education and awareness.</p> <p>Apart from the preparation of National Communications and Reports to the UNFCCC Secretariat, there is no official national policy on climate change.</p> <p>In response to high fossil fuel prices and volatility in supply, more so than the recognition of the need to address climate change issues, GSKN has been promoting the development of renewable energy. Already the GSKN has installed a demonstration solar farm to power the RLB International Airport. Concessions have been provided for companies to install solar panels to power their establishments.</p> <p>SKN participates where practical and benefits from initiatives under the UNFCCC programme.</p>
<b>2</b>	<b>Natural and</b>	i. Establish and/or strengthen	SKN has all year round fully

<p><b>environmental disasters</b></p>	<p>disaster preparedness and management institutions and policies, including building codes and regulatory and enforcement systems, in order to mitigate, prepare for and respond to the increasing range and frequency of natural and environmental disasters and promote early warning systems and facilities for the rapid dissemination of information and warnings.</p> <p>ii. Strengthen the capacity of local broadcasting to assist remote rural and outer island communities within countries and among neighbouring countries during disaster events.</p> <p>iii. Establish a national disaster emergency fund with joint private and public sector support for areas where insurance is not available in the commercial market, taking into account the relevant experience to be gained from the operation of similar funds.</p> <p>iv. Integrate natural and environmental disaster policies into national development planning processes and encourage the development and implementation of public and private sector pre- and post-disaster recovery plans, drawing on the capacity of the United Nations Department of Humanitarian Affairs and bearing in mind the International Decade for Natural Disaster Reduction.</p> <p>v. Strengthen cultural and traditional systems that improve the resilience of local communities to disaster events.</p>	<p>functioning National Emergency Management Agencies that work closely with CDEMA and the UWI/SRU.</p> <p>Local media has been exposed to training on the importance to broadcasting as part of the information dissemination and education processes.</p> <p>A national disaster emergency fund has been established at the regional level (within CDB). No such formal fund exists at the national level. However, in the past GSKN would have provided emergency relief to individuals.</p> <p>The Guidelines on Mainstreaming SLM into National Development includes considerations for DM. NHIA for the most part is included in the EIA process. Most private companies and institutions have developed Emergency Response Plans.</p> <p>Several national and regional interventions have been used to promote cultural and traditional systems toward enhancing disaster</p>
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			awareness.
<b>3</b>	<b>Management of wastes</b>	<p>(i) Develop fiscal and policy incentives and other measures to encourage environmentally sustainable imports and local products with low waste or degradable waste content.</p> <p>(ii) Develop and implement appropriate regulatory measures, including emission discharge and pollution standards, for the reduction, prevention, control and monitoring of pollution from all sources; for the safe and efficient management of toxic, hazardous and solid wastes, including sewage, herbicides, pesticides and industrial and hospital effluent; and for the proper management of disposal sites.</p> <p>(iii) Ratify and implement relevant conventions, including the Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and Their Disposal and the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention of 1972), as well as relevant regional conventions.</p> <p>(iv) Formulate and implement public awareness and education campaigns designed to gain local recognition of the need to control wastes at the source; of the value of reuse, recycling and appropriate packaging; and of the possibilities for converting wastes to resources in culturally appropriate ways.</p> <p>(v) Introduce clean technologies and treatment of waste at the</p>	<p>Other than placing a ban on CFCs, no significant work has been done in this regard.</p> <p>SKN relies on the standards and controls established by PAHO and WHO. There is a need to develop national regulatory mechanisms.</p> <p>SKN ratified the Basel Convention and MARPOL prior to the implementation of 2004 NBSAP. The country participates in projects and programmes under these conventions.</p> <p>SKN participates with local and regional partners on programmes that promote sustainable waste management. GSKN has approved a waste to energy project as part of its national energy policy.</p> <p>SWMCs in SKN have primary</p>



		<p>source and appropriate technology for solid waste treatment.</p> <p>(vi) Develop information systems and baseline data for waste management and pollution control, monitoring the types and quantities of wastes, for both sea- and land-based sources of pollution.</p> <p>(vii) Establish port reception facilities for the collection of waste in accordance with annex V of the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78). 7/</p> <p>(viii) In conformity with the Basel Convention and relevant decisions taken by the parties to that Convention, formulate and enforce national laws and/or regulations that ban the importation from States that are members of the Organization for Economic Cooperation and Development (OECD) of hazardous wastes and other wastes subject to the Basel Convention, including hazardous wastes and other wastes destined for recycling and recovery operations.</p>	<p>responsibility for waste collection and disposal. Several private companies have been granted licenses for solid waste management.</p> <p>No formal information system for waste management data and pollution control has been developed and implemented.</p> <p>SCASPA in collaboration with the SWMC has implemented a programme for the collection of solid waste from ships.</p> <p>SKN conforms with the Basel Convention and the decisions taken at the COP.</p>
4	<b>Coastal and marine resources</b>	<p>(i) Establish and/or strengthen, where appropriate, institutional, administrative and legislative arrangements for developing and implementing integrated coastal zone management plans and strategies for coastal watersheds and exclusive economic zones, including integrating them within national development plans.</p>	<p>GSKN has established a DMR to improve the management of fisheries and other marine resources in St. Kitts. The DMR is presently working with the MSD to undertake an updated flyover which would allow for the mapping of coastal watersheds and the EEZ.</p>

		<ul style="list-style-type: none"> <li>(ii) Design comprehensive monitoring programmes for coastal and marine resources, including wetlands, in order to determine shoreline and ecosystem stability, and also document and apply, as a basis for integrated coastal zone planning and decision-making, traditional knowledge and management practices that are ecologically sound and include the participation of local communities.</li>   <li>(iii) Develop and/or strengthen national capabilities for the sustainable harvesting and processing of fishery resources and provide training and awareness programmes for the managers (Government and local communities) of coastal and marine resources.</li>   <li>(iv) Ratify and/or adhere to regional and international conventions concerning the protection of coastal and marine resources and combat unsustainable fishing and related practices.</li> </ul>	<p>The DMR and the DPPE undertake periodic field inspections. There is a need however to design and mainstream data collection processes to facilitate meaningful analysis.</p>
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<p><b>Freshwater resources</b></p>	<ul style="list-style-type: none"> <li>(i) Develop, maintain and protect watershed areas, irrigation systems, distribution networks and appropriate catchment systems and promote effective programmes for water conservation and prevention of water contamination through, inter alia, the development of integrated national water plans, the use of appropriate incentives and regulatory measures, community involvement in management and conservation, forest management and reforestation and investment strategies.</li> <li>(ii) Adopt appropriate standards for the management of freshwater resources, and develop and strengthen low-cost monitoring and assessment capabilities, linked to water resource databases, for relevant decision-making tools, including forecasting models for water management, planning and utilization.</li> <li>(iv) Strengthen procedures to monitor and respond to the impacts on water resources of natural and environmental hazards, in particular the impacts of climate change and climate variability, including drought and sea level rise.</li> <li>(v) Encourage the development and acquisition of appropriate technology and training for cost-effective sewage disposal, desalination and rainwater collection to provide a sufficiently high quality potable freshwater, including opportunities for technology interchange SIDS.</li> </ul>	<p>Generally built development is restricted above the 1000' contour in SKN. GSKN has designated the CFR as a protected area. Nevis Peak is protected also by an administrative order.</p> <p>The lower coastal section of the Basseterre Valley was declared protected. WSD in collaboration with the DPPE is undertaking an assessment of the water sector in SKN.</p> <p>SKN employs CEHI, PAHO and WHO standards for water resources management.</p> <p>WSD has developed strategic response mechanisms with regard to the impact of extreme weather and drought on water resources.</p> <p>There is increase use in waste water treatment plants and rain water harvesting systems in SKN.</p>
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6	Land resources	<ul style="list-style-type: none"> <li>(i) Develop and improve national databases and the dissemination of information to relevant groups, especially local communities, youth and women, for land-use planning and management, including estimates of the carrying capacity, economic and environmental value of land resources, along with appropriate decision-making tools, such as land/geographic information systems.</li> <li>(ii) Encourage appropriate forms of land tenure, improved land administration and a greater appreciation of the integrated nature of land development in order to facilitate sustainable land-use.</li> <li>(iii) Formulate and enforce laws, regulations, and economic pricing and incentives in order to encourage the sustainable and integrated use, management and conservation of the land and its natural resources.</li> <li>(iv) Support appropriate afforestation and reforestation programmes, with appropriate emphasis on natural regeneration and the participation of land owners, in order to ensure watershed and coastal protection and reduce land degradation.</li> <li>(v) Improve the availability, affordability and environmental quality of shelter in human settlements, in accordance with chapter 7 of Agenda 21.</li> <li>(vi) Increase attention to national physical planning in both urban and rural environments, focusing</li> </ul>	<p>DCPB developed a NPDP in 2006 for St. Kitts. NDP developed for Nevis in 2008</p> <p>GSKN presently undertaking a strategic review of the land registry operations.</p> <p>There is a need to strengthen the GIS Unit in the DPPE.</p> <p>GSKN has established a Special Land Initiative that promotes the land ownership for first timers. NPDP is used to guide zoning.</p> <p>GSKN has conducted a comprehensive land valuation exercise. There is a need to streamline the pricing and incentives regime for land development</p> <p>There is a need to implement a national reforestation programme. SKN is participating in the IWEco project which should address localized deforestation.</p> <p>The NHC and the NHLDC has implemented various affordable housing schemes. GSKN offers duty free on the purchase of building materials for first time home owners.</p>
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		on training to strengthen physical planning offices, including the use of environmental impact assessments and other decision-making tools.	Ongoing
<b>7</b>	<b>Energy resources</b>	<p>(i) Implement appropriate public education and awareness programmes, including consumer incentives to promote energy conservation.</p> <p>(ii) Promote the efficient use of energy and the development of environmentally sound sources of energy and energy-efficient technologies, paying special attention to the possibilities of using, where appropriate, economic instruments and incentive structures and the increasing economic possibilities of renewable sources of energy.</p> <p>(iii) Establish and/or strengthen, where appropriate, research capabilities in the development and promotion of new and renewable sources of energy, including wind, solar, geothermal, hydroelectric, wave and biomass energy, and ocean thermal energy conversion.</p> <p>(iv) Strengthen research capabilities and develop technologies to encourage the efficient utilization of non-renewable sources of energy.</p>	<p>SKELEC and NEVLEC have been promoting energy conservation.</p> <p>GSKN grants incentives for the use of energy saving devices.</p> <p>GSKN encourages research and development of alternative/renewable energy sources. A 1.5 mega watt solar farm has been established at the R.L.B International Airport to power that facility. Initial geothermal investigations/testing have been conducted on Nevis.</p>
<b>8</b>	<b>Tourism resources</b>	<p>(i) Ensure that tourism development and environmental management are mutually supportive.</p> <p>(ii) Adopt integrated planning and policies to ensure sustainable tourism development, with</p>	<p>GSKN has developed a tourism master plan that embraces ecotourism and wider sustainable development interventions.</p> <p>The NPDP and the related LUMP identifies areas/zones for tourism related activities.</p>

		<p>particular attention to land-use planning and coastal zone management, requiring environmental impact assessments for all tourism projects; the continuous monitoring of the environmental impact of all tourism activities; and the development of guidelines and standards for design and construction taking into account energy and water consumption, the generation and disposal of wastes and land degradation, the proper management and protection of eco-tourism attractions, and the carrying capacity of areas for tourism.</p> <p>(iii) Identify and develop facilities to meet specific niche markets, particularly in eco-tourism, nature and cultural tourism, and involve local populations in the identification and management of natural protected areas set aside for eco-tourism.</p>	<p>The DCPB requires that EIAs are undertaken for tourism development activities. However, there is a need to strengthen the implementation of guidelines and standards for monitoring.</p> <p>The guidelines on mainstreaming SLM and BDC into national development should be used by all stakeholders.</p> <p>GSKN has developed facilities for craft and beach vendors in the Greater Basseterre area and at Black Rocks. There is a need to build additional facilities island wide.</p> <p>GSKN with the SIDF has provided financial and technical support to first time and existing small entrepreneurs.</p>
<p><b>9</b></p>	<p><b>Biodiversity resources</b></p>	<p>(i) Formulate and implement integrated strategies for the conservation and sustainable use of terrestrial and marine biodiversity, in particular endemic species, including protection from the introduction of certain non-indigenous species and the identification of sites of high biological significance for the conservation of biological diversity and/or for eco-tourism and other sustainable development opportunities, such as sustainable agriculture, training and research.</p>	

		<ul style="list-style-type: none"> <li>(ii) Ratify and implement the Convention on Biological Diversity, 10/ the Convention on International Trade in Endangered Species of Wild Fauna and Flora 11/ and other relevant international and regional conventions.</li> <li>(iii) Promote community support for the conservation of biological diversity and the designation of protected areas by concentrating on educational strategies that increase awareness of the significance of biodiversity conservation, in particular the fundamental importance to resource-owning communities of a diverse biological resource base.</li> <li>(iv) Generate and maintain buffer stocks or gene banks of biogenetic resources for reintroduction into their natural habitat, especially in the case of post-disaster restoration and rehabilitation.</li> <li>(v) Develop or continue studies and research on biological resources, their management and their intrinsic socio-economic and cultural value, including biotechnology.</li> <li>(vi) Conduct detailed inventories of existing flora, fauna and ecosystems to provide basic data needed for the preservation of biodiversity.</li> <li>(vii) Ensure that the ownership of intellectual property rights is adequately and effectively protected. Ensure, subject to national legislation and</li> </ul>	<p>GSKN has ratified the UNCBD, CITES.</p> <p>GSKN has established the CFR as a protected area under the OPAAL Project. The process was participatory and involved the watershed communities of Old Road and Phillips Village.</p> <p>Several private plant nurseries have been established in SKN. The emphasis for the most part has been ornamentals and not fruit trees. There is a need to develop buffer stocks and gene banks.</p> <p>Several reports have been developed to capture existing flora and fauna in SKN. A Report on Rapid Assessment of Causes and Consequences of Biodiversity Loss was prepared as part of the NBSAP review.</p> <p>While legislation has been passed to protect intellectual property rights, regulations are</p>
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		<p>policies, that the technology, knowledge, and customary and traditional practices of local and indigenous people, including resource owners and custodians, are adequately and effectively protected, and that they thereby benefit directly, on an equitable basis and on mutually agreed terms, from any utilization of such technologies, knowledge and practices, or from any technological development directly derived there from.</p> <p>(viii) Support the involvement of non-governmental organizations, women, indigenous people and other major groups, as well as fishing communities and farmers, in the conservation and sustainable use of biodiversity and biotechnology.</p>	<p>lagging behind.</p> <p>While the DOA and the DMR conducts sensitization activities, there is further need for mainstreaming.</p>
<p><b>10</b></p>	<p><b>National institutions and administrative capacity</b></p>	<p>(i) Strengthen institutional arrangements and administrative capacity, including cross-sectoral/inter-ministerial committees and task forces, in order to integrate environment and economic policy into national planning and across sectors and ensure the capacity to implement Agenda 21 and the decisions of the Global Conference.</p> <p>(ii) Develop implementation strategies and schedules, including financing, for both regional and national activities.</p> <p>(iii) Establish or strengthen environmental agencies with adequate financial and staff resources.</p> <p>(iv) Increase the awareness and involvement of non-governmental organizations, local communities and other major groups in public education, national planning and the implementation of sustainable</p>	<p>The DCPB provides a good example of the benefits of having an inter ministerial body to review development and building applications.</p> <p>There is a need to operationalize the Strategic Framework for Investment Planning and Resource Mobilization and the Guidelines for Mainstreaming SLM and BDC developed under the SLMP and the NBSAP review respectively.</p>



		<p>development programmes.</p> <p>(v) Improve public education in order to familiarize local, provincial/State and national bodies with environmental laws already in existence, facilitate discussion of the value of environmental legislation and standards to local communities and open wider discussion on more culturally appropriate penalties for the contravention of laws and regulations.</p> <p>(vi) Develop appropriate national, provincial/State and local environmental regulations that reflect the needs and incorporate the principles of sustainability, create appropriate environmental standards and procedures, and ensure their integration into national planning instruments and development projects at an early stage in the design process, including specific legislation for appropriate environmental impact assessment for both public and private sector development.</p> <p>(vii) Give sustainable development task forces or their equivalent the official authority and validity to permit their continued meeting as interdisciplinary and communally representative advisory bodies.</p> <p>(viii) Provide adequate resources for the enforcement of environmental regulations.</p> <p>(ix) Enact the domestic legislation required for the implementation of the wide range of international environmental conventions and agreements directly relevant to SIDS.</p>	<p>There is a need to operationalize the Guidelines for Mainstreaming SLM and BDC developed under the SLMP and the NBSAP review respectively.</p>
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		(x) Establish national information nodes on the sustainable development of SIDS in order to encourage, at the international level, the development of a small islands' sustainable development information network to facilitate the exchange of experience among SIDS.	There is a need to develop a national repository and clearing house on environmental data and other relevant information.
<b>11</b>	<b>Regional institutions and technical cooperation</b>	<ul style="list-style-type: none"> <li>(i) Support regional organizations through membership and budgetary contributions.</li> <li>(ii) Encourage improved coordination and collaboration among regional bodies and between the international community and regional programmes.</li> </ul>	Generally SKN has been meeting its obligations in this regard.
<b>12</b>	<b>Transport and communication</b>	<ul style="list-style-type: none"> <li>(i) Continue efforts to strengthen transport services and facilities at both the national and local levels, paying particular attention to environmental protection, safety, and innovative energy-efficient and low-cost transport solutions.</li> <li>(ii) Upgrade domestic communication facilities, including radio and telephone coverage, to remote rural and outer island communities, and continue efforts to improve international telecommunications links.</li> <li>(iii) Address quarantine problems and requirements stemming from changing transport situations and longer-term climatic changes.</li> </ul>	<p>GSKN has been investing in infrastructure upgrades. The R.L.B International Airport is powered by solar energy.</p> <p>There is a near 100% coverage across SKN.</p>
<b>13</b>	<b>Science and technology</b>	(i) Ensure that science and technology policy is closely linked to national environmental strategies and sustainable development plans and is responsive to local and sectoral sustainable development needs, emphasizing self-sufficiency and the minimization of import dependency.	There is a need to mainstream science and technology into sustainable development at the national level.

		<ul style="list-style-type: none"> <li>(ii) Give greater emphasis to research and development, as well as to training for science and technology and economic development generally, and for environmental and technology assessment in particular; refine analytical tools for natural resource accounting; and encourage the development and use of information and communications technology to overcome size and isolation problems.</li> <li>(iii) Promote research and development in areas where endogenous technologies and traditional practices have great relevance, including agriculture, agricultural processing, waste-recycling, ethno-biology and biotechnology, construction and renewable energy, ensuring that mechanisms are in place for the appropriate protection of intellectual property rights in accordance with relevant international conventions.</li> <li>(iv) Encourage the use of endogenous, environmentally friendly technologies by establishing regulations, standards and economic incentives.</li> <li>(v) Develop or ensure access to databases on environmentally sound technologies of local relevance and collect consistent time-series data for monitoring the performance of sustainable development.</li> <li>(vi) Promote and strengthen the role of women in science and technology disciplines.</li> </ul>	
<b>14</b>	<b>Human resource development</b>	<ul style="list-style-type: none"> <li>(i) Infuse sustainable development ideas into education curricula at all levels and promote participation by all groups,</li> </ul>	

		<p>emphasizing the link between environment and social and economic issues, and continue to improve access to scientific, mathematics and technical training.</p> <p>(ii) Incorporate population issues into the mainstream of decision-making and planning mechanisms of government, including developing comprehensive population policies consistent with sustainable development objectives while respecting and promoting the dignity and the fundamental rights of the human person and of the family.</p> <p>(iii) Improve urban/rural settlements, in consultation with local communities, by giving priority to the improvement of basic services, such as access to potable water, environmentally sound sewage treatment and disposal, shelter, education, family planning and health care, as well as to the elimination of poverty; ensuring that development projects are people-centred and have explicit environment and health objectives; ensuring adequate resources for public health and preventive medicine activities; and considering urban development options, including decentralization.</p> <p>(iv) Direct efforts to improve urban/rural settlements through the promotion of projects aimed at the elimination of poverty that give priority to the improvement of basic services such as shelter and comprehensive public health, including potable water, sewage disposal, maternal and child health care, the responsible planning of family</p>	
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		<p>size and other specific measures aimed at health promotion and disease prevention.</p> <p>(v) Encourage the use of distance training to meet the expanding educational demand and the large demand for knowledge and training in the area of the environment.</p> <p>(vi) Promote and strengthen the role of major groups, including non-governmental organizations and women, in the creation and implementation of sustainable development initiatives.</p> <p>(vii) Seek to improve the quality of education, training and human resource development by upgrading basic education and technical/vocational skills training and by making improvements, where necessary, to national management and planning capacities and labour market linkages.</p> <p>(viii) Encourage the use of traditional knowledge and skills in environment, resource management and health, and the use of community groups to assist in promoting environmental awareness.</p>	
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Table 10: Summary of BPOA priority areas for SKN, national actions, policies and measures

## **2.2 Fair and Equitable Sharing**

The GSKN is currently examining, with a view to ratify the Nagoya Protocol on Access and Benefit Sharing of Biological Genetic Resources and the fair and equitable sharing of benefits arising from their utilization of the UNCBD. This international agreement is aimed at sharing the benefits arising from the utilization of genetic resources, in a fair and equitable way, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies. Also, it considers all rights over those resources, available technologies and with appropriate funding contribute to the conservation and sustainable use of biodiversity resources.

In accordance with the tenets of the protocol, SKN will develop and implement legislation on Access and Benefit Sharing. The resulting draft ABS legislation, together with the provisions of the Biosafety Act, will be incorporated into the National Conservation and Environmental Management Bill.

## **Chapter III: NBSAP 2014-2020**

## Chapter 3: NBSAP 2014-2020

### 3.0 Introduction

The preparation of the 2014-2020 NBSAP is in recognition of the fact that targets, principles and priorities of the first NBSAP of 2004 would have changed especially with the closure of the sugar industry and the transformation of the physical and economic landscape of SKN. The new NBSAP is providing an opportunity for the GSKN to mainstream biodiversity in the overall development process by setting new national targets, principles and priorities which are in line with the Aichi Targets on Biodiversity and the Strategic Plan on Biodiversity, 2011 – 2020. The NBSAP will also focus on stronger institutional integration. It identifies and examines how various provisions of key legislative, regulatory and policy instruments can better influence biodiversity management in SKN.

The 2014-2020 NBSAP should provide the framework for the following:

- Directing specific responses and to focus the attention of relevant line ministries, departments, sectors, agencies, stakeholder groups and the wider community to consider, understand and apply the principles of sustainable development.
- Strengthening the overall implementation plan of the National Targets as well as realizing the objectives of the NBSAP.
- Bringing specific focus toward ensuring policy and action measures by GSKN are strategically linked to business and biodiversity more visibly and based on principles of fairness and equity.
- Designing a framework that provides an enabling/facilitative environment on matters related to conservation, sustainable use, resource access and benefit sharing.
- Combining species management principles related to both invasive and alien species and focusing on identifying and eradicating pathways for their introduction.
- Raising awareness of the importance of genetic resources and traditional knowledge associated with genetic resources, and related access and benefit-sharing issues.

Several indicators have been identified that should help to assess the mainstreaming of biodiversity conservation in SKN. These include but are not limited to the following:

- National guiding framework and outlook on biodiversity prepared and distributed.
- Synergistic actions by line ministries, departments and agencies are put in place for the sustainable conservation and use of biodiversity
- Direct and indirect support and interventions into national ecosystems and biodiversity related actions by relevant line ministries, departments, sectors, agencies, stakeholder groups and the wider community by 2020.
- Private sector application and investment in conservation action separate and apart from mere corporate social responsibility interventions.



- Valuing of concessions and incentives granted by the GSKN to biodiversity related activities.
- Legislative, regulatory and management framework for Marine Management Area(s) for SKN developed.
- Improved management plans developed and components implemented for select areas under agriculture, aquaculture and forestry.
- National programme of action for integrated watershed and coastal areas management and/or prevention of pollution from land based sources and activities developed.
- Major sources and activities contributing to the pollution of the marine environment identified and assessed.
- Development and implementation of access and benefit-sharing legislation or regulatory requirements.
- Standards and/guidelines for monitoring of compliance on benefit sharing developed.
- Establishment of national access and benefit clearing house mechanism.

Overall, this chapter presents the strategic path that SKN has adopted in the pursuit of biodiversity conservation. The 2014-2020 NBSAP is in line with the objectives of maintaining a diverse and rich biodiversity resource base as the foundation for national development. The strategic path is supported by an action plan that gives the minimum indicative steps necessary for the achievement of the objectives. It is supportive of the GSKN intent to make SKN the world’s first Sustainable Island State.

During the 2013 National Consultation on the Economy under the theme “The Green Economy as a viable pathway towards a sustainable future”, the Right Honourable Dr. Denzil Douglas, indicated that the GSKN was determined to make the Federation the World’s first Sustainable Island State. This pronouncement has received much local, regional and international attention as it points to a strategic response and commitment to pursue a sustainable development agenda. To this end the GSKN made a call for the 2013 Rio +20 Conference to focus on the Green Economy.



Figure 6a&b: Photographs of 2013 Consultation on the economy

### 3.1 Overview of Green Economy Interventions in SKN

The green economy is one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. It is an economic development model based on sustainable development and knowledge of ecological economics. In part, the pursuit of a green economy for SKN has been influenced by external factors as outlined in figure 7 below.

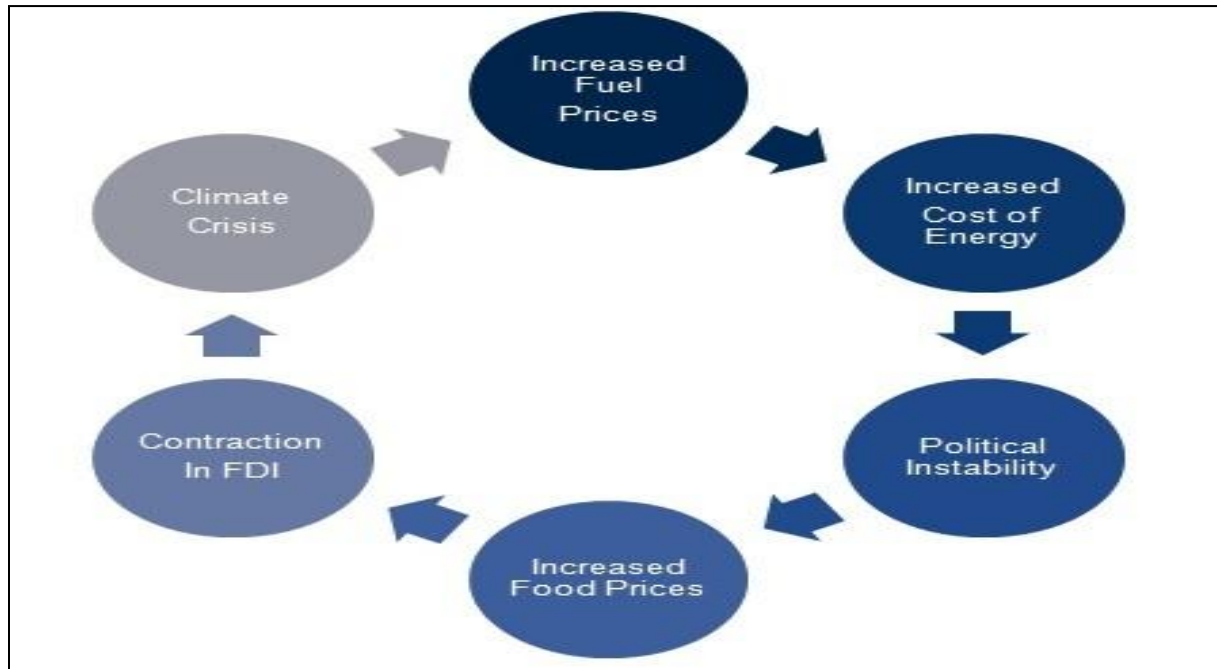


Figure 7: Diagram depicting nature of global economic crisis

By and large the GSKN has been successful in designing a “home grown” debt management and fiscal stabilization strategy that has met the approval of the ECCB, CBD, IMF, IDB (World Bank) and the EU. The pursuit of a green economy is fueled by the conviction that a similar strategy can be developed to provide a practical framework or path toward the aspiration to become the first SIS.

The GSKN is supportive of investments in the green economy as demonstrated by the following actions to date:

- Development of a solar farm at the R.L Bradshaw International Airport.
- Installation of LED and solar lighting along the IMR at various locations.
- Solar lighting of the R.L Bradshaw Memorial Park.
- Grant of concessions to economic development partners in the local private sector for the import and installation of solar panels.
- Phasing out of substances that deplete the ozone layer (CFCs).
- Requirement for the conduct of EIAs as part of the development approval process.
- Support for research and development of alternative sources of energy including geothermal and wind.
- Designation of Protected Areas and areas of cultural and heritage significance.

- Launch of the Education Network (EduNET)
- Etc

In order for SKN to become a SIS, green infrastructure interventions will have to be included in the following areas:

- Land and property values,
- Labour productivity,
- Tourism,
- Agriculture,
- Recreation and leisure,
- Biodiversity conservation
- Climate change adaptation and mitigation,
- Waste management,
- Energy efficiency
- Information Technology Communication, and
- Economic growth and development

Designing the green economy for SKN requires an understanding of the circular flow of income based on the five sector model. It requires the ability to craft policies and programmes that are responsive and resilient to external shocks such as changing prices for food and energy.

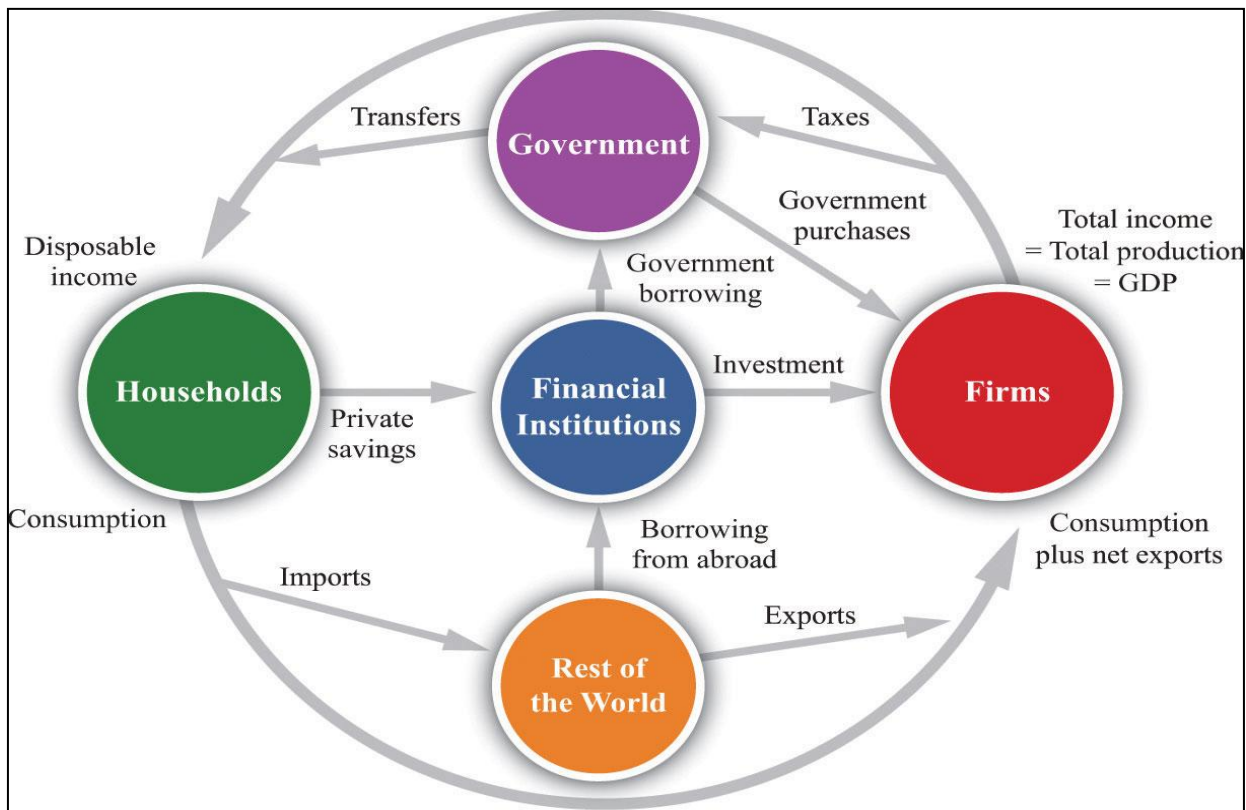


Figure 8: Circular flow of income model

### **Exhibit 3- St Christopher (St. Kitts) and Nevis 2014 Budget Address presented by Prime Minister the Rt. Hon. Dr. Denzil L. Douglas (Excerpt)**

“Mr. Speaker, a real opportunity exists for us to create a new economy by making the Federation of St. Kitts and Nevis one of the world’s first ‘sustainable island-state’. It is no accident that my Government has chosen to present this Budget under the theme “A Green Economy – The Pathway Towards A Sustainable Island State” This is the vision that we presented to our social and economic partners just recently at our annual National Consultation on the Economy. This is our clear vision for the future of this country. This vision was very well received at the National Consultation and is therefore presented in this Budget in keeping with our quest to ensure that key policies are informed by such consultations. I invite all citizens and residents to share in this vision because I truly believe that we can indeed achieve the status and maintain the status of a thriving, sustainable island state fuelled by a green economy.

This vision of a sustainable island-state should be founded on certain core values. Balance is a central part of the vision, where we acknowledge that truly sustainable development requires the harmonization of people, heritage, environment and prosperity. We must have a clear sense of our identity. Recognizing that it is necessary for our people to continually develop a sense of self. We must also come to the understanding that culture and the environment have a central role to play in our development. The movement to a sustainable island-state will require active management of our resources and assets. We the people of St. Kitts and Nevis must begin to see ourselves not only as beneficiaries or mere spectators but rather as the primary resource that is required for the process to succeed. We must endeavour to maintain our independence. This will require us to truly value and understand the importance of resource independence in water, food, and energy. We must adopt a zero tolerance for exclusion of any group among us. Every segment of our society must be equitably involved and fully incentivized throughout the process of building a sustainable island-state.

St. Kitts and Nevis has unique advantages in its aspirations to develop a green economy and a sustainable island-state. This opportunity lies in the small size of our population who are educated and patriotic. The physical environment of both islands is well preserved. Our land mass covers a manageable 104 square miles, with only two islands to administer. The islands have good potential for the development of renewable energy in the form of solar, geothermal and wind. St. Kitts and Nevis is emerging as a premium tourism destination and is increasingly establishing brand awareness in major markets. Our National Assembly has the ability to rapidly develop enabling legislation that can attract targeted businesses and industries. We have already established a substantial framework in sustainability planning, as evidenced by the existing National Physical Development Plan, modern Building Codes, the National Adaptation Strategy and the establishment of the Ministry of Sustainable Development which my Government created in 2009.

In our quest to become a sustainable island-state, we intend to continue the consultative process started at the National Consultation. We believe that we must engage our people in a dialogue and build a national consensus. The people of the Federation must be involved at every step of this process and have ownership. This vision cannot be achieved without support and commitment at all levels, from both administrations of the Federal Government and the Nevis Island Administration, all Government Ministries, the private sector, civil society and of course our individual citizens. We will create and market a national brand for St. Kitts and Nevis as one of the world’s first sustainable island-states”

#### **Exhibit 4- Clinton Foundation to Assist SKN in becoming a Sustainable Island State**

BASSETERRE, St. Kitts, Apr 16 – Prime Minister Dr. Denzil Douglas says the twin-island Federation will receive assistance from the Us-based Clinton Foundation to improve efforts in developing the renewable energy sector. He says he expects the collaboration will help reduce the island’s dependence on fossil fuel as well as leading to cheaper rates for consumers of electricity.

“We are dependent upon the importation of petroleum products, diesel in particular from which we generate electricity...Diesel is imported from overseas. Diesel has been having a very unstable climb in the price. The price keeps going up and up and up. Very few opportunities for it to come down,” he said. “The more the price of the diesel goes up, the more the price of the diesel goes up, the more it costs us to generate electricity, and thus the fuel charge on your electricity bill will be higher.

“It means then you have to pay more money for the use of electricity. That is not sustainable. The continuing high price of electricity is not sustainable. It means, it can’t continue forever. It’s going to create serious problems for us,” Dr. Douglas said on his weekly radio programme “Ask the Prime Minister.”

He told listeners that a team of experts from the foundation is due to arrive here later this month for discussions with the various stakeholders here. “They’re going to look at where we’ve reached so far in removing ourselves from the dependence on fossil-based energy or diesel energy. They’re going to look at how much the Taiwanese have done so far in assisting us in the creation of a solar energy farm, and their promised assistance with another two megawatt farm down there at the agro tourism project.

“They’re going to be looking at the prospects for wind energy that we’ve been working on for some time with the North Star Company. They’re going to be looking at how we dispose of our waste, and maybe how we might be able to work closely on a new project to convert waste into energy or electricity.” Dr. Douglas said he is also hoping that the assistance from the Clinton Foundation would extend to the development of the geothermal sector in St. Kitts-Nevis.

“They will provide technical support for the sister island of Nevis, the Nevis Island Administration, with regard to their geothermal energy project that has been ongoing for some years, but which seems to have been stalled.” He said the Foundation would also “look at the potential for the island of St. Kitts to also generate geothermal energy and thus revolutionize our dependence on fossil fuel energy in St. Kitts and Nevis and bring us into a new realm where there would be green energy, cheaper energy, sustainable energy and this will impact on the cost of generating electricity and the consumers then would pay less for their electricity use.”

Prime Minister Douglas says the initiative is in keeping with his administration’s efforts.

## 3.2 Mainstreaming Biological Diversity Conservation

The review of the 2004 NBSAP for SKN showed that biodiversity conservation was not yet integrated fully in national development frameworks, partly because of lack of knowledge of the process of integration. Previously there was no guidance on how to achieve biodiversity conservation. The Guidelines on Mainstreaming Biodiversity Conservation into National Development have been developed as part of the 2014-2020 NBSAP preparatory process to help fill that gap. They aim at providing direction to users (Development Regulators and Practitioners) to help them mainstream biodiversity conservation in development policies, plans, projects and activities. It is expected that the practice of biodiversity conservation would become another regularly used decision-making tool, such as Environmental Impact Assessment (EIA), Cost-Benefit Analysis (CBA) and Social Impact Assessment (SIA) in the review of development applications and the articulation of development policies.

The Guidelines contain direction on mainstreaming biodiversity conservation in selected development themes and sectors. Strategies designed to give direction to biodiversity management at the national level in order to achieve the local and international targets and ultimately achieve the national goals are included under each theme/sector. These themes and sectors are:

- poverty reduction,
- agriculture and rural development,
- environmental protection,
- land degradation,
- water resource management,
- marine resources management
- land use planning, and infrastructure.

Others are gender issues, and health issues, and climate change adaptation.

### 3.2.1 Poverty reduction

Poverty is a universal expression of vulnerability as it weakens the capacity to cope with overall risks. The poor and indigent are usually the most vulnerable to the effects disaster (natural and manmade). Also, the poor are susceptible to other livelihood hazards, partly because disaster and environmental losses often interact with and tend to worsen other livelihood threats including terrestrial and marine biodiversity losses. Thus, environmental risks and other development risks are mutually reinforcing.

Biodiversity conservation and poverty reduction must focus on reducing the multiple sources of risks and empowering poor people to face them. Biodiversity conservation helps safeguard human development, which involves protecting people from deprivation resulting from shocks induced by natural hazards. Coping with environmental risk through poverty reduction interventions aims to build the overall resilience of people so that vulnerability can be reduced.

The key to mainstreaming biodiversity conservation in poverty reduction as a national

development goal in SKN is to implement interventions that minimize risk accumulation, while resulting in reduction of poverty.

**Strategy:**

Employ the following specific measures:

- institutionalize the application of risk sensitive-poverty assessment in development planning;
- improve governance of poverty reduction interventions such as the Peoples Employment Programme (PEP), the Small Entrepreneur Enterprise Development Programme (SEED), the Women in Small Enterprises (WISE), and the Small Enterprise Assistance Fund (SEAF) for them to contribute more to building the capacity of the poor to address vulnerability;
- implement sustainable livelihood measures that strengthen the livelihood assets of the poor (including environmental resources), thereby building their capacities to address vulnerability; and
- improve the quality of growth to help the poor address accumulated risks from past development interventions.



Figures 9a&b: Examples of GSKN poverty reduction programmes

**3.2.2 Agriculture and rural development**

Agricultural livelihoods in SKN depend significantly on the natural resource base (particularly soil and water). Consequently, several effects of natural hazards and climate change can potentially affect agriculture and rural development. Natural hazards and disasters impact agriculture through three main pathways; namely input systems (including biological inputs), services (such as processing and marketing infrastructures) and management practice (such as water use and disease and pest control). Therefore, mainstreaming biodiversity conservation in agriculture and rural development should aim to reduce the impact of disasters on the sector and the negative effects of sectoral practices on environmental risks.

<sup>4</sup>The majority of the poor in SKN live in rural areas. However, the basic resources of land and water are constrained and rural productivity is low partly due to poor natural

<sup>4</sup> Country Poverty Assessment Survey

resource management. Also, rural non-farm activities do not adequately contribute to sustainable growth in agricultural productivity and the economy. As a major economic sector, developments in agriculture have major implications for the vulnerability of livelihoods at risks. Reducing rural poverty and improving rural livelihoods depends strongly on reducing environmental risk. Also, sound agricultural management reduces environmental risks particularly biodiversity loss.



Figures 10 a&b: Photographs of agri-produce post sugar

### **Strategy:**

Enhance food security, growth and development of the agricultural sector through diversification and the sustainable utilization of human, natural and other resources. The strategic direction and objectives enunciated in the ADP and the NAS remain in place. The 2014-2020 NBSAP seeks to build around and upon them to strengthen SKN's position nationally, regionally and globally as it pertains to the sustainable use of biodiversity.

### **3.3.3 Land degradation**

Several environmental factors, such as land degradation and desertification, ecosystem loss, environmentally related diseases, pollution, and, climate variability and change are hazards and factors that can adversely impact biodiversity. Land degradation can cause or worsen environmental risks alone or in combination with other natural hazards which in turn limit ecosystem resilience and growth.

For example, environmental degradation can affect biological hazards, such as epidemics, hydro meteorological hazards and some geological hazards, including landslides. Inadequate environmental protection also damages the natural resource base thus further weakening the ability of people and ecosystems to withstand hazards. For these reasons, it is necessary to integrate biodiversity conservation in environmental management and vice-versa to minimize the impact of hazards on the environment and the role of environmental factors in disasters.

Environmental management tools do not systematically incorporate trends in hazards and vulnerabilities. However, these environmental tools were designed from a risk management perspective and can be adapted for identifying disaster risks in project development. For example, risks arising from environmental factors can be identified and analyzed using adapted Environmental Risk Assessment (ERA). Additionally, to



determine what measures to take to address risk from environmental protection measures, socio-economic gains from environmental management activities can be demonstrated using such tools as Strategic Environmental Assessment (SEA) and Environmental Risk Assessment (ERA).



Figures 11a&b: Photographs of aspects of land degradation in SKN

### **Strategy:**

Adopt and incorporate the Guidelines on Mainstreaming Biodiversity Conservation and the Guidelines on Mainstreaming Sustainable Land Management into National Development as part of the physical planning, development approval and land development processes.

### **3.3.4 Water resources management**

Water resources, biodiversity conservation and development are linked in many ways. Firstly, several natural hazards arise from hydrological factors. Secondly, disasters triggered by natural hazards such as floods can destroy or severely damage water infrastructure, affecting water supply and adversely affecting the immediate environment and development. For example, drought can reduce surface or groundwater flows, flooding and volcanic eruptions can contaminate water quality (potable and marine), and, earthquakes can divert groundwater. Thirdly, water resources degradation causes or worsens environmental risks arising from natural hazards. Degradation of watersheds can adversely induce or exacerbate flooding and landslides. Unsustainable water resources utilization affects productivity and also weakens the resilience of communities at risk.



**Strategy:**

Reduce risks to water resources in a comprehensive and integrated multi-hazard context. Undertake a Vulnerability Capacity Assessment National Adaptation Strategy and Action Plan. Commence implementation of recommendations from the IWCAM Project.

**3.3.5 Land use planning**

Land use planning is an effective tool for national physical, social and economic development and managing the associated risks. A well-designed and risk-sensitive land use plan is a risk reduction tool that also facilitates BDC. However, effective land use planning is challenging because of the multiple competing interests, uses and sectors associated with land. Externalities including regional and global economic instability also present challenges to policy makers and land planners. Land use planning must therefore address spatial and temporal issues connected with the physical vulnerability of key economic sectors, individuals and communities.

Within the context of BDC, land use planning is essentially a proactive form of mitigating environmental risk. Consequently, mainstreaming BDC into the land use planning process involves assessing land risks and applying strategic and integrated measures to meet land management objectives. Integrating BDC in land use planning involves establishing the planning background, formulating the planning strategy and the strategic land use plan, and developing the implementation plan.



Figure 13: Photograph of ground breaking ceremony for new housing development

**Strategy:**

Undertake a strategic review of the current NPDP including an appraisal of the land use planning and development approval processes used by the DCPB. The review will include an assessment of the current legislations, regulations and guidelines that govern land use planning and development in SKN.

**3.3.6 Infrastructure Development**

General infrastructure systems/networks in SKN form part of the physical asset base of the community and impact productivity and the livelihoods of individuals. However, the increasing interconnectedness of infrastructure, particularly those providing critical services, poses challenges for reducing risks. Critical infrastructures are those physical and information technology facilities, networks and assets whose disruption or destruction from hazards or would seriously impair people's lives and livelihoods. In the context of SKN, these often comprise infrastructure elements in the following sectors:

- ✓ government,
- ✓ energy and utilities,
- ✓ communications,
- ✓ services,
- ✓ transportation,
- ✓ safety, and
- ✓ agriculture

Considering that complete total security or assurance is neither feasible nor affordable, the priority task in reducing the environmental risk is to ensure that infrastructure installations are design and constructed within minimal impacts on the environment.

Integrating BDC as a risk reduction tool in infrastructure development and management helps to prevent the potential for disruption of reliable services from the impact of hazards to the community. However, it is necessary also to prevent physical failure of infrastructure installations from causing disasters, such as upstream drainage failure resulting in downstream flooding. Accordingly, mainstreaming BDC in infrastructure development as part of the national agenda should aim at minimizing the potential negative effects of hazards on infrastructure, and vice-versa.

**Strategy:**

Develop a National Infrastructure Development Plan based on a Land Use Management Plan.

**3.3.7 Gender issues**

In a general way, gender factors help to determine development policies and patterns. It is argued that vulnerability to hazards and community response to disasters are gender sensitive. Gender biases in access to productive resources such as land for farming and capital formation increases women's vulnerability to risks. Therefore, there are development costs to gender bias and clear growth benefits from reversing gender inequality, which would help reduce vulnerability.

Mainstreaming gender in BDC is the process of fully considering and integrating the

concerns of women and men in national development policies and programmes. It depends on identifying gender differences in vulnerabilities and coping strategies, and determining gender-appropriate measures for managing risk. However, enhancing gender aspects of BDC is not about simply increasing women's chances of survival and resilience to livelihood risks. It is about balancing the entitlements and responsibilities of both males and females, and the terms of women's participation in the BDC process.

### **Strategy:**

Integrate gender considerations in biodiversity conservation by developing interventions that expand male-female livelihood opportunities and reduce their vulnerability to risks. Some specific interventions to achieve this include:

- promoting the application of gender mainstreaming tools in BDC programmes;
- expanding opportunities for male-female participation in decision-making and leadership roles in BDC programmes and institutions;
- ensuring equitable access by both women and men to BDC interventions, particularly post disaster entitlements;
- increasing women's access to environmental risk management information, including through public awareness on the gender perspective in disaster reduction; and
- strengthening comparative research and analysis on the gender aspects of risk configuration.

### **3.3.8 Climate change adaptation**

The impacts of climate change in SKN are likely to encompass the following:

- (1) Increase in drought, flood, tropical storms and other extreme weather phenomena,
- (2) Changes in rainfall, river/ghaut sensitivity and more intense land use,
- (3) Sea level rise leading to coastal erosion and flooding, and
- (4) Changes in the national biodiversity profile.

Given the geophysical realities, climate change is likely to worsen SKN's vulnerability to biodiversity loss and other natural hazards. Also, hard mitigation interventions are economically unsustainable and currently ineffective against climate change effects. Consequently, mainstreaming BDC in climate change adaptation should aim to enhance the adaptive capacities of people and the community to assess and reduce climate change risks on ecosystems. Climate change outcomes impact nearly all development sectors as well as several natural processes.

Also, a large degree of uncertainty surrounds climate change issues. Therefore, reducing the risk of disasters from climate change adaptation in SKN involves adopting a multi-hazard and iterative approach. Specific interventions to apply to reduce the risk from climate change will depend on the sector and the climate change impact of concern. Nonetheless, the following should assist in mainstreaming BDC in climate change adaptation interventions as a national action:

- ✓ increasing the use of vulnerability and adaptation assessment in development activities;

- ✓ reducing vulnerability to sustain livelihoods;
- ✓ improving the management of climate-sensitive natural resources (water resources) and economic production systems;
- ✓ promoting economic diversification to reduce over reliance on climate-sensitive primary sectors;
- ✓ increasing the resilience of infrastructure and physical development;
- ✓ restructuring risk profile and sharing through improved financial intermediation and mechanisms;
- ✓ mainstreaming climate and BDC issues and adaptation into national policies, programmes and budgets;
- ✓ strengthening information and communication on climate change effects and adaptation options;
- ✓ enhancing inter-island cooperation to improve productivity and management of shared resources.

**Strategy:**




Develop a climate change strategy and action plan that integrates BDC and other related environmental concerns.

**3.4 National Targets and Priorities**

SKN is pursuing a ‘green’ development path in keeping with the government’s pronouncement that declared SKN the as World’s first SIS. The GSKN has prepared its National Biodiversity Targets have been designed to integrate conservation and sustainable use of biodiversity into sectoral and cross-sectoral activities. Also, the national targets provide significant focus and impetus for mainstreaming of BDC into national development. Already SKN has begun to realize some outcomes from the National Targets that have been identified. These results are captioned below.

**Target 1-**By 2020, an increased percentage of Kittitians and Nevisians are aware of the values of biodiversity, and understand the steps they can take to conserve and use biodiversity sustainably. (Aichi Target 1,14,19)

*Indicators:*

-  Trends in policy development and investment options for biodiversity related actions by various stakeholders.
-  Trends in mainstreaming biodiversity conservation at the community level.
-  Amount of direct and indirect support and interventions into national ecosystems and biodiversity related actions by relevant line ministries, departments, sectors, agencies, stakeholder groups and the wider community by 2020.

Guidelines on the mainstreaming of BDC into national development have been prepared as part of the NBSAP review process. There is a need to widely disseminate the Guidelines toward ensuring direct and indirect support for national interventions.

**Target 2-** By 2020, St. Kitts and Nevis would have completed an evaluation of its biodiversity resources. (Aichi Target 2, 14 )

*Indicators:*

- National guiding framework and outlook on biodiversity prepared and distributed.
- Synergistic actions by line ministries, departments and agencies are put in place for the sustainable conservation and use of biodiversity.
- Biodiversity resource evaluation results incorporated in the NBSAP.

A Stocktaking Report on the biological diversity resources of the country has been prepared and incorporated in the revised NBSAP. The EIA procedure set out by the Development Control and Planning Board requires that consideration for BDC be included in development project appraisal.

**Target 3-** By 2020, the Ministry of Sustainable Development will have an increased role in the granting of incentives to activities based on biodiversity related sustainability principles. (Aichi Target 3)

*Indicators:*

- Trends in national policy and action programmes that use economic, investment and market instruments for conservation, sustainable use and benefit sharing.
- The type of private sector application and investment in conservation action separate and apart from mere corporate social responsibility interventions.
- Number and/or value of concessions and incentives granted by the Ministry of Sustainable Development to biodiversity related activities.

Albeit indirectly, the GSKN is granting concessions for green energy alternatives as part of its thrust to promote SKN as the World's First Sustainable Island State. The pursuit of green/clean energy interventions reduce can potentially reduce environmental risks.

**Target 4-** By 2020, fish and invertebrate stocks and aquatic plants are managed, harvested sustainably and the Marine Management Area has been formally declared. (Aichi Target 6, 9, 10)

*Indicators:*

- Legislative, regulatory and management framework for Marine Management Area for SKN developed.
- Observed fish, invertebrate stocks and aquatic plants increase by 5%.

The GSKN is in the process of declaring its first Marine Protected Area as a conservation measure for marine biodiversity. The candidate site has been indicatively survey. Additionally there are ongoing management programmes that seek to protect marine endangered species (primarily the sea turtle). The Department of Maritime Affaires works closely with the <sup>5</sup>Sea Turtles Monitoring Network.

**Target 5-** By 2020, areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity. (Target Aichi Target 7,11)

*Indicators:*

- The number of areas under agriculture, aquaculture and forestry that are identified for improved management and management plans developed and components implemented.
- The number of public-private partnerships in increasing agricultural production systems that are considerate of local needs.
- The amount of investments by government and the non-government sector in agro-biodiversity based research focusing on conservation, sustainable use and sharing of benefits.

The GSKN has identified agriculture as a critical pillar of the ‘new’ and ‘green’ economy. The Ministry Agriculture has already identified areas for commercial farming based on land capability analysis. Also, the Republic of China on Taiwan Agricultural Mission on St. Kitts has being promoting research on vegetable and tree crop production for several years with a focus on water conservation and the sharing the of technology among local farmers. This is expected to continue with the opening of the ‘new’ Agro-Tourism Demonstration Farm/EcoPark.



Figures14a&b: Photographs of the Agro-Tourism Demonstration Farm

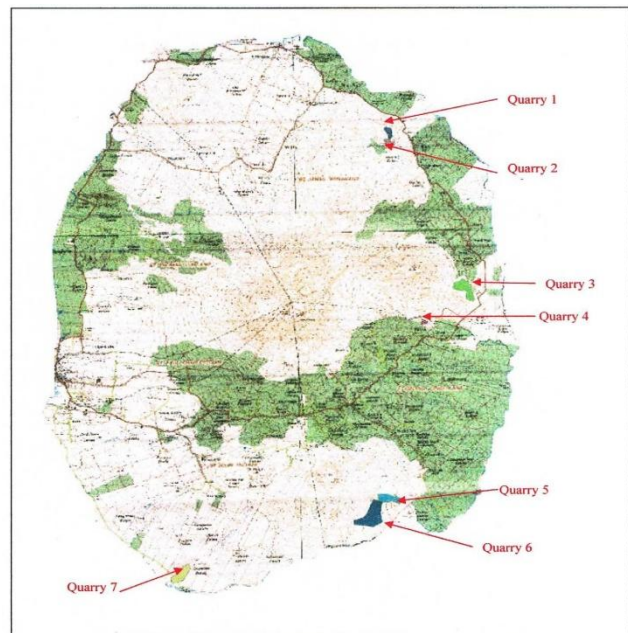
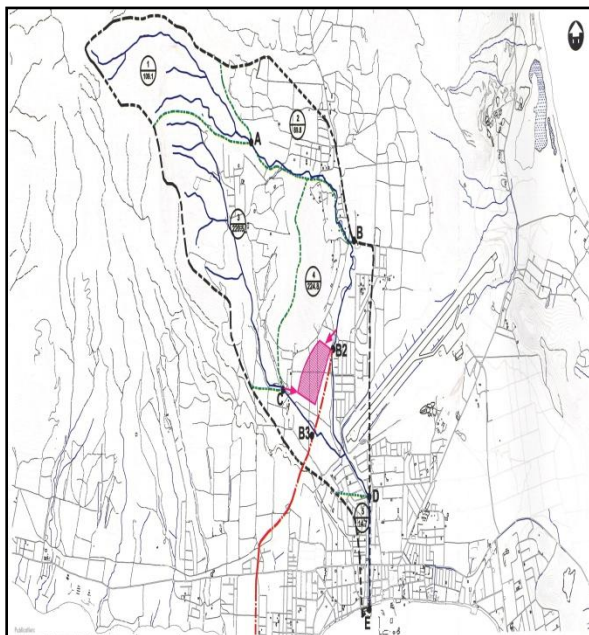
<sup>5</sup> The St. Kitts Sea Turtle Monitoring Network is a nonprofit voluntary organization led by the Ross Veterinary School of Medicine.

**Target 6-** By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity and appropriate Waste Management Plans are developed. (Aichi Target 8)

*Indicators:*

- National programme of action for integrated watershed and coastal areas management and/or prevention of pollution from land based sources and activities developed.
- Major sources and activities contributing to the pollution of the marine environment identified and assessed.
- At least two demonstration projects (one each on St. Kitts and Nevis) to reduce pollution of the marine environment implemented.
- Synergistic actions by line ministries, departments and agencies are put in place for the sustainable conservation and use of biodiversity.
- At least two national training workshops in waste water management convened.
- Establishment of national legally binding standards for sewage effluent and discharges.

The GSKN is participating in the GEF funded Integrating Water, Land and Ecosystems in the Caribbean SIDS which is a follow on from the Integrating Watershed and Coastal Areas Management (GEF-IWCAM) Project. This project targets the College Ghaut Watershed and its outfall at the Basseterre waterfront and several quarry sites on Nevis







Figures 15a&b: Maps showing proposed management sites under the IWEco Project



**Target 7-** By 2020, invasive alien species and pathways are identified and prioritized and measures are in place to manage pathways to prevent their introduction. (Aichi Target 9)






*Indicators:*

-  A national policy on sustainable management of invasive alien species, rare, endemic, endangered, and threatened species developed and components implemented.
-  National guiding framework and outlook on biodiversity prepared and components implemented.
-  Synergistic actions between line ministries, departments and agencies are put in place for the sustainable conservation and use of species based interventions.
-  At least 5% of known species components protected in SKN through a range of specific interventions.

No significant work/action has been taken in this regard.

**Target 8-** By 2020, the anthropogenic pressures on coral reefs and other vulnerable coastal ecosystems impacted by climate change are minimized. (Aichi Target 10)

*Indicators:*

-  Major sources and activities contributing to the coral reef and coastal ecosystems degradation in SKN identified and assessed.
-  At least two national training workshops on coastal areas management convened.
-  At least two artificial reefs established (one each on St. Kitts and Nevis) to promote marine biodiversity.
-  At least two sites (one each on St. Kitts and Nevis) replanted with mangroves.
-  Zero percent decline in the populations of three endangered marine turtle species (leatherback, hawksbill, green) from 2013 levels.

The GSKN is in the process of declaring its first Marine Protected Area as a conservation measure for marine biodiversity. The candidate site has been indicatively surveyed. Additionally there are ongoing management programmes that seek to protect marine endangered species (primarily the sea turtle). The Department of Maritime Resources works closely with the <sup>6</sup>Sea Turtles Monitoring Network.

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<sup>6</sup> The St. Kitts Sea Turtle Monitoring Network is a nonprofit voluntary organization led by the Ross Veterinary School of Medicine.

**Target 9-** By 2020, at least one marine and one additional terrestrial area will be formally declared and appropriate management plans are operationalized. ( Aichi

*Indicators:*

- At least one marine and one land based area declared protected with the requisite management plan.
- The nature of synergistic action to combine and strengthen national policy and resource management as evidenced by public-private partnerships, institutional capacity adjustments and resource use.
- The number of integrated programmes facilitated to achieve sustainable land management, conservation, governance and the overall sustainable development agenda.

The GSKN has declared the CFR as a protected area with management status. Plans are well on the way to declare the lower coastal section of the Basseterre Valley Aquifer as a Protected Area. Also, Nevis Peak has been effectively declared as a PA based on an administrative order.



Figure 16: Photograph of tour operator at Nevis Peak

**Target 10-** By 2016, St. Kitts and Nevis would have signed on to the Nagoya Protocol on 'Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization'. (Aichi Target 16,19)

*Indicators:*

- 🌿 Development and implementation of access and benefit-sharing legislation or regulatory requirements.
- 🌿 Standards and/guidelines for monitoring of compliance on benefit sharing developed.
- 🌿 Establishment of national access and benefit clearing house mechanism.
- 🌿 At least one national training workshop convened on the Nagoya Protocol.
- 🌿 The nature of synergistic action to combine and strengthen national policy and resource management as evidenced by public-private partnerships, institutional capacity adjustments and resource use.

There is increasing recognition of the need to capitalize on valuable synergies and the streamlining of national policies, programmes and plans with regard to UNCCD, UNCBD, and UNFCCC.

**Target 11-** By 2015, the revised National Biodiversity Strategy and Action Plan (NBSAP) has been completed and adopted as a policy instrument and is being implemented with broad sectoral participation. (Aichi Target 17)

*Indicators:*

- 🌿 NBSAP completed and adopted at the Government of St. Kitts and Nevis as a key environmental policy instrument.
- 🌿 At least two workshops (one each for St. Kitts and Nevis) convened.
- 🌿 The nature of synergistic action to combine and strengthen national policy and resource management as evidenced by public-private partnerships, institutional capacity adjustments and resource use.
- 🌿 Financing mechanism(s) for NBSAP implementation identified and approved.

**Target 12-** By 2015, the financial resources for supporting the revised NBSAP implementation have been identified including direct budgetary allocations. (Aichi Target 20)

*Indicators:*

- 🌿 National Financial Strategy for NBSAP implementation developed.
- 🌿 Budget line for NBSAP implementation included in the budgetary allocations of the Ministry of Sustainable Development in 2015.

### 3.5 CBD and the Millennium Development Goals

The Millennium Development Goals (MDGs) were officially established when the United Nations General Assembly in 2002 affirmed the Millennium Declaration. The MDGs address issues of poverty eradication and sustainable development through a set of targets. A criticism of the MDGs is that they seem to focus on developmental issues without any clear definition of how to implement actions to achieve the goals. For

example, Goal 7 of the MDGs focuses on environmental sustainability without any explicit treatment of the role of biodiversity and natural resources in the development process. Nonetheless, the GSKN is mindful of the role that biodiversity plays in ensuring that the national targets of the MDGs are successfully achieved.

SKN has made commendable strides toward satisfying the MDG's. Table 4 below summarizes the progress that has been made to date.

Millennium Development Goals	Comments
1. Eradicate poverty and hunger	<p>GSKN has implemented the following programmes:</p> <ul style="list-style-type: none"> <li>• Special Land Initiative that distributes land for housing at below market rates.</li> <li>• Supply of affordable housing through the NHC and NLHDC</li> <li>• Establish social safety nets.</li> <li>• Home care services/support for the elderly.</li> <li>• Extension of school meals programme.</li> <li>• Free access to health care for the elderly.</li> <li>• Education and retraining of former sugar workers.</li> <li>• Increasing the minimum wage.</li> <li>• Etc</li> </ul>
2. Achieve universal primary education	<ul style="list-style-type: none"> <li>• SKN has universal access to primary education.</li> </ul>
3. Promote gender equality and empower women	<ul style="list-style-type: none"> <li>• Women in SKN hold top positions in the Public and Private Sector.</li> <li>• Ministry of Social Development and Gender Affairs is providing training and investment opportunities for women in small and medium enterprises and the non-traditional sectors such as construction.</li> </ul>
4. Reduce child mortality	<ul style="list-style-type: none"> <li>• Child mortality in SKN is relatively low. There is open and free access to pre-natal and post-natal care at the community level</li> </ul>
5. Improve maternal health	<ul style="list-style-type: none"> <li>• There is open and free access to pre-natal and post-natal care at the community level</li> </ul>

6. Combat HIV/AIDS, malaria and other diseases	<ul style="list-style-type: none"> <li>• Infection rates, especially mother to child has fallen drastically.</li> <li>• The Pan-Caribbean Initiative has reduced the cost of anti- retroviral medication.</li> <li>• There is a need to address non-communicable diseases such as hypertension and diabetes.</li> </ul>
7. Ensure environmental sustainability	<p>GSKN has undertaken several initiatives:</p> <ul style="list-style-type: none"> <li>• Establishment of a Ministry of Sustainable Development.</li> <li>• Requirement for EIA for development approval.</li> <li>• Tourism development strategy that promotes high-end and ecotourism</li> <li>• Participation on regional and global programmes and plans for action under the MEAs.</li> <li>• Development of a Green Energy Policy.</li> <li>• Declaration of intent to be a Sustainable Island State.</li> <li>• Etc</li> </ul>
8. Develop global partnership for development	<p>SKN is party to the UNFCCC, UNCCD, UNCBD and other protocols that seek to protect the global environment. Several bi-lateral and multilateral arrangements on various thematic areas such energy (Petro Caribe) and agriculture (Republic of China on Taiwan) are in place.</p>

Table 11: Summary of SKN's MGD progress

### 3.6 Lessons Learned, Gaps and Constraints

The legal and institutional framework for sustainable development in SKN is derived from several existing legislations and regulations. However, legislation only reflects or translates into implied policy and good intentions; both of which are usually compromised by lack of enforcement and weak and/or insufficient institutional capacity. For SKN, the absence of key regulations is one of the main factors that hinder effective enforcement.

However, apart from regulations, there are several other tools and strategies that can be employed in support of SKN's overall sustainable development objectives. The need for effective stakeholder involvement through meaningful consultation and participation is of tremendous importance. Additionally, it is useful that the GSKN to continue to work together with the key Non State Actors, especially the economic partners, in the crafting

and implementing sustainable development interventions.

A functional relationship between the Federal Government and the Nevis Island Administration is of extreme importance toward the effective implementation of the NBSAP. This should assist SKN also in maintaining a clear vision for sustainable governance of all sectors involved in the national development process, including formulation, implementation, monitoring and evaluation of programmes.

Additionally, there are a number of issues that have to be addressed in order to effect an improvement in the institutional framework for sustainable development in SKN. These issues have been highlighted in the “Guidelines for Mainstreaming Sustainable Land Management in National Development” prepared as an output of the SLMP. The Guidelines seek to provide direction to users to help them mainstream SLM in national development policies, plans and projects. These same guidelines are generic enough to be applied to other sustainable development initiatives such as BDC.

The Stocktaking Report on Biodiversity which included a review of legislative, regulatory, policy and institutional arrangements indicated that the effective advancement of sustainable development in SKN requires several interventions. These include the following:

1. Development of appropriate regulations and or guidelines to effectively support legislative provisions.
2. Re-design and implementation of clearly articulated policies that govern BDC and overall SLM.
3. Monitoring and evaluation of institutional and capacity development interventions including education, training, advocacy and awareness.
4. Development and implementation of integrated financing and programme strategies to support BDC.

The development of regulations should aim at creating an enabling environment for private sector participation, information and benefits sharing, technological transfer, physical investment, payment for environmental services and resources, and promoting fair, secure and effective sustainable development interventions.

### **3.7 Actions Planned**

The **Action Plan** presented here represents issues to be addressed at the policy level that will lead to the success of the strategies which in turn will realize the national and international targets and the national objectives and goals that have been established. The Action Plan is presented in a simplified tabular with accompanying outputs, resource needs and risk factors.

Objective	Action	Lead Agency	Output	Budget US\$	Risk Factor
1. To ensure that the biological resource of SKN remains rich and diverse	Conduct inventory of BD resources	DPPE, DPPNRE, DOA	Updated list of flora and fauna in SKN	80,000	Finding qualified taxonomist and being able to raise the finances to undertake project.  Regulations to accompany bio safety legislation need to be developed and approved.
	Establish baseline for agreed targets	DPPE, DPPNRE, DOA	Baseline established for all national targets	80,000	
	Strengthen quarantine efforts and enforcement legislation	SCASPA, NASPA, DOA	Quarantine regulations and SOP in place	50,000	
2. To reduce or eliminate the potential risks from the use of biotechnology and its by-products	Coordinate policy on food security, technology	MOA	A national policy on food security that addresses GMOs.	250,000	Not enough knowledge about GMOs penetration into the food supply chain.  Organic agriculture may not yield instant returns.  MJLA may not attach enough significance
	Reduce the conflict between traditional agriculture and organic farming.	MOA	A policy defining organic agriculture is developed		
	Expand public awareness on biosafety issues	DPPE, DPPNRE, MOE	Biosafety regulations developed		
3. To reduce and/or minimize the loss of terrestrial and marine	Amend or create new legislation and regulations to improve BDC	DPPE, MJLA	Revised legislation and regulations developed	25,000	MJLA may not attach enough significance  Policing marine area may be difficult.
	Direct CARDI to		National storage &		

<b>biodiversity</b>	function as a first level genetic pool	MOA	distribution facility for genetic resources developed	150,000	<p>Potential damage from hurricanes.</p> <p>Permitting and revenue collection may become more important than conservation.</p> <p>MOE may not assign enough importance to the network</p> <p>Market forces and the demand for imported produce may slow efforts.</p> <p>Limited human resource for effective PA management.</p>
	Strengthening and enforcing permitting system for harvesting forest resources	DPPE, DPPNRE, DOA, MJLA	A controlled harvesting system for mechanism for marine and forest resources	50,000	
	Establish BD knowledge network within secondary schools using the EduNET.	DPPE, MOE, DPPNRE,	Functional team with access to BD data.	25,000	
	Bring agricultural sector in line with BDC, Climate Change and SLM principles.	DPPE, DOA, DPPNRE,	Reduction in pesticide use. Increase buffer zones	150,000	
	Expand the network of PAs	DPPE, DOA, MJLA, SCNT, DPPNRE,	System Plan for PAs	150,000	
<b>4. To ensure that the basis for development is through</b>	Seek agreement among farmers for the regulating of pesticide use in support of organic	DOA	Agricultural Land Use Plan that identifies & separates organic farming areas from	50,000	Aerial application of pesticides may render organic farming impossible.



<p><b>the sustainable use of terrestrial and marine biological resources</b></p>	<p>farming. Develop economic accounting system for BD resources</p>	<p>DOA, MSD, MOF</p>	<p>traditional agricultural areas. Economic value for specific BD resources established</p>	<p>50,000</p>	<p>Value may be market-based and not reflective of true resource value.</p>
<p><b>5. To ensure the equitable and sustainable distribution of social and economic benefits from the use of terrestrial and marine biological resources</b></p>	<p>Promote partnership between government and the private sector. Training of farmers and fishers in resource management</p>	<p>MSD, MA DPPE, DPPNRE, DOA</p>	<p>Agreement between Government and private land owners to support BDC Training Manual on BDC</p>	<p>20,000 50,000</p>	<p>Private land owners may not want to encumber land with legal agreements. Older farmers and fishers may be reluctant to embrace training.</p>

Table 12: NBSAP Action Plan 2014-2020

### 3.8 Protected Areas Initiatives in SKN

The GSKN does not have adequate legislation, management policies, and institutional capability to support the management of a single protected area or national park, a protected areas conservation system, or a protected areas conservation service or agency. The MSD does not have adequate resources (i.e., money, equipment, number of personnel, skills and competencies, training) to develop, plan and manage a protected areas system or a single land-based protected area, nor does the MOA have the adequate resources to develop, plan and manage a protected areas system or a single marine protected area.

Notwithstanding, there is keen interest among government officials and the public for developing the institutional framework for one national system of land and marine protected areas. Accordingly, while the modalities for funding and PA management are being worked on, several ecological and cultural sites/areas have been identified, designated and/or earmarked for protection. These are briefly described below.

#### 3.8.1 Central Forest Reserve

St. Kitts and Nevis has also established a terrestrial Protected Area which is focused on the protection of its last stand of undisturbed tropical rainforest. This area known as the Central Forest Reserve (CFR) consists of 12,500 acres of the central forested region of the island of St. Kitts. On the island of Nevis a similar area was established known as the Nevis Peak National Park. Construction activity is restricted above the 1000 feet contour which helps to protect the biodiversity in these areas.

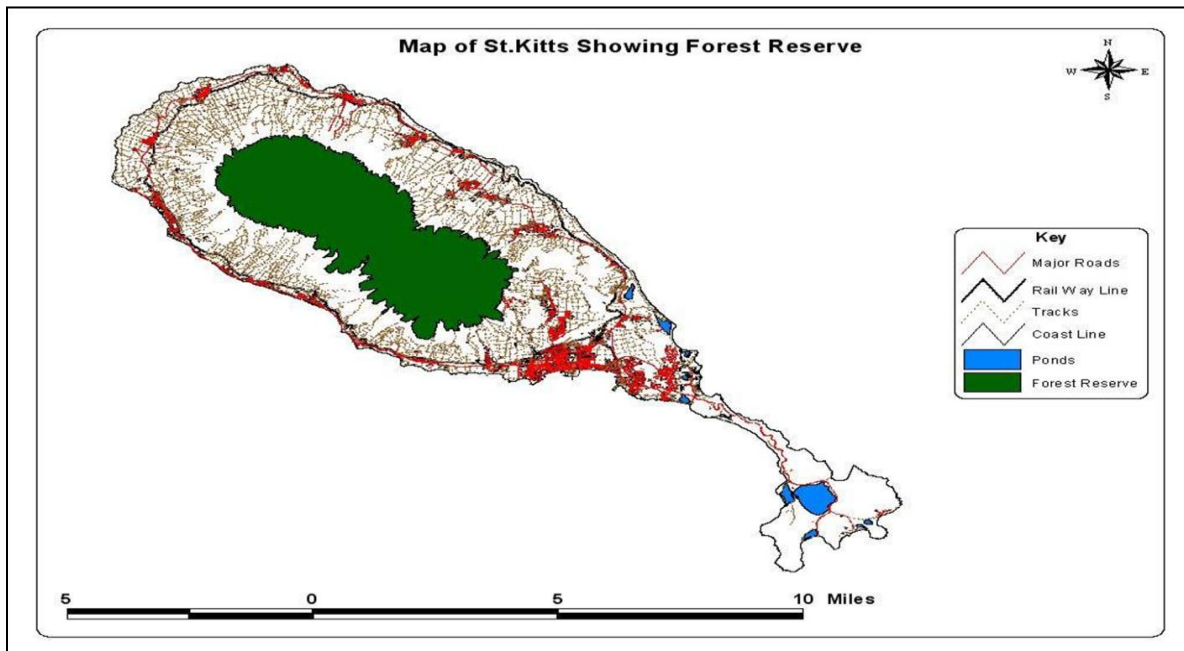


Figure 17: Map showing the CFR (Source: DPPE)

### 3.8.2 St. Mary's Biosphere Reserve

This is an important site in terms of biological diversity, comprising cloud forests, mangroves and coral reefs. The Reserve represents one of the most diverse natural communities on St. Kitts: the marine area and beaches near Canada, Keys and Cayon and the surrounding tropical forests of the mountain ridgeline. It represents one of the first Biosphere Reserves of the small Caribbean island countries and could serve as an example of village participation in preserving the outstanding mosaic of natural and cultural landscape values.

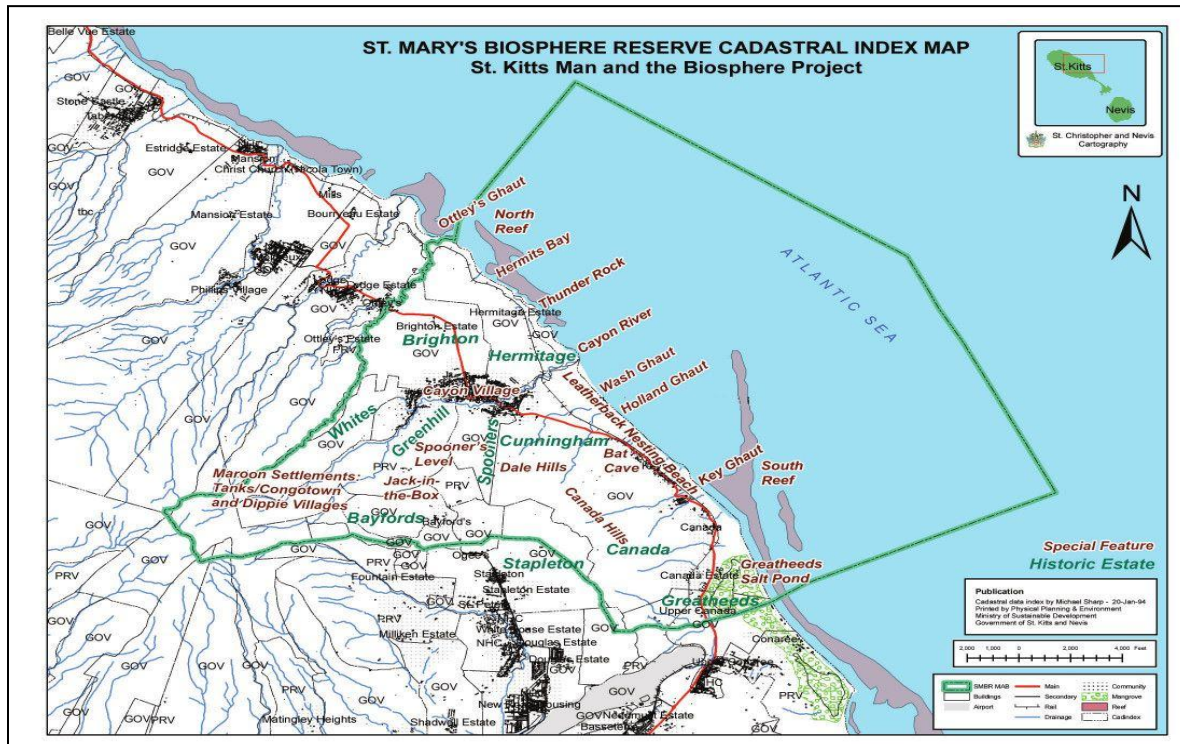


Figure 18: Map showing the St. Mary's Biosphere (Source: DPPE)



Figures 19a&b: Photographs of human interactions within the St. Mary's Biosphere

### Exhibit 3

**Basseterre, St. Kitts, December 01, 2011 (SKNIS):** St. Mary's, St. Kitts has been declared the first biosphere reserve in the Federation making the twin-island eligible for international funding to facilitate employment opportunities for the local community and the development of the area.



At the 36<sup>th</sup> Session of the UNESCO General Conference, in early November 2011, then acting Minister of Education and Information Honourable Patrice Nisbett accepted a certificate that symbolized the designation of St. Mary's as a Man and the Biosphere (MAB) project. This was based on the recommendation given by the International Coordinating Council of UNESCO's Man and the Biosphere Programme which approved the Federation's nomination at its 23<sup>rd</sup> session in Germany last June. St. Mary's was described as "one of the most diverse natural communities on St. Kitts" that includes "the marine area and beaches near Canada, Keys and Cayon and the surrounding tropical forests of the mountain ridgeline." The MAB Council commended St. Kitts and Nevis on a well prepared nomination and said it "recognized the importance of the site in terms of biological diversity ranging from cloud forests to mangroves and coral reefs." It was further noted that St. Mary's "could serve as an example of village participation in preserving the outstanding mosaic of natural and cultural landscape values."

Ms. Gretchen Kalonji, UNESCO Assistant Director-General for Natural Sciences presented the certificate to Minister Nisbett who noted the pride of the Federation, particularly, since St. Mary's is the "first ever MAB site in the English-speaking Caribbean region" and that the designation "marks our strong commitment to the interdisciplinary research agenda and capacity building expertise that will assist the Federation to target the ecological, social and economic dimensions of biodiversity loss and the reduction of this loss."

Similarly, Antonio Maynard, Secretary General of the St. Kitts-Nevis National Commission for UNESCO recognized the potential of the MAB programme to "contribute to promoting innovative approaches to economic development that is socially and culturally appropriate and environmentally sustainable for a small island developing states."

The task of moving the MAB plans forward, with experts in Paris, is left to Dr. David P. Doyle, St. Kitts and Nevis' Permanent Delegate to UNESCO. He drew on the fact that the MAB programme can be used as the basis "for pursuing the promotion of sustainable development based on local community efforts and sound science – a highly tangible illustration of adaptation to climate change."

### 3.8.3 Basseterre Valley National Park

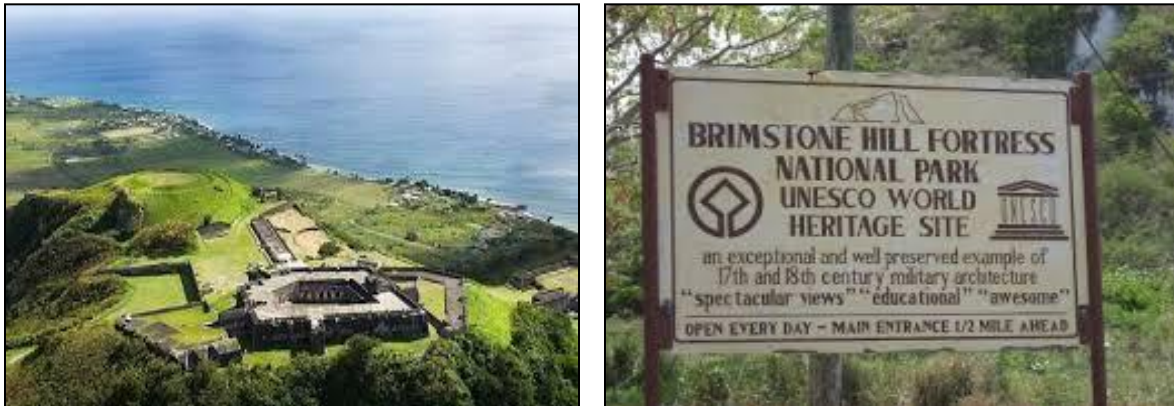
The St. Kitts National Capitol Park is proposed to have a variety of development such as trails, parking lots, train station, and large rainforest arboretum. The most significant facility in cost would be the visitor center complex. The visitor center complex (described in more detail in Section 6) is actually a three-part facility---a 90,000 square foot outdoor botanical plaza with keystone water features and a spray park, a 10,000 square foot visitor center (two-story with administrative offices on second floor), and an outdoor amphitheater. These facilities are still at the concept stage and have not received a professional cost estimate at this time, but a projected capitol development cost is estimated to be \$4-5M US.



Figures 20a&b: Demarcation and elements of the proposed national park

### 3.8.4 Brimstone Hill Fortress National Park

The Brimstone Hill Fortress features tremendous historical, cultural and architectural significance. Designed by British military engineers with the construction, skill, strength and endurance of the African slaves, Brimstone Hill is a symbol of the past, present and future of SKN. Its architectural features, notably the Citadel, are expressions of the different stages European imperialism and the emergence of a distinctive Caribbean culture. Today, Brimstone Hill is a World Heritage Site and a key component of the island's tourism product. Although primary focus is historical and cultural preservation, Brimstone Hill is a sanctuary for many birds and monkeys.



Figures 21a&b: Photographs of the Brimstone Hill Fortress National Park

### 3.8.5 Frigate Bay Salt Pond

The Frigate Salt Pond was declared a protected area in May 2014 and will be rehabilitated for eco-tourism and educational purposes. The declaration of the Frigate Bay Salt Pond and its environs as a protected area is in keeping with the ongoing thrust to make SKN the World's first SIS.

This decision to designate this important ecosystem as a PA is in keeping with the 2006 NPDP of St. Kitts that recommends that the area be zoned and developed for recreational purposes. Additionally, the Protected Areas Systems Plan for SKN recognizes the fact that the Frigate Bay Salt Pond is located in an area that supports a number of bird species and is linked to the breeding of three such species. As a PA, the Frigate Bay Salt Pond and its environs will continue to offer opportunities for use by nationals, residents and visitors without the threat of development in the area.



Figures 22a,b&c: Photographs of the Frigate Bay Salt Pond

## Exhibit 4

### South Frigate Bay Salt Pond: A Hub of Activity For Birds and Humans

MAJOR PLANS DISCUSSED TO MAKE FRIGATE BAY A COMMUNITY ENTERTAINMENT PARK  
BASSETERRE, ST. KITTS, JULY 23RD 2005 (CUOPM) –

Major plans for converting the land around the Salt Pond at Frigate Bay into a community entertainment park and improving the beach so that economic activity can be generated for the local vendors have been outlined by Minister of State for Tourism, Sports and Culture, Sen. the Hon. Ricky Skerritt. He told St. Kitts and Nevis Prime Minister Dr. the Hon. Denzil L. Douglas and other officials who were on a tour of Frigate Bay, that the proposed plans will generate the kind of economic and customer flows to justify having the local vendors on the beach so that they can benefit from the spin off, not only from citizens and residents patronising the area, but also cruise ship passengers and stay over visitors.

“We are also discussing the installation of buoys that will allow yachts and other pleasure craft to moor in Frigate Bay. We intend to construct a tender pier that will service the dinghies from those yachts and pleasure craft. It gives them the means to come ashore and patronise the local vendors all year round and especially during the high season,” said Mr. Skerritt, who praised the workers of the Frigate Bay Development Corporation. “The beach has to be kept clean. The vendors booths have to be in an orderly manner, proper parking will be in designated in areas, the boating enhanced and the economic activity properly lay out and regularized,” said Skerritt.

He said that as part of the enhancement of Frigate Bay, the existing booths will be relocated to provide additional beach space that will allow locals and visitors to enjoy the island’s natural resource. Minister Skerritt disclosed also that use of the road nearest to the beach will be discontinued and traffic will now flow on the main dirt road which now becomes a one way route allowing vehicles to flow in one direction. Cars will now enter just outside of Timothy Beach Hotel and exit on the other end at the road leading from Dolce Cabana.

Chief Physical Planning Officer, Mr. Ellis Hazel said that as life was slowly returning to the 17-acre Salt Pond, plans are also being discussed to develop the area into a recreational fishing ground as well as for non motorised boating such as kayaking and canoeing. He said the intention is to put in the basic infrastructure that would influence a recreational theme park with space for picnicking, kite flying and separate jogging, pedal biking and walking trails. Mr. Hazel said a project, being undertaken by the Frigate Bay Development Corporation and All Dive and Marine Company Ltd, has led to the installation of a mechanism to flush the Salt Pond to ensure its continued rehabilitation.

“There is immediate evidence that the pond is now cleaner and this has led to more birds and an abundance of fish. This could now generate income from activities such as bird watching and pleasure fishing, providing additional income for local vendors,” said All Dive and Marine Company, Russell Rousseau, who added that tarpon, mullet and snook - three recognised game fish - that have begun to breed again in the ponds. Skerritt pointed out that since the effort has begun, more and more local persons have been using the shaded areas for family outdoor activities. “We need to create more public green space. Our own people need that, Sir,” Minister Skerritt told Prime Minister Douglas.

### 3.8.6 Marine Management Areas

The proposed Sandy Point Marine Park is located in the southwest corner of the island of St. Kitts, close to Brimstone Hill National Park and the Sandy Point fishing village. Its development is being planned in close consultation with the local community and various user groups. The Park's size is still being discussed with the different users, but it will protect the two major reefs currently being used by divers and fishermen: Paradise Reef and Anchors Away Reef. Another important reason for the protection of the sites is the existence of numerous historic shipwrecks, some of them closely linked to the island's history. It is considered a unique and world-class dive site. The Government of St. Kitts-Nevis is currently in the process of declaring the Sandy Point Reef as its first marine park as part of a general strategy of marine conservation areas.

A marine park in the South East Peninsula is also under consideration. In the case of Sandy Point, it is part of an overall tourism development plan for the area focusing on both terrestrial and marine attractions. From the tourists' perspective, MPAs are expected to contain one or all of the following characteristics:

- cleanliness of water and beaches
- no fishing
- lots of fish
- healthy reefs
- trained park rangers
- visitor information services
- environmentally-oriented facilities
- use of alternative energy sources and quality of operation
- family facilities
- good underwater visibility

Visitors suggested more detailed information on the sites, enforcement of anchoring prohibitions and facilities for children. Some specific recommendations for each site were also presented.



Figures 23a&b: Proposed Marine Management Areas in SKN



### **3.8.7 Nevis Peak Park (Proposed)**

The Nevis Peak area refers to all the land above the 300 metre contour (1,000 ft). It contains approximately 12.9 square kilometres (5 square miles) of steep and rugged terrain. The peak itself is like the hub of a wheel; the highest and most prominent point on the island. The slopes and associated ghauts radiate outward like spokes of a bicycle wheel radiating toward the coast. The island's circular shape, gives it an almost perfect conical profile.

As one journey from the coast up the slope to the peak, the environment becomes moister as precipitation increases with altitude. As the humidity increases, ferns begin to appear, the forests get taller, and the environment appears lush and verdant. The island has over 101 species and varieties of ferns and fern allies, most of which are limited to slopes above 300 m (1,000 ft), where the environment is more moist and cool.

This too is true for the island's birds. The wetlands of the west and northern coasts provide sanctuary to many aquatic species, many limited to coastal flooded environments. Moving further inland, as the wet forests are approached, many forest species become abundant, and many are in fact limited to these upland moist environments. Birds such as the Brown Trembler (*Cinlocerthia ruficauda*) and the Lesser Antillean Flycatcher (*Myiarchus oberi*) are Lesser Antillean endemics, limited to upland forest environments.

### **3.8.8 Camps Ghaut and Coastal Lagoons and Associated Wetlands (Proposed)**

This coastal wetland system at the mouth of the Camps River is roughly 3.9 square kilometres (1.5 square miles). It consists mainly of mangrove swamp that provides attractive coastal landscapes and habitats that support a rich assemblage of birds and invertebrates. It is also a fish nursery, and provides protection to this section of windward coast from erosion by waves and storm surges. The mangrove also protects the marine environment from sedimentation from upland sources.

Camps River/Ghaut provides a transport corridor from upland areas to the coast as it dissects a variety of environments encountered between the shore and the 300 metre contour. Additionally, this Ghaut system is readily accessible and the springs that feed the water system are well-known and frequently used for recreational purposes.

### **3.8.9 Fountain Ghaut and Butlers (Proposed)**

Fountain Ghaut and Butlers are located on the northeastern side of Nevis, to the east of the more developed Camps River Ghaut. The Fountain Ghaut drains a deeply indented and steep valley, and is also the location of Madden's Spring, which provides portable water for parts of Nevis. Several lower volcanic vents are located on both sides of this valley. These peaks are little explored and the biodiversity is less well known than other parts of the island. On the slopes below

300 metres, evergreen-deciduous forest is replaced by montane, rainforest and palm break. This area provides a dramatic backdrop and is popular among hikers.

### **3.8.10 Endangered Coastal Habitats: (Bath Bogs, Pinneys Pond, Page Pond, Parish Pond, Cades Pond and Nelson’s Spring)**

Located close to major towns and urban areas, and located on the coast where development pressures and natural forces are at work, these wetland systems/habitats have undergone severe alterations over the last 400 years. However, they still provide several important ecological services and are a unique part of Nevisians’ natural heritage that if lost cannot easily be replaced. They contain fresh and brackish water, a mixture of marshes, mudflats, estuarine mangroves, and ghauts which serve as connective circuits between the sea and Nevis Peak.



Figures 24a&b: Photographs of wetlands/coastal habitats on Nevis

### **3.8.11 Round Hill**

Round Hill is a dry coastal volcanic remnant located on the northern slopes of the island. It has some of the best examples of Lesser Antillean Caribbean dry forest on Nevis, especially on the northern, north eastern and north western slopes of the Hill. These areas are critically endangered as much of the steeper upland areas of the hill are already being developed. Protecting the remaining areas of this unique forest community is a priority and should be included in the protection offered by the Park.

## **3.9 NBSAP Stakeholders**

Biodiversity issues are cross cutting and as such require a holistic and programmatic approach toward developing and implementing the NBSAP. While the DPPE in the MSD has featured as the focal agency, several other line ministries and departments together with various NSOs have been instrumental in preparing the 2014-2020 NBSAP. These are outlined in the table below.

<b>Agency</b>	<b>Scope of Responsibility</b>
DPPE & DPPNRE	Regulate land use; set boundaries for PA and associated livelihood activities.
DEPPSIP	Design, implement and manage projects and programmes
DOA	Regulates the use of germplasm; Works to control invasive species
PWD	Design, implement and manages infrastructure development and maintenance.
WSD	Manages the production and distribution of potable water. Undertakes some aspects of watershed management- mainly catchment areas.
NHC & NLHDC	Design, implement and manages affordable housing schemes.
WGDC	Owns, manages, regulate use and conserves biodiversity resources
NSAs (BHFS, SCNT & NHCS)	Owns, manages and conserves biodiversity resources and other national resource interests.
DMR	Manage marine resource, train fishermen, monitor changes in marine resources –fish stocks, sea-grass beds, etc.
MJLA	Develop, enact and enforce Legislations necessary for biodiversity protection.
MOF	Manage revenue generation and expenditure on biodiversity
SKSTMN	Support turtle conservation. Train nationals in conservation approaches
Coast Guard	Police the coast and its resources

Table 13: Summary of key stakeholders for NBSAP process

**CHAPTER 4: The NBSAP Process Monitoring,  
Evaluation & Reporting**

## **Chapter 4: The NBSAP Process, Monitoring and Evaluation**

### **4.0 The NBSAP Implementation Process and Impact**

The approach to implementing the NBSAP in SKN should be adaptive, cyclical and iterative. Monitoring and evaluation should be used as a tool to make changes to the implementation of activities toward improving the outcomes. The process should be reviewed and expanded as the country develops and its needs and priorities change. SKN operates generally on a 5-year socioeconomic planning cycle and as such the same cycle may be adopted for review of the NBSAP. At each implementation step and review stage the stakeholders should be involved in reviewing the previous step and agreeing on the approach for the next step. Successful implementation is based on effective participation of stakeholders in the process.

There are several mechanisms that can be used to promote the implementation of the 2014-2020 NBSAP. These include the following:

- The production of an Annual National Report on policies, activities and plans;
- Coordinating the implementation of national and international elements of the Strategy through a permanent Inter Ministerial National Biodiversity Steering Committee (NBSC) and with support from a National Secretariat for Biodiversity;
- Identification of all needs (capacity, equipment & finance) for effective implementation of the NBSAP;
- Development of an NBSAP implementation plan, which includes the needs (capacity, equipment & finance) for implementation and how they may be met;
- Measures to allow and encourage non-government and private sector participation in the implementation of the Strategy;
- Regular reporting on the indicators identified for each strategic objective;
- Reporting on the status of biodiversity at the country level; and,
- Revision of the NBSAP after an initial implementation phase of two years, with a full review of the NBSAP at least every 5 years.

The NBSAP Implementation Plan should feature the following:

- All actions from the "Action Plan", with priorities, phasing and sequencing of actions.
- Highlight any priorities or timeframes and all resources (capacity, equipment & finances).
- Situational Analysis (initial opportunity to discuss NBSAP implementation)
- NBSAP Action Analysis (setting priorities & time frames)
- NBSAP Needs Analysis (resources needs assessment and analysis)
- Sectoral Needs Analysis (specific needs assessment and analysis based on sector)

- NBSAP Action Prioritization
- NBSAP Implementation
- NBSAP Monitoring & Evaluation
- Indication of what has to happen if actions are not delivered as planned in the NBSAP
- An Initial Guide to the NBSAP that is relevant to all stakeholders

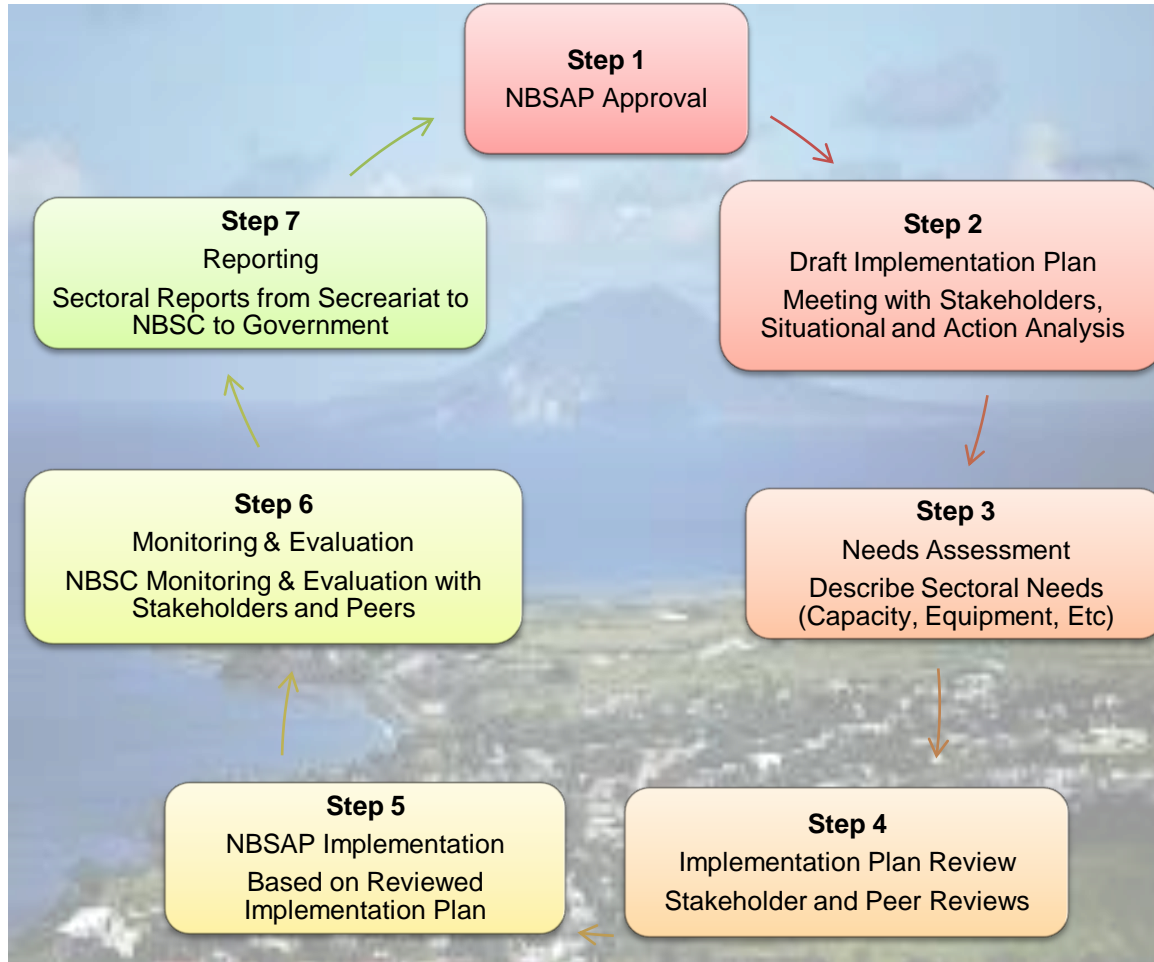


Figure 25: Diagram showing the NBSAP Implementation Cycle

#### 4.1 Challenges in NBSAP Implementation

Despite the lessons learned from the implementation of the 2004 NBSAP, several challenges still may be encountered during the implementation of this version. These include but may not be limited to the following:

- Overlapping responsibilities between line Ministries and department and Laws
- Lack of or limited Donor Coordination

- Undermining Of Institutional Capacity due to staff turnover and low morale
- Resource, Allocation, Mobility & Accountability (plans are not follow, little motivation for group to work hard etc.)
- Channels for Communication (ineffective formal and informal communication channels)
- Human Resource Development (little to no long term planning for Human Resources)

#### **4.1.1 Recommendation**

- Formal and informal lines of communication should be standardized across the ministries to promote better inter and intra ministerial communication, as well as communication between ministries and other organisations.
- Government and donors should implement reforms and lead by example
- Staff should be placed based on their skills and training, as part of a larger institutional HRD program
- Better coordination and links between capacity development activities such as National Capacity Development Project (NCDP) should be made.

#### **4.2 Defining Responsibilities**

Responsibility for implementing the NBSAP should be shared between the National Biodiversity Steering Committee, relevant line Ministries, Departments and Institutions, key NSAs and the Secretariat (DPPE). The NBSC should have overall responsibility for developing the NBSAP and to undertake monitoring and evaluation of activities and outcomes. Relevant public sector agencies, institutions and NSAs are responsible for activities and actions that specific to their own operations. The focal agency or Secretariat is required to provide support to the NBSC and key stakeholders.

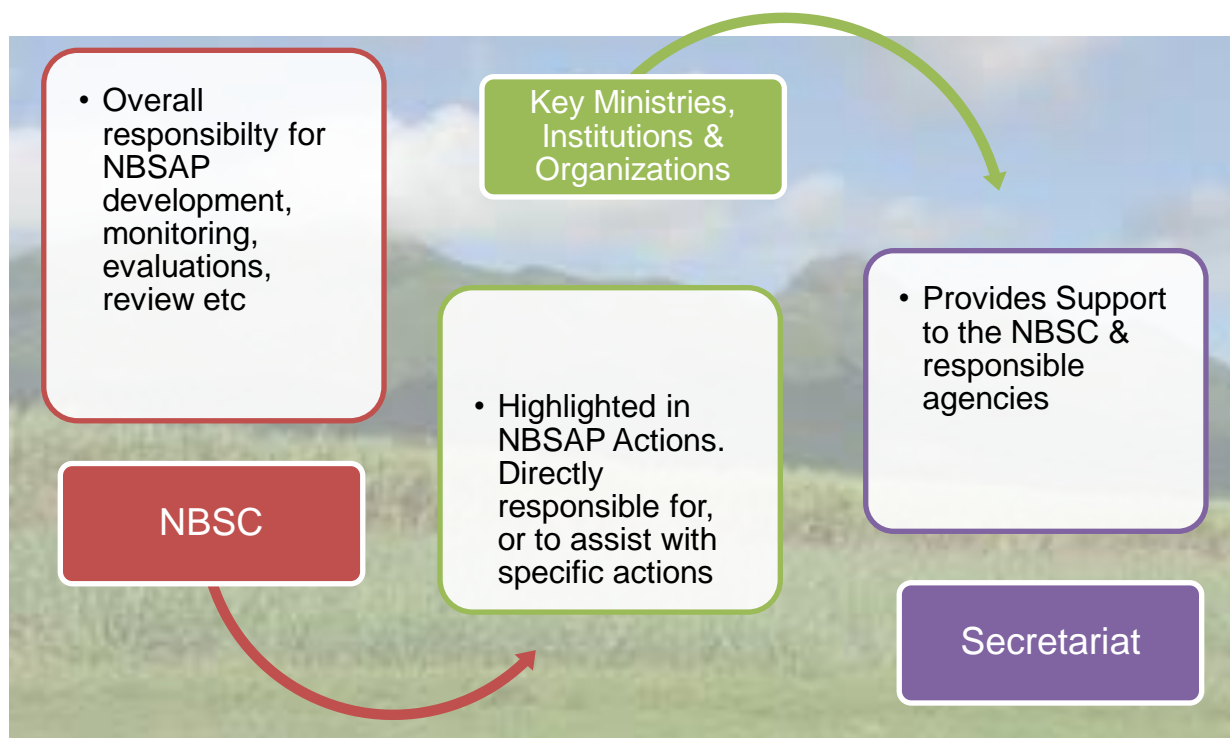


Figure 26: Diagram showing NBSAP implementation responsibility

### 4.3 Monitoring and Evaluation

Following the progress and achievements from the implementation of the NBSAP is critical toward determining its true value as a national development tool. Decision making on the treatment of gaps and how to improve on the outcomes so that they may be more beneficial to the community; who should do what and by what time; how much funds should be programmed; and the overall effective management of the Action Plan, in part, would determine the success of the 2014-2020 NBSAP.

Effective monitoring and evaluation should provide answers to the following:

1. Are the targets outlined in the NBSAP meaningful and realistic?
2. Have stakeholders really bought into the process and take ownership of the action plan?
3. Has the GSKN provided the technical, financial and political support anticipated?

In addition to answering these questions, the tracking process should take into consideration some baselines from which to measure progress. The agreed baseline indicators should be measurable and simple enough so that all stakeholders can understand and support their use.

The preparation of a logical framework consisting of objectives, indicators, means of verification and assumptions and risks should be part of the project planning



exercise. Preparing these frameworks for each set of activities under the Action Plan will enable the NBSC to assess outcomes and identify lessons to be learned. However, for other elements of the Action Plan, such as the development of and or revision of a legal and administrative framework, conducting scientific research or capacity building; the application of such logical frameworks may be practical or appropriate. Accordingly, it will be prudent for the NBSC to identify appropriate baseline data and indicators of progress in order to be able to evaluate the outcomes of activities carried out and their effectiveness in meeting their objectives.

#### **4.4 Reporting**

Implementing this NBSAP will require the sustained effort of all sections of society. Specific responsibilities are stated in the case of each strategy/action in the preceding chapter. Nevertheless, there is a need for an overall implementation mechanism, which could help to facilitate and coordinate the actions being taken. By necessity, this implementation mechanism needs to be rooted in ground-level institutions and processes of participatory decision-making.

National Reports are an important communication tool for increasing public awareness, conveying the urgency of the situation, and for taking action and mobilizing support from all sectors of society. Also, they are very useful to inter-governmental agencies, NGOs and scientists. The National Report on the implementation of the Convention on Biological Diversity in the Federation of St. Christopher (St. Kitts) and Nevis will provide a valuable source of information for the mid-term review of progress towards the implementation of the Strategic Plan for Biodiversity 2014-2020. The Report also examines the progress that the GSKN has made towards the National Biodiversity Targets and the Mainstreaming of Biodiversity Conservation into National Development.

As a communication tool, the Report will provide the GSKN with strategic policy direction in relation to BDC and wider environmental management. At the regional and international levels, the information from the Report will be essential to the successes of the Strategic Plan and the Convention as a mid-term review and decisions to be made on that basis will boost CBD implementation.

## Appendix 1

### Acronyms

ABS	Access and Benefit Sharing
BD	Biological Diversity
BDC:	Biological Diversity Conservation
BPOA:	Barbados Programme of Action
CITES	Convention on International Trade in Endangered Species
CFR:	Central Forest Range
DMR:	Department of Maritime Affairs
DOA:	Department of Agriculture
DOLS:	Department of Lands and Surveys
DPPE:	Department of Physical Planning and the Environment
DPPNRE:	Department of Physical Planning, Natural Resources & Environment
EIA:	Environmental Impact Assessment
EU:	European Union
GEF:	Global Environment Facility
GSKN:	Government of St. Kitts and Nevis
IWCAM:	Integrated Watershed and Coastal Areas Management (Project)
MSI:	Mauritius Strategy for Implementation
MEA:	Multilateral Environmental Agreement
MSD:	Ministry of Sustainable Development
NAS:	National Adaptation Strategy
NAP:	National Action Plan
NBSAP	National Biodiversity Strategy and Action Plan
NGO	Non-Government Organization
NSA	Non State Actors
PA	Protected Areas
NCEPA:	National Conservation and Environmental Protection Act
NCSA:	National Capacity Self Assessment
NEMS:	National Environmental Management Strategy and Action Plan
NHC:	National Housing Corporation
NHLDC:	Nevis Housing and Land Development Corporation
NPDP:	National Physical Development Plan
OECS:	Organisation of Eastern Caribbean States
OPAAL:	OECS Parks and Associated and Associated Livelihoods Project
PEP:	People Employment Programme
PWD:	Public Works Department
SGD:	St. Georges Declaration
SLMP:	Sustainable Land Management Project (Project)
SWMC:	Solid Waste Management Corporation
SCNT:	St. Christopher National Trust
SEA:	Strategic Environmental Assessment
SEAF:	Small Enterprise Assistance Fund
SEED:	Small Entrepreneur Enterprise Development

SIDS: Small Island Developing States  
SIS: Sustainable Island State  
SKN: St. Kitts and Nevis  
SKSTMN: St. Kitts Sea Turtle Monitoring Network  
SLM: Sustainable Land Management  
SLMP: Sustainable Land Management Project  
UNCBD: United Nations Convention on Biological Diversity  
UNCCD: United Nations Convention to Combat Desertification  
UNDP: United Nations Development Programme  
UNFCCC: United Nations Framework Convention on Climate Change  
WGDC: White Gate Development Corporation

