

Executive Summary

St. Kitts and Nevis is a twin island country with a total landmass of just 269 square kilometers, and is part of the Eastern Caribbean chain of islands. The island of St. Kitts, the larger of the two, is 176 square kilometers in size and is located at latitude 17.3⁰ N, and longitude 62.8⁰ W. Nevis is 93 square kilometers and located at latitude 17⁰ 10' N, longitude 62⁰ 35' W, approximately 3 km south-east of St. Kitts. This country has a tropical and maritime climate that is heavily influenced by northeast trade winds, an average temperature of some 27 degrees Celsius, and annual average rainfall of 801.4 mm.

The island of St. Kitts generally rises from the coastline toward its mountain cluster. Three volcanic centers, their associated glacial deposits, and a chain of more maturely reduced residual hills linked by recent beach and saline deposits characterize the topography of the central northwest range.

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. Mount Lily (Windy Hill) to the north climbs to 309 meters with Saddle Hill in the south rising to 381 meters. The other subsidiary peak of note is Butlers Mountain (578 meters) which thickens the range in the central east of the island.

The island of 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. The islands are the summits of a submerged mountain range which forms the eastern boundary of what is known as the Caribbean Tectonic Plate. St. Kitts is oriented northwest-southeast, about 80 km long and 16 km wide. The entire island archipelago is geologically young, having begun to form probably less than 50 million years ago, during the Miocene era. Volcanic activity occurred along the ridges of this arc during the Miocene era and has continued since.

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, these prevent any single model of the island's geological evolution. The geology of Nevis can be subdivided into four informal units: Volcanic of the eruptive centers, volcanogenic rocks - pyroclastics and lahars, fluvial and lacustrine deposits, and raised beaches.

The soils of St. Kitts have been studied and described in detail by Lang and Carroll (1966) and modified by Granger (1995). Edaphic conditions have been greatly influenced by the island's volcanic origins. Soils of a given type are in most cases a product of the extent to which a given volcanic parent material has weathered. Generally, the soils of St. Kitts can be placed into groups and types. According to Granger (1995), the soils are generally quite young pedogenically showing very little weathering and profile development. Whereas the most developed soils are found on

the steep wet upper slopes, the soils on the gentler, but drier, lower slopes show very little profile development.

In the first soil survey of Nevis conducted by Hardy and Rodrigues, it was noted then that Nevis' soils were generally impoverished with respect to potash and that they differ significantly from those on St. Kitts (Hardy and Rodrigues, 1947). The soil type in St. Kitts is predominantly a sandy loam while the Nevis soil is clayey.

The climate of St. Kitts and Nevis is classified as tropical marine. Generally, steady northeast trade winds and tropical oceanic cyclonic movements influence it. Furthermore, the islands enjoy warm even temperatures with a mean of approximately 27⁰ Celsius. Seasonal and diurnal variations in temperature are small.

Rainfall is mainly orographic and increases in amount and frequency with the altitude. Except for the South East Peninsula (SEP) which is very dry, mean annual rainfall ranges from about 16 cm in the coastal areas, to about 60 cm in the central mountain ranges. The situation at the SEP is quite different, with mean annual precipitation varying from 15.6 cm on the peaks to 13.6 cm at Cockleshell Bay.

While some Caribbean countries such as Dominica have undisturbed and extensive forests, the present vegetation of St. Kitts and Nevis provides evidence of great disturbance by human activity. In the lowland areas intensive land use has removed all vestiges of the natural vegetation. Although the mountain peaks are still covered by forest, they do not have virgin forest characteristics. Lower slopes are covered by secondary growth on abandoned farms. The vegetation, which comprises about 243 species of trees (Beard, 1946), supports wildlife.

The most significant factor that influences vegetation distribution in St. Kitts and Nevis and other small islands is the distribution of rainfall. Islands with several peaks cause moisture laden air to rise as it moves in a westerly direction. As a result, when the moisture cools and precipitates rain, most of it occurs consistently on the upper slopes and toward the leeward side of the island. Other factors that contribute to the variations in microclimates and the change in vegetation distribution includes altitude, temperature, humidity, saltiness of the air, the intensity and incidence of sunshine, wind exposure, and soil types. These factors in totality significantly influence the bio-diversity of the island.

Water drains in a radial pattern from the central mountain range in St. Kitts to the ocean, interrupted only by the minor volcanic cones at Brimstone Hill, Ottley's mountain, Sandy Point Hill and Monkey Hill. Most of the water channels are deep and steep-sided, and are usually dry along all or most of their stretches. Only the relatively large Wingfield and Cayon rivers flow almost to the sea for much of the wettest part of the year.

Water drains in a radial pattern from Nevis Peak to the ocean through ten (10) major drainage basins and is interrupted only by the smaller volcanic cones of Hurricane, Saddle and Round Hills. These basins comprise ephemeral ghauts that may consist of up to three stream orders namely Camps River, Barns Ghaut and Kitt Ghaut. In some basins water is channelled from 457 cm above sea level through relatively straight ghauts with steep but not extended sides. The steep sloping sides of the ghauts favour

rapid run-off that causes a quick flow of water to the island's coastal areas. This is coupled with the fact that the rain forest is very small and readily exposes any run-off to open evaporation, thereby reducing the amount of available recharge. In addition, the gently sloping peripheral/coastal section of Nevis is not extensive enough to allow for substantial recharge. Almost all of the ghauts are ephemeral except the Bath Stream, which flows year-round to the sea from springs less than 1.6 km inland. Most of the other ghauts flow intermittently, about 3 to 4 times annually, but more excessively after rainfall.

Most of the country's major watersheds are concentrated in the central area of the islands. The area's forest resources provide a reliable rainwater storage service. Rainwater is intercepted by the forest canopy and then absorbed by the soil and root systems.

The coastal and marine ecosystem in St. Kitts includes coral reefs, sea grass beds, mangroves, salt ponds, diverse aquatic life, and the coastline. As an island territory, St. Kitts has a fragile 78.1-km long coastline in need of special protective measures for ecological, environmental and economic reasons. It consists of 34.7 km cliff (rocks), 10.8 km cobble, 6.3 km boulders and rocks, 13.1 km black volcanic sand, and 13.2 km golden sand.

Processes of erosion and accretion are occurring at different points on the coast. This is a result of natural factors such as hurricanes, and manmade causes such as beach sand mining, construction too close to the shore, and pollution. While law strictly prohibits large-scale removal of beach sand, it is still being practiced illegally in some places.

Coastal erosion is a serious problem in view of the fact that the beaches represent a very important resource to the island. Not only are they heavily used for local recreation, but they are also a vital part of the tourism product. Additionally, they protect coastal infrastructure during storms and periods of high wave activity.

Coral reefs and sea grass habitats are generally found along the southwest coast between Nag's Head and the southern end of Basseterre Bay, on the northwest coast between Sandy Point and Dieppe Bay, on the east coast between Conaree and North Friar's Bay, and on the southeast coast adjacent to the Narrows. Most coral habitats are relatively small with less species diversity than is typical of similar habitats in the Eastern Caribbean. Deep reefs with species diversity are found off Sandy Point and Guinea Point, and in the Narrows. Sea grass beds, dominated by turtle grass and manatee grass species are mostly common in the SEP of the island.

Mangroves were once abundant. This is no longer the case. The main and most extensive mangrove habitat in St. Kitts occurs in the SEP. Hawksbill and green sea turtles are found around the entire coast. In addition, a large number of resident and migratory birds depend on the mangrove and pond communities for feeding and nesting. Thus extensive effort is needed to conserve what remains and arrest the decline of these important habitats.

The St. Kitts Sugar Manufacturing Corporation (SSMC) and the Public Works Department, with very limited resources, have been putting measures in place to arrest

the severe land degradation along College ghaut (ravine). SSMC's interest in this activity is influenced by the fact that sugarcane fields in close proximity are progressively undermined by severe erosion. The Public Works Department recognizes that where this ghaut passes suffers severe land degradation in relatively highly populated areas. There is a real threat to human life.

Many other ghauts on the island have severe erosion problems almost with similar intensity to that of College ghaut with the exception, however, that they may not be passing through highly populated areas. Degradation along these ghauts undermines arable farmlands, mainly sugar lands. Also excessive silt from erosion is deposited into the sea, contributing to negative effects on the sea grass beds, coral reefs and other spawning grounds in the marine environs.

Most of the arable lands in St. Kitts are under sugarcane cultivation. This crop which is a member of the grass family, when managed efficiently, is very useful in preventing the erosion of sandy loam soils, the type that is predominant in St. Kitts.

Arable lands in the upper land areas of the island where sugarcane cultivation takes place suffer erosion where there is absence of sound contouring principles and terracing.

Unscientific as well as illicit farming occurs in some sections of the forest thus predisposing the land to degradation. Many areas in the forest where there are landslides result from this type of farming.

Mining of sand for building purposes has undermined many beaches. In the process, sand dunes, which are provided by nature for protection of beaches against tidal surges, are destroyed, and this process destroys the natural nesting habitats of turtles.

The island main road in St. Kitts traverses part of the coastline of Half Way Tree Village. That coastline is being eroded and so too is that part of the main road which traverses it. A bypass road may be necessary to protect road users.

A World Bank project is underway for the Old Road Bay area. It will analyze the condition of the bay area and determine whether the use of organic nets on the slopes will help protect the road. Huge rocks do fall down the shore occasionally and pose severe risks to road users.

Several factors contribute to severe land degradation on the peninsula. Massive deforestation in the past first predisposed the area. The land is volcanic in nature several slopes have been left unstable after a major road was cut through the hills. The rocks on the slopes pose real danger to road users as they have not been cut back to their natural line.

There is an abundance of monkeys. In addition to being a health hazard, they are pests that destroy farmers' crops. They ravage sugarcane grown for export and destroy vegetation in sensitive areas thus contributing to predisposing areas to land degradation.

Land degradation is prevalent in low lying areas, especially Bath Village and Indian Castle in Nevis which receive the lowest amounts of rainfall and also suffer through extensive livestock grazing by small ruminants and a growing donkey population. As a result, there is a lack of vegetation, which leads to large tracts of sloping land that will be prone to erosion, and abundant levels of sea blast, leaving salt on land.

The stakeholders are the farmers, the St. Kitts Sugar Manufacturing Corporation, the fisheries department, the Government of St. Kitts and Nevis (GOSKN), land developers, the general public and help is sought from the Legal department.

The NGO community shows concern for environmental issues. It is comprised of the Nevis Historical and Conservation Society, the St. Kitts Heritage Society, the Leo/Lions Club, the Jaycees, Rotary Club, Scouts, Boys Brigades, Girls Guides, Optimist Club, Anglican Young Peoples Association (AYPA), Pathfinders Association, Business and Professional Women (BPW), and the local media.

St. Kitts and Nevis are also members of the Caribbean Conservation Association (CCA), a regional non-profit Organization dedicated to promoting policies and practices which contribute to conservation, protection and wise use of natural resources. The Caribbean Natural Resources Institute (CANARI), formerly the Eastern Caribbean Natural Area Management Programme (ECNAMP) also supports St. Kitts and Nevis in its goal to strengthen local capacity to manage the living resources critical to development in the Caribbean region.

The National Environmental Action Plan (NEAP) analyses the environmental issues affecting St. Kitts and Nevis in a comprehensive, multi-sectoral framework and sets forth a long-term strategy for maintaining the country's natural environment, the health and safety of its population, and its cultural heritage as economic development occurs. In proposing practical measures to forestall or remedy environmental problems, the analysis considers cross-sectoral links that affect renewable and non-renewable resources, as well as human activity. The objective is to set forth a long term national environmental policy and investment strategy based on comprehensive environmental analysis.

Like other small OECS countries, St. Kitts and Nevis faces substantial environmental challenges with limited managerial and technical resources to meet them. Hence, the national environmental priorities have to be carefully determined and the available resources, including those that can be marshaled through aid, used to maximum advantage.

The government also intends to build on the existing legal foundation to complete the legal and regulatory framework for environmental management through the promulgation of implementing regulations for existing legislation, the adoption of legislation requiring environmental impact assessments for all major public and private sector investment, and the revision of major laws such as the Public Health Act.

Actions to be taken to develop institutional capacity include (a) strengthening the technical capacity and increasing the financial resources of the National Conservation

Commission; (b) developing the environmental role of the Physical Planning Unit; and (c) improving the capacity of all Ministries with environmental responsibilities.

One of the major problems being faced is that there are not sufficient or updated laws or regulations in existence that deal with combating desertification. And for the laws that do apply, there is a lack of enforcement.

The National Conservation and Environmental Protection Act (NCEPA) 1987 provides some protection. It has been discovered that there is a severe shortage of legal draft personnel to prepare to prepare regulations for making the Act more useful. Here the National Conservation Commission, which is provided for under the NCEPA Act needs to be strengthened.

The Federation of St. Kitts and Nevis is not yet in a position to present to the Conference of Parties a fully developed National Action Programme. Our government will take a planned approach, however. And it will be a fully integrated approach, along the lines set out by the Convention.