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**ST. KITTS AND NEVIS**

**NATIONAL ENVIRONMENTAL  
ACTION PLAN**

**April 1994**

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## ***Acronyms and Abbreviations***

CARICOM	-	Caribbean Community
CDB	-	Caribbean Development Bank
CEHI	-	Caribbean Environmental Health Institute
CEP	-	Country Environmental Profile
CIDA	-	Canadian International Development Agency
EC\$	-	Eastern Caribbean Dollar
EIA	-	Environmental Impact Assessment
EIB	-	European Investment Bank
FAO	-	Food and Agricultural Organization (of the United Nations)
FY	-	Fiscal Year
GDP	-	Gross Domestic Product
GNP	-	Gross National Product
GOSKN	-	Government of St. Kitts and Nevis
ICZM	-	Integrated Coastal Zone Management
IDA	-	International Development Association
IMF	-	International Monetary Fund
LUMP	-	Land Use Management Plan
MARPOL 73/78	-	International Marine Pollution Convention
MOF	-	Ministry of Finance
MOA	-	Ministry of Agriculture, Land, Housing and Development
MTESP	-	Medium-Term Economic Strategy Paper
NCC	-	National Conservation Commission
NCEPA	-	National Conservation and Environmental Protection Act
NEAP	-	National Environmental Action Plan
OAS	-	Organisation of American States
NGO	-	Non-Governmental Organization
OECS	-	Organization of Eastern Caribbean States
PSIP	-	Public Sector Investment Program
SEP	-	Southeast Peninsula of St. Kitts
TFAP	-	Tropical Forestry Action Plan
UN	-	United Nations
US\$	-	American Dollar
UNDP	-	United Nations Development Programme
USAID	-	United States Agency for International Development

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## ***Executive Summary***

*Many of the outside world may consider the Federation of St. Kitts and Nevis, blessed as it is with a relatively small population and liberal amounts of sun, sea and sand, as a country not plagued by the usual problems that afflict other developing countries. While this is true to a certain extent, there are in fact a number of serious issues affecting the day to day lives of the people.*

*The small size of the population of St. Kitts and Nevis is a serious constraint. The present population of 41,600 has been reduced from 44,000 in 1980. This decline is in part a result of outward migration. Such migration results in the loss of high level expertise and places increasing pressure on existing capacity. It also places a burden on training institutions and necessitates the importation of foreign expertise which often proves costly to the country.*

*St. Kitts and Nevis, like other OECS member states, because of its small size, fragile ecosystems and vulnerability to natural hazards face serious constraints to the optimal development of its human and natural resources. The limited domestic market and the concomitant limited opportunities for economies of scale are also derived from the country's size. Moreover, the dependence on a limited range of products, sugar and tourism, subjects the country to the vulnerability of fluctuations in the international market. Nevertheless, the economy has, in the last decade or so, registered an impressive annual growth due largely to increased receipts from tourism and government investment in infrastructure.*

*The development of human beings is acknowledged as the heart of any programme of sustainable development. The building of human potential and capacity to enhance the quality of life is therefore given special attention. Regional and international support is particularly required to improve education and training programmes; promote improvement of environmental and conservation management; devise appropriate programmes for participation of the private sector, NGOs, and the public in the identification, formulation and implementation of sustainable development activities; and obtain access to and the transfer of appropriate technology.*

*Institutional development is a prerequisite for proper integrated planning and management of the country's limited resources. It is, therefore, necessary to upgrade the legal and administrative institutions, especially with a view to improving implementation, monitoring and evaluation of environmental policies and programmes. Financial and technical assistance for institutional strengthening is also required.*

*Solid waste management, the single most serious problem facing the country, is a particularly difficult area. The national solid waste plan identifies activities for financial support to improve collection and transportation of solid waste in terms of construction of port facilities to collect*

waste from ships and the provision of proper equipment.

The fragile ecosystems of the country, particularly coastal and marine resources as well as watersheds, create a special need for protection of natural resources. With the country's emphasis on tourism, undue waste disposal, oil spills and deforestation could threaten the livelihood of the whole population. The dependence of the country on coastal and marine resources for food and income makes it extremely vital that appropriate national measures be taken in concert with regional and international support. Such support is required in the form of technical and financial assistance to develop and implement a coastal zone management plan and fisheries policy.

Natural disasters, especially as a result of hurricanes, are an ever present threat to the country. The extensive damage from Hurricane Hugo and the devastating impact on the economy has provided the impetus for GOSKN to improve disaster preparedness and early warning systems. Such disasters place extreme stress on the country's resources in terms of the capacity to recover quickly. Technical and financial support from the international community will obviously assist the country's disaster management efforts.

Despite the constraints of technical know-how, manpower and finances, GOSKN has instituted appropriate policy legislation, and regulatory and institutional measures for sound environmental planning and management. Foremost is the recognition that the environment and development are inter-linked and that one mutually supports the other. This has led to the location of environmental planning responsibilities within the Physical Planning Unit since 1990.

While the NEAP identifies initiatives at the national level to promote sustainable development, there are some priority areas for which regional and international support is critically required. Assistance in the areas of human resource development, institutional development, solid waste management, coastal zone management and disaster management is especially vital, if national strategies are to be effectively implemented. Regional and international assistance in these critical areas will certainly provide much needed support for the national activities identified to advance the cause of sustainable development.

Problems of sustainability, derived in part from the size of St. Kitts and Nevis, suggest a high level of pressure on the environment, and human and financial resources. The situation, therefore, calls for an integrated, strategic approach to generate an increased rate of economic activity in order to guarantee the provision of essential needs and improve the quality of life of the population.

## *Preface*

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.

Accordingly, the NEAP examines the quality of the environment; biodiversity; and the use of natural resources, including air, land, water, forest, and wildlife. It assesses how economic and institutional issues associated with the management of these resources are affecting development, and human health and well-being. On the basis of these analyses, the NEAP sets forth priorities and related policy recommendations in the following areas: (a) public awareness of environmental issues; (b) a national strategy for environmental protection; (c) specific legislative actions, programmes, and investment projects to address priority problems; (d) the management of natural resources, particularly endangered species and habitats; (e) the reversal of environmental degradation; and (f) protection of the public from environmental pollution and natural hazards.

Much work has already been done on the environmental problems faced by the country, and the NEAP draws heavily from that work -- including the Country Environmental Profile (CEP), the Tropical Forestry Action Plan (TFAP), and the Five Year Development Plan. A Government team, assisted by consultants financed by the World Bank, provided the initial draft of the NEAP. The NEAP was then circulated for review and comment to a number of Government agencies, private sector representatives, and non-governmental organizations (NGOs).

The document is a blueprint for addressing issues of development, planning and environmental management. Through the adoption of the NEAP, GOSKN shows that it is committed to the concept of sustainable development and is seeking, as a matter of priority, appropriate policies and mechanisms for translating word into action. Accordingly, GOSKN will use this NEAP to incorporate environmental policies and actions into its development strategy for the next ten years, and will include the investment requirements identified in its public sector investment program (PSIP) and in its requests for external assistance. GOSKN intends that its macroeconomic and sector policies would reflect the findings of both the NEAP and the Medium Term Economic Strategy Paper (MTESP) in order to ensure sustainable development of its resources. Finally, GOSKN considers the NEAP to be a rolling environmental plan that will

require constant updating as circumstances change, and GOSKN will involve the general public, private sector interests and NGOs in that process.

## ***1: Background to St. Kitts and Nevis***

St. Kitts and Nevis is a two-island country, 269 sq. km in size, in the Eastern Caribbean. The islands have a relatively small population, with approximately 41,600 inhabitants (130 people per sq. km) in 1992. Independent since 1983, the country is a member of the organisation of Eastern Caribbean States (OECS), the Caribbean Community (CARICOM), the Organisation of American States (OAS) and the United Nations (UN). The islands share similar topographical and morphological characteristics with their OECS neighbours but are doubly endowed with an adequate supply of ground water and ample land suitable for agriculture.

St. Kitts and Nevis are small tropical islands, 176 and 93 sq. km. in size respectively, which have a tropical and maritime climate heavily influenced by northeast trade winds, an average temperature of 27 degrees Celsius, and annual average rainfall of 801.4 mm.

St. Kitts is characterised physically by a central mountain range dominated by Mount Liamuiga (1,176 m) surrounded by cane-covered slopes, dissected by ghauts, reaching to the sea. The southern branch of the range encloses a spacious fertile valley where the capital of Basseterre is located. Golden sandy beaches line the South-east Peninsula (SEP), although most of the island's beaches are of grey to brown volcanic sand.

The island of Nevis is of volcanic origin and is dominated by a central peak, Nevis Peak (985 m), which is usually covered by clouds. Deep ghauts cut into the slopes from below the peak to the sea with no regular stream flow except during heavy rains. There are no bays, inlets or cays of significance, but long stretches of golden, sandy beaches border much of the island. Growth cover is extensive but not dense, and many wet-lands occur along the leeward coast.

### **A. MAJOR ENVIRONMENTAL ISSUES**

St. Kitts and Nevis is blessed with a rich natural resource base, ranging from coral reefs and golden sandy beaches to wet-lands and tropical rain forests. Whilst the islands have been spared some of the threats to these resources that their OECS neighbours face, they do share certain fundamental environmental concerns with the other OECS countries, including problems with solid and liquid waste management, beach erosion, and loss of wildlife habitat. Waste management, in particular, presents a major problem for the country. Current solid waste disposal practices need improving, and the disposal of liquid wastes, both sewage and industrial effluent, continues to result in surface water contamination. Water pollution threatens not only the local population but also the important tourism sector of the economy. Also, beach erosion, both natural and man-made, poses a threat to one of the islands' premier natural attractions. Finally, the increasing loss of wildlife habitats, ghaut erosion, and sand mining are all serious

considerations. Whilst the natural habitat of the African Green Vervet monkey may be jeopardised by agricultural expansion and continued use of the forest for fuel-wood, due consideration has to be given to the control of the population of this specie since over-population generally threaten the livelihood of farmers in both St. Kitts and Nevis.

Given the fragile nature of the island ecosystems, the finite land area and limited absorptive capacity, population, income distribution and sustainable development issues will be addressed by GOSKN. With increasing return migration, a population policy is being formulated to ensure the long-term sustainable development of the country. This population policy will take into consideration the fact that though St. Kitts and Nevis has shown negative population growth for the past ten years, there has been an increase in return migration of nationals in more recent years.

## **B. ECONOMIC PERFORMANCE AND DEVELOPMENT PROSPECTS**

St. Kitts and Nevis have no known mineral resources; agriculture has traditionally been the main activity with sugar-cane as the chief cash crop. However, in the last few years, tourism has expanded to become the major foreign exchange earner for the country. Light manufacturing also contributes significantly to economic development. The economy of St. Kitts and Nevis has continued on a path of steady growth for the past decade. In recent times, the economy has demonstrated a remarkable degree of resilience in spite of the impacts of Hurricane Hugo, increase oil prices arising from the Gulf War and sluggish economic growth worldwide. In 1992, the economy recorded a positive growth rate of 3.56 %, which is below the very high average of 6% achieved over the last decade. Moreover, the GNP per capita has almost tripled in the last decade, reaching US \$3,990 in 1992.

Tourism grew rapidly during the 1980s. Today, the prospects for continued growth in tourism appears quite favourable. Tourist arrivals doubled between 1980 and 1985 and have increased at about 6% per year since 1986. In 1992, the number of stay-over visitors to St. Kitts and Nevis increased by 6.7% to 88,624, following even stronger growth of 14% in the previous year. Similarly, the number of cruise ship visitors increased by an impressive 40%, following an even more impressive increase of 55.7% in the previous year. Tourism and related services accounted for 10% of GDP in 1992. The industry attracts tourists from a relatively wide international market, with more than 50% of tourist arrivals coming from the United States and Canada. Tourist expenditures have grown rapidly over the past decade, amounting to an estimated US\$ 51 million in 1992.

GOSKN will continue to invest heavily in tourism-related infrastructure, and to generally enhance the tourism product. The generous package of tax incentives also encourages entrepreneurs to invest in new hotel and tourism-related facilities and to upgrade existing facilities. The resulting increase in high quality hotel rooms will not only boost the tourism product but will also allow St. Kitts and Nevis to attract additional airline flights into the country.

Agriculture continues to be one of the major contributors to economic growth in St. Kitts and Nevis, generating about 42% of merchandise exports, employing about 25% of the labour force, and contributing about 8% of the GDP in 1992. The islands have about 22,000 acres of arable land, of which about 13,000 are actually cultivated. The climate supports a wide variety of crops, however sugar cane dominates cultivation, with about 80% of the cropped area and some 46% of total agricultural production. Certain agricultural practices associated with sugar cane cultivation, like improper planting on slopes and burning of cane fields before planting, may result in soil erosion and loss of organic nutrients for the soil.

In 1993, the output of the sugar factory reached 21,228 tons, an increase of 5.6% over the previous year's output of 20,159 tons. However, despite very impressive improvements in operational efficiency, and a slow down in the growth of the overdraft in recent times, the industry has not yet returned to profitability.

Further substantial improvement in operational efficiency will require substantial injections of capital to upgrade the plant and equipment, and to rehabilitate the railway system. GOSKN is therefore considering the privatisation of the sugar-industry so as to attract foreign direct investment into the industry, to combine with private capital in order to provide the necessary financing for the rehabilitation of the industry.

Non-sugar agriculture consists largely of small farmers growing vegetables, root crops, and fruits for subsistence and for sale on the domestic and regional market. In 1992, the value added of non-sugar agricultural crops and livestock increased by 2.7% and 3.2% respectively. A comparison of the output of the main crops during the first half of 1993 with the output in the corresponding period in the previous year, reveals that the production of white potatoes increased by 7.1% to 600,000 lbs., tomatoes by 95% to 234,900 lbs., onions by 145% to 150,000 lbs., sweet peppers by 336% to 48,000 lbs., and carrots by 37.5% to 165,000 lbs. Much attention has also been focussed on increasing the output of fishermen. It is estimated that in 1993, the output of the fishing sub-sector increased by 4.4%. GOSKN will continue to assist farmers and fishermen through tax concessions, technical advice, and easy access to financing.

The industrial sector has continued to thrive. In 1992, the industrial sector activity was slow as a result of the effects of the depressed regional and international markets and low domestic demand. However, during 1993 exports to the United States increased by 5%. It is important to note that St. Kitts and Nevis is among the leading OECS exporters of manufactured goods to the United States. Apart from sugar refining, industry consists of both export-oriented firms producing mainly garments and electronic components, and small enterprises, producing food, beverages, furniture, and other wood products primarily for the domestic market. The sector accounts for 9% of GDP and about 34% of merchandise exports.

GOSKN will continue to provide support to industrial enterprises through the provision of factory space, fiscal incentives, assistance in export promotion and easy access to credit through the Development Bank of St. Kitts and Nevis. In the area of promotion, GOSKN has been encouraging local manufacturers to participate in both regional and international trade fairs and

expositions to showcase their products and attract customers to their businesses. Additionally, GOSKN is intensifying its investment promotion campaign in North America and Europe in an attempt to increase the flow of private investment capital to St. Kitts and Nevis.

The current development strategy for St. Kitts and Nevis is to broaden the production base by promoting private sector activities. The development objectives are private sector-led economic growth, concurrent with diversification efforts in non-sugar agriculture, small manufacturing, tourism, and information services. The Government will concentrate on providing physical and social infrastructure, developing special areas for tourism, and creating a macro-economic and regulatory environment conducive to private sector development.

A portion of the Public Sector Investment Programme (PSIP) for St. Kitts and Nevis for 1994-99 is allocated directly to addressing environmental concerns, i.e., water supply and sewerage services. Water and sewerage projects amount to about 9% of the PSIP, a significant part of which is the ongoing US \$3.3 million project financed by the Canadian International Development Agency (CIDA) for the development of a water master plan, and the Kuwaiti-funded water project in the amount of US \$6.5 million. These projects address improvements to water storage and redistribution facilities.

### **C. ECONOMIC POLICIES AND THE ENVIRONMENT**

Economic growth and development which ensure international competitiveness are essential if St. Kitts and Nevis is to maintain its position as one of the more advanced developing countries in the sub-region. However, the maintenance of a good quality of life is dependent on the exploitation of natural resources. Consequently, GOSKN is pursuing a sustainable, balanced and integrated approach to development, ensuring that economic decisions adequately reflect environmental impacts. Additionally, environmental initiatives are adequately taking into account economic consequences.

GOSKN's economic objectives over the past decade have been to develop the islands' tourism potential, and more recently, to promote light manufacturing in order, and to rehabilitate the ailing sugar industry. To meet its goals, GOSKN has embarked on a comprehensive strategy for tourism development. The emphasis on incentive policies -- a liberal tax regime and an array of tax and duty incentives and duty concessions -- therefore reflects this shift, with a reduced reliance on the sugar industry, and a promulgation of measures aimed at encouraging and guiding development in the other two major economic sectors.

In particular, tourism development has had to be closely managed as it involves development of the environmentally fragile areas of the SEP area of St. Kitts, and the relatively unspoiled beach areas of Nevis for hotel accommodations, tourism facilities, infrastructure and activities. The SEP Board has established procedures for approval of economic development applications that include requirements for Environmental Impact Assessments (EIAs). These procedures also provide for monitoring to enforce agreed environmental management plans.

It should also be noted that in January, 1993 the Government introduced a charge on cruise ship passengers of US\$ 3.00 per person. The Government has also begun to charge user fees for natural and cultural heritage sites. Entrance fees are also collected at the Brimstone Hill Fortress National Park to help recover preservation costs.

Water supply is a particular concern in the state, and the Government is moving towards establishing an autonomous body for the provision of water services, shifting the responsibility from the Central Government. In the meantime a programme of metering for households and commercial establishments has advanced considerably. Additionally, as the economy develops on the basis of tourism expansion, the demand for water supply is stretching the existing systems on both islands. GOSKN intends to ensure that the pricing of water to these new facilities adequately reflects the additional costs to society of providing this utility.

All electricity customers are metered, and an upgraded metering system which is being installed will standardise the system throughout the country. The Government is currently moving towards establishing a statutory body for the provision of electricity in place of the existing Government department. This would facilitate the transition to a rate system more reflective of costs.

Current sustainable development policies are clearly focussed on promoting those sectors and sub-sectors which will promote social and economic development, generate increased levels of income and employment and earn foreign exchange while, at the same time, pay special attention to the protection of the environment. Accordingly, governmental priorities will focus on the following:

- a. maintaining an average real growth rate of 5% per annum over the next five years;
- b. continuing the process of diversifying the economy and forging greater linkages between the various sectors of the economy to create a more tightly integrated economy;
- c. transformation of agriculture, including crop substitution to emphasise the production of crops for domestic use as well as for export;
- d. continuing with its efforts to rehabilitate and improve the efficiency of the sugar industry to make it more economically viable;
- e. promotion of tourism as a major earner of foreign exchange, and support of industrial development, particularly high skilled, high-tech manufacturing; and,
- f. increasing domestic savings as a means of providing additional resources for private and public sector investments, and containing the rate of increase in general price levels;
- g. providing increased employment and entrepreneurial opportunities for the people, especially the women and young people;

- h. satisfying the health, nutritional, educational and other socio-cultural needs of citizens, and to generally engage in the process of human resource development with a view to preparing the people to face the challenges of the upcoming millennium;
- i. catering for the special needs of the aged, unemployed and other vulnerable groups in society, and to provide a social "safety net" for the protection of lower income groups; and,
- j. continuing the expansion of the social, economic and physical infrastructure for the convenience of the public at large and to generally facilitate the development of trade, commerce, industry, agriculture, tourism and financial services.

However, GOSKN recognises that a strong commitment to environmental protection is necessary for the attainment of sustainable development. Without adequate attention to safeguarding the environment the cumulative impacts of extensive soil erosion, ground water contamination and pollution from solid and liquid waste will damage or destroy the resource base on which sustained long-term development depends. Major components of the economy of St. Kitts and Nevis, such as tourism and agriculture, are directly linked to the resource base. If the quality of life is to be enhanced over the long term, it is essential that the limited resource base be managed by policies that are environmentally sound.

#### **D. THE ROLE OF THE PRIVATE SECTOR AND NON-GOVERNMENTAL ORGANISATIONS (NGOs)**

It is important that public opinion fully supports GOSKN's sustainable development thrust. Public education and awareness are essential to foster the long-term stewardship of the environment. The target groups include everyone — children, women, youth, social organisations, NGOs, the private sector and academics. GOSKN sees the collaboration of NGOs in the development process as of paramount importance. Hence, the need for proper awareness and involvement of local communities are recognised as essential components of the NEAP.

The private sector and NGO community are playing an increasingly active role in raising environmental consciousness and addressing environmental concerns in the country. The outstanding examples are the private sector activities of the St. Kitts and Nevis Hotel Association and the Chamber of Industry and Commerce. Recognizing the critical nature of environmental assets to their economic survival, the hotels on the islands are actively working to identify and address significant environmental concerns. The Hotel Association has drawn up a list of critical environmental issues, including threats to beaches (e.g., sand removal, beach erosion, pollution) and natural resources deserving special protection (e.g., rain forests, wet-lands, reefs, water supply). The Association is beginning to collaborate with the Government and various NGOs to address these concerns. In addition, the Chamber of Industry and Commerce, which represents the principal business interests on the islands, is working to promote environmentally responsible behavior. Members of the Chamber have been active in sponsoring the "Beautiful

Basseterre" campaign, which has made noticeable improvements in the city by cleaning up city parks, removing garbage from the streets and drains, and preserving the rich architecture of the old city.

The principal NGO in Nevis concerned with environmental issues is the Nevis Historical and Conservation Society (NHCS), which, *inter alia*, aims to promote and facilitate the protection and preservation of the ecology and natural life forms on the island. On St. Kitts, the St. Christopher Heritage Society (SCHS) has as its major goals and objectives the safeguarding and preservation of the country's environmental, historical, and cultural national heritage. The SCHS served as the local NGO coordinator for the implementation of the Country Environmental Profile (CEP) and produces a journal entitled *Heritage*.

St. Kitts and Nevis are also members of the Caribbean Conservation Association (CCA), a regional non-profit organisation dedicated to promoting policies and practices which contribute to conservation, protection and wise use of natural resources. The Caribbean Natural Resources Institute (CNRI), 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.

## **2: Sustainable Development: Priority Areas and Strategies**

While St. Kitts and Nevis remains relatively unspoiled, the islands face several environmental problems which, if left unaddressed, will threaten the sustainable development of the country. These include environmental degradation from improper waste disposal, water pollution, soil and shoreline erosion, and destruction of wildlife and wildlife habitats, in addition to problems related to human resource and institutional development. Each of the critical environmental problems impacting St. Kitts and Nevis is discussed briefly.

### **A. HUMAN RESOURCE DEVELOPMENT**

Human resource development (HRD) is critical to the sustainable development of St. Kitts and Nevis. It involves the building of human potential and capacity, and the strengthening of institutions as essential elements for sustained growth and development of the economy. Such capacity-building and institutional strengthening would assist in the proper formulation and analysis of policies and programmes.

HRD is thus geared toward the sustained development of individuals and increased productive activity. The government of St. Kitts and Nevis has, therefore, pursued policies which provide for easy access to education and training. Additionally, issues relating to sustainable development have been incorporated in the school curriculum, and multi-disciplinary educational activities have been encouraged. These programmes recognise the important role of non-governmental organisations (NGOs) and the private sector in encouraging a proper mix of skills and management innovations.

The Ministry of Education has spearheaded a variety of programmes which are presently being implemented. These include:

- (i) seminars, workshops and material production for teachers of Environmental Science;
- (ii) a new syllabus for Environmental Education, used in Primary Schools;
- (iii) a Marine Educational Kit which emphasises conservation and management; and,
- (iv) an Environmental Health Education Project with special emphasis on vector control.

Thus, HRD includes training which will enhance the capabilities of interest groups to participate, to understand issues, to critically weigh and balance options in the light of communally agreed objectives, and to follow through with implementation. Accordingly, GOSKN will continue to upgrade educational facilities, promote public consciousness and awareness of sustainable development programmes, strengthen tertiary education programmes, and develop multi-

disciplinary programmes for sustainable development.

## **B. LEGAL AND INSTITUTIONAL DEVELOPMENT**

An adequate legal and institutional programme is vital to sustainable development. GOSKN, in recognition of this principle, introduced the National Conservation and Environmental Protection Act (NCEPA) No. 5 of 1987. The NCEPA, among the most forward-thinking pieces of environmental legislation in the region, provides comprehensive authority for management and development of the natural and historic resources of St. Kitts and Nevis.

The NCEPA provides for the management and development of natural and historic resources, establishment of protected areas to help conserve these resources, and the establishment of a National Conservation Commission (NCC). Protected areas, designated under this Act, must have the following broad purposes and objectives: to preserve the biological diversity of wild flora and fauna species that may be endemic, threatened or of special concern, and the land and marine habitats upon which the survival of these species depends; to protect selected examples of representative or unique biological communities, both on land and in marine areas, and their physical environments; to sustain natural areas important for protection and maintenance of life support systems, and basic ecological processes including water recharge and soil regeneration; and to protect selected natural sites of scenic beauty or of special scientific, ecological, historical or educational value, including sites that are already degraded and need protection for restoration or sites that may become degraded if not protected.

Part II of the NCEPA provides for the establishment of protected areas, identified as national parks, nature reserves, botanic gardens, marine reserves, protected marine areas, historic sites, scenic sites, or areas of special concern. Under Part IV of the NCEPA, authority is conferred on the Brimstone Hill Fortress National Park Society to make and enforce regulations for that area of the same name.

After consultation with the NCC, the Minister can designate a protected area by publishing a notice in the *Gazette* describing boundaries, intended classification, and activities regulated or prohibited. Where a proposed protected area includes private land, the Minister of Development can either require compulsory purchase, using the Land Acquisition Act, or enter into an agreement with the land owner for the right of access, and the right to control such land.

The Fisheries Act, No. 4 of 1984, provides for the establishment of marine reserves and priority fishing areas, and authorises the Minister to make regulation for the management and protection of such areas. Although none has yet been declared, the NCC is actively studying proposals to implement the act. The legal authority to designate a marine area as a national park, marine reserve or a protected area is given in both Part II, Section 3-6 of the NCEPA and Part II, Section 23 (a-d) of the Fisheries Act. Although neither Act specifies an administrative authority to manage such an area, both acts assign sufficient authority to the Minister responsible in both fields to make declarations and rules to establish reserves and protected areas without first

obtaining the consent of parliament.

Part VII of the NCEPA covers forestry, soil and water conservation, and Section 35 provides for the establishment of forest reserves. The Minister, in consultation with the NCC, is required to establish forest management schemes and the necessary regulations, including the prohibition of livestock grazing, although, to date, no regulations have been promulgated. The NCEPA also provides for the protection of soil in areas of critical natural drainage, and authorises the imposition of a fine for those who burn the land, fell trees or allow grazing in critical areas. Areas of special interest may be created where it is prohibited to cultivate the land, graze livestock, construct buildings or extract sand.

Part VI, Section 31 of the NCEPA makes provision for the protection of beaches and the coastal zone out to 2 km, and the Minister, through consultation with the NCC, is responsible for the preparation and implementation of a coastal zone management plan to regulate development. The Minister may declare certain areas to be protected beaches, where activities such as fishing, the use of boats, certain sports, mining or the removal of treasures or artifacts from the sea bed are prohibited.

The Ministry of Agriculture, Lands, Housing and Development is the leading agency for the protection and preservation of the natural resources of St. Kitts and Nevis. The functions of this Ministry, in so far as the selection, management, and administration of any protected area is concerned, are carried out by the advisory NCC. The NCC is required to prepare management plans for protected areas based on the best information available. Each management plan must be approved by the Minister and reviewed at least every five years, with a view to revision where necessary. The management plans must contain objectives with respect to different activities, and time frames within which management activities will be undertaken.

National planning legislation is being revised to reflect the current consideration of environmental concerns necessary to achieve sustainable development. The Town and Country Planning Act will contain a legal requirement for conducting EIAs and environmental regulations would be incorporated into public and private development planning. In addition, the SEP Board has put in place a Land Use Management Plan (LUMP) as mandated by the South-East Peninsula Land Development and Conservation Act, 1986. The SEP LUMP requires that an EIA be conducted before any development project on the SEP can be approved.

Pollution control legislation is also to be updated to address the emerging pollution problems on the islands. The Watercourses and Waterworks Act provides general authority to control water supply but does not address proper sewage disposal. The Public Health Act provides authority to address environmental health threats. These authorities and their implementing regulations will be revised to meet the current water pollution and waste management needs of the country. Regulations for both the Pesticides Act and the Litter Act will be introduced to allow proper implementation and full enforcement.

**Table 1: Principal Environmental Laws**

<b>Environmental Law</b>	<b>Date</b>	<b>Authority</b>	<b>Regulations</b>
National Conservation and Environmental Protection Act	1987	Control management and development of historic and natural resources	In preparation
Fisheries Act	1984	Manage fisheries and marine reserves	Fisheries Regulations
Watercourses and Waterworks Act	1949	Control water supply and management	Watercourse Regulations
Public Health Act	1969	Maintain environmental health, control pollution and waste management	Public Health Regulations
Pesticides Act	1973	Control use of pesticides	Labeling/ Storage Regulations
Litter Act	1989	Restrict deposit of litter in public and private places	In preparation
Town and Country Planning Act	1949	Establish national planning and land use	Drafted
Land Development Act/Nevis Housing and Land Development Act	1960 1988	Control land development	None
South-East Peninsula Land Development and Conservation Act	1986	Control development, conservation, and management of the South-East Peninsula	Land Use Management Plan
Frigate Bay Development Corporation Act	1972	Control development of Frigate Bay	None

GOSKN will continue to build on the existing legal foundation to complete the legal/regulatory framework for environmental management and harmonize the framework within the regional/sub-regional context, taking into account international conventions and agreements (e.g.,

the MARPOL 73/78<sup>1</sup> Convention, the Cartagena Convention and the Convention on Biodiversity) to which it is a party.

**Table 2: Key Institutions with Environmental Responsibilities**

Institutions	Division/Unit	Responsibility
Min. of Agriculture, Lands, Housing and Development	Forestry Division	Protection and management of forests and wildlife; watershed management
	Fisheries Division	Management and development of fisheries; protection and management of marine reserves
	Physical Planning Unit	Implementation of planning legislation
	Pesticide Board	Enforcement of Pesticide Act and Regulations
Min. of Health and Women's Affairs	Public Health Department	Maintenance of environmental health, pollution control, waste management
Min. of Communications, Works and Public Utilities	Water Department	Supply of piped water
South-East Peninsula Land Development and Conservation Board		Development, management and conservation of the South-East Peninsula
National Conservation Commission		Advise the Minister on implementation of NCEPA

Specifically, the necessary legislative framework will include the following actions. Firstly,

<sup>1</sup> MARPOL 73/78 refers to the International Marine Pollution Convention as ratified in 1973 and amended in 1978. In particular, Annex V of the convention regulates for the prevention of sea and land pollution from ships, designating the wider Caribbean as a special area for protection and allowing for land disposal of non-food wastes generated by ships.

GOSKN will promulgate implementing regulations for existing legislation (i.e., the NCEPA, the Town and Country Planning Act, the Pesticides Act, and the Litter Act) to facilitate full enforcement of these laws. Additionally, GOSKN will adopt legislation, based on the OECS model legislation, requiring preparation of EIAs for all major public and private sector development projects. Finally, GOSKN will revise the Public Health Act to require the establishment of criteria for water quality, controls for industrial pollution (including effluent discharges), and standards for solid/hazardous waste management (ensuring compliance with MARPOL 73/78).

Institutional development, associated with HRD, will assist the achievement or realisation of human needs and the policies of government. A number of Governmental institutions and statutory bodies currently undertake sustainable development functions in St. Kitts and Nevis. For the most part, the institutions fall along traditional sector lines (e.g., agriculture, fisheries, health, etc.), with little effective communication or coordination across sectors.

Sustainable development planning in St. Kitts and Nevis is severely constrained by the limited capacity within the Physical Planning Unit of the Ministry of Development. The situation is aggravated by the creation of special planning boards such as the South-East Peninsula Land Development and Conservation Board, which draw already limited environmental planning expertise.

The need to rationalise development planning institutions and to institute an integrated policy approach has been accepted by GOSKN. The institutional planning mechanisms will, therefore, be reviewed and formal inter-agency linkages will be established in order to foster co-operation and collaboration, thus reducing duplication and misuse of resources. Data bases will be strengthened in an effort to support the planning process.

GOSKN will improve capacity within existing institutions with environmental responsibilities. This will include programmes for professional staff development, technical training, and continuing education, as well as the creation of institutional incentives for carrying out environmental monitoring, regulatory, and enforcement functions. The Government will also strengthen the NCC by providing it with the technical capacity and financial resources needed to fully execute its sustainable management responsibilities.

### **C. SOLID WASTE MANAGEMENT**

The single most important environmental problem in St. Kitts and Nevis is solid waste management. It is a difficult problem because of the limited land area and the lack of technical and financial resources. Additionally, solid waste management presents a pervasive problem in terms of storage, collection and disposal. The problem is compounded by the lack of proper equipment, poor public attitudes, and the lack of public co-operation.

The solid waste generated in St. Kitts and Nevis consists of municipal waste, principally

household garbage; ship-generated wastes, principally from cruise ships; industrial wastes, including hazardous waste; and agricultural wastes, mainly from sugar cane cultivation. At present, all solid wastes are being disposed of in open dumps. This practice has many disadvantages such as odour, flies, stray-animal invasion, uncontrolled leachate disposal and potential fire hazards.

With increased cruise ship arrivals, and ratification of the MARPOL 73/78 Convention, the amount of ship-generated waste for disposal on St. Kitts and Nevis is expected to increase in coming years. Nevertheless, it is believed that the existing disposal sites will have adequate capacity to meet disposal needs into the next decade. The more immediate waste management problems to be tackled by GOSKN will involve proper management of the existing disposal sites and upgrading of port waste reception facilities at the two major sea ports in the capitals of Basseterre, St. Kitts and Charlestown, Nevis.

In collaboration with the OECS countries, St. Kitts and Nevis is addressing its solid waste management concerns in a comprehensive manner. The OECS Waste Management Project, supported by the Global Environmental Facility (GEF), the World Bank (IBRD and IDA), the Caribbean Development Bank (CDB) and the European Investment Bank (EIB), will rationalize the country's system of waste collection as well as waste disposal, and will provide technical assistance and training for environmentally sound waste management on both the national and regional levels.

A National Solid Waste Management Plan has been prepared that (i) identifies the types and amounts of solid waste generated and specifies environmentally sound waste management methods (including waste reduction, reuse, and recycling, to the extent feasible); and, (ii) integrates sound economic policies into solid waste management, such as proposals for cost recovery (e.g., waste disposal fees) of Government expenses for collection and disposal.

As a strategy to improve waste management and mitigate the adverse environmental impacts, GOSKN will undertake rehabilitation and proper management of disposal sites, taking the measures necessary to ensure adequate protection of public health and the environment. Two sites have already been identified, one in St. Kitts and one in Nevis, to be developed into sanitary landfills. This work will be completed within the context of the OECS Waste Management Project. In addition, GOSKN will install new port waste reception facilities and improve storage, collection, transportation, and disposal of ship-generated solid waste. This will be implemented within the context of the proposed OECS Waste Management Project.

#### **D. COASTAL AND MARINE POLLUTION**

While considerable attention will be directed toward solid waste management, a similar effort will be made to protect the coastal areas from the discharge of sewage, and the leaching of chemicals from various industrial sources. It is critical, therefore, that all proposed coastal developments take place in harmony with the marine environment as it is the coastal resources

such as beaches, coral reefs, and seagrass beds which will provide the principal settings for future tourism activity.

Land-based sources of pollution account for some 80% of marine pollution. Sources of pollution include residential sewage and industrial and agricultural waste. In the capital Basseterre harbour, pollution from at least four sources have been documented, namely: the sugar factory, the brewery, the hospital, and the sewage plant of the Gardens Housing Project. The sugar factory, for example, discharges its untreated, highly organic effluent directly into the harbour. The high nutrient load of these effluent has resulted in a drastic reduction of dissolved oxygen and adverse impacts on marine ecosystems. Plumes of nutrient rich water have encouraged the proliferation of algae, smothering corals along the shoreline.

In view of the serious threat to coastal and marine resources, the Government will prepare an Integrated Coastal Zone Management (ICZM) Plan and institute a development planning process that is cross-sectoral, inter-ministerial, and encourages participation of relevant government agencies and incorporation of environmental considerations. The plan will provide overall guidance for development projects and improve management of coastal resources (e.g. beaches, coral reefs, fisheries, and coastal waters).

The plan will incorporate appropriate economic policies and incentives that bring prices for the islands' natural resource-based utilities and services (e.g. water supply, waste water treatment, solid waste, power) in line with their long-run marginal costs. The plan will set a strategy to increase fines for violations of environmental laws and regulations (sand mining, effluent discharge, unauthorized deforestation) to levels that have a clear deterrent value. Critical to the success of coastal zone management is the fact that the plan will be developed with broad public participation, including consultation with both urban and rural community-based groups and NGOs.

GOSKN will install a sewerage system for the capital Basseterre ensuring that:

- (i) mandatory hook-ups are required in the Basseterre area, including the identified point sources for Basseterre Bay; and,
- (ii) there are no more discharges of sewage or industrial waste-waters into Basseterre Bay.

## **E. BEACH EROSION**

During the past twenty years, sand has been mined from dune and coastal ridges for construction purposes. At all these sites beach erosion has been noted. Beach erosion is a serious problem in view of the importance of the beaches for recreation and tourism. While large scale removal of sand from the beaches of St. Kitts and Nevis is strictly prohibited by law, the illegal removal of beach sand has resulted in the erosion of the sandy shoreline, impacting recreational opportunities. The removal of beach sand in these areas has increased the exposure of coastal

lowlands to inland flooding from high seas during hurricanes. In addition, the destruction of coral reefs directly affects beach erosion.

In areas where construction has been adequately set back from the high water mark, data indicate that the natural accretion/erosion of the beach occurs without causing loss of real estate or damage to the ecosystems. Identifiable man-made causes of this erosion are: water contamination from fertilizer run-off that results in reef deterioration, construction too close to shore, and beach sand mining to supply sand for block-making and mixed concrete. The use of salt ponds and mangrove swamps as dump sites for solid waste further contributes to the destruction of coastal ecosystems. Comprehensive coastal zone management regulations or requirements for protecting coastal resources are necessary.

GOSKN will, therefore, strengthen its efforts to enforce the prohibition against illegal beach sand mining, including the restriction of sand-mining to designated sites and increasing fines for violations. It will also study and identify appropriate alternatives for obtaining construction materials.

#### **F. BIODIVERSITY AND WILDLIFE HABITAT**

St. Kitts and Nevis, like their Eastern Caribbean neighbours, show a considerable dependence on the coastal and offshore waters, particularly for fisheries, but also for protection from storms and erosion (by coral reefs and mangroves), for communication, for firewood, for building materials, and for climatic influences to name a few. Onshore, the majority of the population live within 100s of metres from the ocean. Increasingly, both through population growth and changing lifestyles, there is considerable pressure on the coastal land and seascape.

Habitat destruction could be the single biggest contributor to the continuing decline of unique plant and animal communities in St. Kitts and Nevis. Among the most endangered species in the islands today are marine turtles, some native species of birds, and deer. With the opening of the Southeast Peninsula, the use of off-road vehicles on beaches and along lower slopes can be expected to increase. Indiscriminate use of such vehicles can contribute to beach and dune erosion, destruction of slow growing vegetation, the crushing of turtle nests and hatchlings, and interference with other recreational activities.

Coral reef ecosystems deserve special attention in that they constitute nursery habitats and enhance fisheries. Coral reefs and adjacent ecosystems provide excellent sites for tourism activities, including diving, snorkeling, boating and fishing. In addition to these economic benefits, coral reefs also protect the shoreline from erosion from waves and storms, and help supply beaches with the golden sand and colourful diversity of life that draws tourists. Perhaps most importantly, they provide tremendous genetic diversity, many important ecological functions, global bio-geochemical functions and aesthetic values which are difficult to quantify and even more difficult to replace.

Centuries of deforestation and land clearing for agricultural use, together with urban and tourism development on the coast, have also resulted in the loss of wildlife habitat and reduction of biodiversity. About 37% of the land area of St. Kitts (approximately 6,500 ha) is covered by forest. Nearly all forested areas except for the South-east Peninsula are owned by GOSKN. The forest on Nevis is similar to that on St. Kitts and covers 20% (1,900 ha) of the island. The St. Kitts forest cover is classified as follows: rain and cloud forest (2,300 ha); moist forest (2,100 ha); and, dry forest (2,100 ha). The main threat to the forest is loss of trees to charcoal burning, although under the NCEPA the Minister can regulate charcoal burning and its export. There has been a trend towards the abandonment of upper hill slopes for agriculture in favour of more suitable sites, and some areas are reverting to secondary forest.

Wetlands and ponds cover about 240 ha of St. Kitts and are mostly found on the South-east Peninsula as well as at Great Heeds Pond, Conaree. Nevis has four wetlands — Cotton Ground, Pinneys, Hurricane Hill and the Bogs at Bath. Mangroves, salt ponds and marine grass beds are afforded general protection under the National Conservation and Environmental Protection Act (NCEPA), 1987.

A number of measures will be taken to protect wildlife habitats. GOSKN will promulgate specific regulations implementing the NCEPA to protect endangered resources, such as mangroves, salt ponds, and sea grass beds, and designate additional protected areas under the NCEPA, including marine reserves, for preserving wildlife habitat and prepare management plans for protecting these areas. Other steps taken will include banning the removal and sale of turtle shells, underwater spear fishing, and fishing with nets of small mesh sizes. A long-term marine biological monitoring programme will also be implemented using assistance from regional agencies, such as the Caribbean Environmental Health Institute, for improving laboratory and staff capacity.

## **G. FORESTRY**

In St. Kitts and Nevis, all of the forest cover has been cleared from the coastal area so that the forests are confined to the more mountainous areas of the interior of the islands. The forest is of vital importance to sustainable development, particularly in relation to water supply, fuel-wood and the prevention of erosion and landslides. However, the present vegetation of St. Kitts and Nevis provides evidence of great disturbances by human activity. In the lowland areas, intensive land use has removed all vestiges of the natural vegetation and everywhere agricultural crops prevail. The mountain peaks are still covered by forests. Most lower reaches of the forest are secondary growth on previously cleared, once farmed, but now abandoned upland marginal cane land or provision grounds.

Deforestation, by cutting forest trees to acquire fuel wood and charcoal, poses a threat to the delicate ecological balance and the level of bio-diversity. A proper plan to encourage the rational use and protection of forestry resources will be introduced by the government. The National Forestry Action Plan will strengthen forestry management, in conjunction with the

CARICOM/FAO/ODA Tropical Forestry Action Programme, by promoting agro-forestry, watershed management, and soil conservation projects.

## H. LAND USE

The small size of the islands coupled with relief factors and multiple use of resources limit the land available for agriculture, forestry, urban development, tourism and infrastructure, and create serious competition among different land use options. Encroachment on environmentally sensitive zones such as catchment areas, wetlands and coastal ecosystems, mountains and forested areas are becoming very difficult to control. On the island of St. Kitts, over 50% of the land area, equivalent to 80% of arable land is under sugar-cane cultivation.

The drift from rural to urban settlement over the past two decades has led to Basseterre, in St. Kitts, and Charlestown, in Nevis, becoming over-crowded, resulting in high demand-supply ratios for basic commodities. Whilst many people are flocking into the town itself, the past 10 years has witnessed the remarkable growth of dormitory suburbs at Mattingley, Bird Rock and Earl Morne housing developments. Additionally, Basseterre is also experiencing commercial/industrial expansion on the margins of the town. Other major towns, such as Sandy Point and Cayon, are also experiencing expansion-related problems. In addition, residential development is encroaching on some productive agricultural lands.

The land tenure arrangements in St. Kitts and Nevis have differed largely because of the differences in land ownership that have existed. Almost all of the agricultural land in St. Kitts is now owned by the State whereas formerly it was made up of privately-owned sugarcane plantations. No system of allowing long-term leases of agricultural land was established. Instead, Government traditionally made land available to farmers under annual leases. In Nevis, however, less than half of the agricultural land is owned by the State, with the balance covered by long-term leases and freehold titles. The recent Land Development Act (of 1991) has made provision for 35-year renewable leases as an important step towards the long-term sustainable development of leased lands.

Both islands have had a lack of comprehensive land use planning and land mapping. Land Use Management and planning has now been introduced as part of a World Bank financed Agricultural Development Support Project. This multi-year project includes development of cadastral mapping, land capability and land use planning and a new leasehold titling system. A Land Use Committee (LUC) has recently been established in St. Kitts and there will shortly be the development of the administrative framework to deal with land use and land tenure matters and it will compliment the Land Development Corporation (LDC) that has been operating in Nevis. In addition, organization and management reviews, and a comprehensive training programme will strengthen the Government's capacity for land use planning, allowing for sustainable development of the country's resources.

To address land use issues presently in areas of intense development in St. Kitts, independent

statutory bodies have been established to manage the land use planning of defined geographic areas. For example, in 1972 the Government established the Frigate Bay Development Corporation to direct development on 850 acres of prime land (220 acres for residential, 285 for hotels and condominiums, a 180 acre golf course, 30 acres for services, and 135 acres for conservation). The corporation was charged with ensuring that appropriate action was taken to mitigate the environmental stress accompanying this development.

In another example, the Southeast Peninsula Land Development and Conservation Board, a semi-autonomous Government authority created by the SEP Land Development and Conservation Development Act of 1986, evaluates development schemes, establishes zoning, and monitors and regulates development activities. The access road to the South-east Peninsula of St. Kitts opened up 4,000 acres to development. The area is expected to attract between 2,000 and 8,000 hotel rooms. The careful use of environmental impact assessments in planning the development for this area is intended to prevent severe environmental deterioration from occurring.

In Nevis a preliminary land zoning plan was proposed and it is to be further developed and refined so as to meet the needs primarily of agricultural, tourism and residential development of that island's infrastructure.

GOSKN intends to pay further attention to the demarcation of land use according to ecological capability and taking into account existing development; to the control of pollution producing activities; to the identification of areas with special protection, conservation and/or improvement; and to the protection of areas against natural phenomena like floods and landslides. In addition, adequate zoning regulations and a Land Tenure policy, especially in relation to farmers, will be introduced.

## **I. NATIONAL PARKS AND CULTURAL HERITAGE**

St. Kitts and Nevis has a wealth of historical landmarks, such as plantation houses, churches, fortifications, archeological sites, shipwrecks, and historic towns. A comprehensive survey and assessment of historic properties was undertaken in the St. Kitts and Nevis Tourism Master Plan (1993). This master plan contains an inventory of heritage sites and natural attractions in St. Kitts and Nevis. In addition, valuable work has been done by the St. Christopher Heritage Society and the Nevis Historical and Conservation Society. At the regional level, the Caribbean Conservation Association and the Island Resources Foundation have helped to compile information.

Brimstone Hill Fortress National Park was established as the first national park in 1985, the second being Wing Field Level in the central range of St. Kitts. Apart from these sites, St. Kitts and Nevis have no formally established national parks or protected areas, although there are various lists and studies of prospective and recommended sites, some habitat focussed, some wildlife focussed, and a few, mostly in Nevis, which deal with the protection of landscape features.

Natural heritage sites on St. Kitts and Nevis include a wealth of forest, wet-land, and marine habitats. A parks and protected area systems plan will be completed to ensure that all critical natural and cultural resources receive adequate protection, and that management is carried out in an integrated fashion. It will include a Marine Parks component to assist in the protection of coral reefs and other habitats, as well as shipwrecks. In addition, the plan will safeguard the national heritage for present and future generations by preserving sites of cultural, historic, scientific, and educational significance. The parks and protected area systems plan will also identify appropriate mechanisms for coordinating management responsibilities within a national system. The principal authority will be vested in the NCC. Allocation of manpower resources for enforcement and management activities is to be made on the basis of priorities established in the plan.

## **J. NATURAL AND ENVIRONMENTAL HAZARDS**

St. Kitts and Nevis, by reason of its location in the inter-tropical belt, is generally exposed to natural hazards in the form of hurricanes. Sometimes, the damage is catastrophic, as graphically depicted by the onslaught of Hurricane Hugo in 1989. Both the economy and the environment are particularly vulnerable to hurricanes.

Another natural phenomenon which has been affecting St. Kitts and Nevis over the last few years has been the occurrence of prolonged droughts, which in the face of competing demand from increased economic sectors (domestic, agriculture, industry and tourism) can have serious impacts upon all sectors of the economy. Shortage of potable water could become a serious threat for the future.

St. Kitts and Nevis are also vulnerable to other natural hazards such as floods and earthquakes. Though these hazards occur periodically their impact can be devastating, affecting all segments of the economy, as well as the social and physical infrastructure. Moreover, the costs of rehabilitation are high, and are becoming increasingly difficult given the limited availability and high cost of insurance protection. The process is often slow, thus retarding the country's development.

St. Kitts and Nevis are likely to be affected by global environmental changes, such as the warming of the atmosphere and the consequent climatic changes in temperature and precipitation. The impending sea level rise is cause for concern. Various scenarios have been put forward on the degree of impact and the effects. The range of adverse impacts envisaged include loss of land, loss of investment, displacement of people, depletion of fresh water aquifers, unpredictable weather and ocean conditions, destruction of reefs and loss of fish stocks. Global warming is expected to cause changes in the strength, frequency and paths of hurricanes and/or extension of the hurricane season.

Development activities have also increased the risk of damage from natural hazards through the construction of hotels and other properties close to the shoreline, the removal of mangroves, the

filling of salt ponds, offshore dredging and sand mining on critical beaches, dumping of wastes in river beds, and road construction.

Because of its utilisation as a major international transit route, the surrounding seas are particularly vulnerable to man-made disasters: ship accidents, oil spills and toxic and hazardous substance accidents. St. Kitts and Nevis have only limited disaster/spill contingency planning and in-country response capabilities to deal with such disasters.

Preventive measures are difficult to implement, especially in view of the fact that the country is very small and is located within the hurricane belt. Additionally, considerable development takes place in areas immediately adjacent to the shoreline. Financial constraints make it almost impossible to ensure that all infrastructure is designed and built to withstand environmental and natural hazards affecting the country. Moreover, the cost of property insurance, where available, is extremely high. Nevertheless, GOSKN will adopt a Building Code prepared with UNCHS/UNDP technical assistance that is tailored to the country's specific needs.

GOSKN has also put in place a Comprehensive Disaster Preparedness Programme, and a Disaster Management Office has been established. Additionally, GOSKN will, in cooperation with other CARICOM countries, and through a regional contingency plan, strengthen arrangements for responding to the further threat of oil spill and the transportation of toxic and environmentally harmful products through the Caribbean Sea. It is expected that, under the provisions of the MARPOL Convention, further strengthening of these arrangements would take place.

## **K. PUBLIC AWARENESS**

Environmental awareness is increasing in St. Kitts and Nevis. The Government has a well established programme of environmental education in the schools. In addition, public awareness programmes such as the Environmental and Tourism Awareness Programme (ETAP) have recently been introduced with assistance from the Organisation of American States (OAS). The private sector is also active in environmental concerns, as demonstrated by the programs of the St. Kitts Hotel Association and the Chamber of Industry and Commerce. In addition, several non-governmental organizations (NGOs) and community groups, including the St. Kitts Heritage Society, the Brimstone Hill Fortress National Park Society, and the Nevis Historical and Conservation Society have been instrumental in preserving important historical and natural areas on the islands. Thus the Government has a strong foundation of public environmental consciousness on which to build.

Sustainable development requires a continued deepening and broadening of the participatory process in order to ensure both good government and good governance. In addition to the existing structures of democratic government in St. Kitts and Nevis, new mechanisms will be put in place to foster greater participation by society (communities, women, youth, the private sector, NGOs, and the general public) in the decision-making process. Accordingly, the

GOSKN will continue to develop additional public outreach and educational programmes to increase grass-roots public awareness of environmental issues. This will include cooperative efforts with the national, regional and international NGOs to maximize the effectiveness of available resources.

### **3: SUMMARY OF ENVIRONMENTAL ACTIONS**

#### **A. ISSUES, INTERVENTIONS, AND RECOMMENDATIONS**

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 marshalled through aid, used to maximum advantage.

GOSKN regards the **development of its human resources** as the center-piece of its programme of sustainable development. Therefore, the building of human potential and capacity to enhance the quality of life is given special attention. Particularly attention is being paid to the improvement of education and training programmes; the improvement of environmental and conservation management; the adoption of appropriate programmes for participation of the private sector, NGOs, and the public in the identification, formulation and implementation of sustainable development activities.

GOSKN 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.

The most urgent of the national environmental problems is that of **Solid Waste Management**. Actions to be taken by the Government involve (a) the rehabilitation and improved management of the Conaree and Lowground disposal sites; and, (b) the installation within two years of new port waste reception facilities.

In other areas, the following actions are planned:

**Coastal and Marine Pollution:** The Government is to prepare an **integrated coastal zone management plan** that will incorporate appropriate economic policies, incentives and controls providing for resource-based services (water supply, waste disposal, power) to be properly priced and violations (sand mining, effluent discharge, deforestation) more effectively deterred. The plan will encourage community consultation and participation in measures to improve

coastal zone management. The Government will also install a sewerage system for Basseterre that will avoid further discharge of sewage or industrial waste-waters into the Bay.

**Beach Erosion:** Efforts to enforce the prohibition against illegal beach sand mining are to be increased; alternative construction materials will be identified.

**Wildlife Habitat:** Regulations specifically designed to protect endangered resources such as mangroves, salt ponds and sea grass beds will be promulgated under the National Conservation and Environmental Protection Act.

**Forestry:** The Government will adopt incentives for private sector investment in the forestry sector in order to stimulate forestry development including agro-forestry, but discourage mismanagement of this resource; it will strengthen forestry management and develop agro-forestry, watershed management and soil conservation projects.

**Land Use Planning:** This is to be improved through a Land Use policy, cadastral mapping, land capability and land use planning, institutional strengthening and training.

**National Parks and the Cultural Heritage:** The Government is to prepare a **protected area system plan** that will identify, evaluate and designate national parks and protected areas, safeguard them, and provide for their management.

Further to these specific actions, the Government intends to adopt a **National Environmental Policy** that explicitly recognizes the conditions for sustainable development of St. Kitts and Nevis and that will provide a framework for assessment of development activities in both the public and private sectors.

To increase **public awareness** the Government will develop, in cooperation with NGOs, additional outreach and educational programmes to increase public knowledge of national and international environmental concerns.

This agenda is set out in matrix form in Table 3, over-leaf.

**Table 3: National issues and Interventions**

ISSUE	ACTIONS
<b>Human Resource Development</b>	Revise and upgrade primary, secondary and tertiary level educational facilities and curriculum taking sustainable development knowledge into account.
<b>Legal Instruments and Institutions</b>	<p>Promulgate implementing regulations for existing legislation. Adopt legislation requiring EIAs for development projects. Revise Public Health Act to establish water quality criteria, controls for industrial effluent, and waste management controls.</p> <p>Strengthen the National Conservation Commission. Strengthen the environmental role of Physical Planning Unit. Improve technical capacity within existing institutions.</p>
<b>Solid Waste Management</b>	Undertake rehabilitation and proper management of Conaree and Lowground disposal sites. Analyse and institute cost recovery measures. Install new port waste reception facilities. Complete investment in new vehicles and equipment for waste collection and disposal.
<b>Coastal and Marine Pollution</b>	Prepare an integrated coastal zone management plan. Install a sewerage system for Basseterre.
<b>Beach Erosion</b>	Enforce prohibition on illegal beach sand mining. Apply fines for violations. Study and identify alternative sources of building materials.
<b>Biodiversity and Wildlife Habitat</b>	Enact Fisheries Regulations. Promulgate regulations to protect mangroves, salt ponds, and sea grass beds. Designate additional protected areas to preserve wildlife habitat. Prepare management plans for protected areas. Implement long-term marine biological monitoring programme.
<b>Forestry</b>	Improve Forestry Management. Implement TFAP incentives study.
<b>Land Use Planning</b>	Continue to improve land use planning by establishing adequate zoning regulations and a land tenure policy, particularly in relation to farmers.
<b>National Parks and Cultural Heritage</b>	Prepare protected area system plan to protect critical terrestrial and marine resources.
<b>Natural and Environmental Hazards</b>	Revise and update the Disaster Preparedness Plan. Strengthen the institutional capacity of the Disaster Management Office. Develop contingency plan for responding to oil spills, and the discharge of toxic and other hazardous materials in the surrounding seas.
<b>Public Awareness</b>	Promote public consciousness and awareness of sustainable development strategies through ETAP. Liaise with NGOs to develop additional public outreach and educational programmes and raise environmental awareness.

In the context of the NEAP, a sample of environmental programmes and projects that GOSKN will be implementing shortly are described in the next section, including the OECS Waste Management Project that is expected to have a major impact on the most urgent of the nation's environmental problems. This project in particular indicates the possibilities among the OECS countries for practical cooperation in the solution of shared environmental problems. Enhanced regional cooperation in environmental action, at the policy, legislation, training and implementation levels, is an underlying theme for the St. Kitts and Nevis action plan.

## **B. ENVIRONMENTAL PROGRAMME AND PROJECTS**

<b>Project Name:</b>	<i>OECS Waste Management Project</i>
<b>Problem/Issue:</b>	Improper management of solid waste poses threats to public health and the coastal and marine environments.
<b>Objective:</b>	To improve collection and disposal of solid waste in order to prevent threats to public health and the environment.
<b>Description:</b>	As part of the OECS Waste Management Project, rehabilitate the Conaree disposal facility and operate it as a proper sanitary landfill; prepare and implement a national solid waste management plan; and install new port waste reception facilities to improve collection, storage, and disposal of ship-generated solid waste.
<b>Duration:</b>	Three (3) Years
<b>Cost:</b>	US\$ 6.2 Million
<b>National Agency:</b>	Ministry of Health, Labour and Women's Affairs/Department of Public Health

**Project Name:** *Liquid Waste Management Project*

**Problem/Issue:** Improper management of liquid wastes, particularly in Basseterre, results in water pollution that poses threats to public health and the coastal and marine environments.

**Objective:** To improve treatment and disposal of liquid waste in order to prevent threats to public health and the environment.

**Description:** Install a sewerage system in Basseterre for handling liquid wastes (including sewage, industrial waste-waters, etc.) generated in the Basseterre area and currently discharged into Basseterre Bay. The sewerage system would be constructed to accommodate mandatory hook-ups for all residential and industrial point sources. It would provide appropriate treatment of wastes before discharge and locate the sewerage out-fall in an environmentally sound area in the offshore receiving waters.

**Duration:** Five (5) Years

**Cost:** US \$15 Million

**National Agency:** Ministry of Health, Labour and Women's Affairs/Department of Public Health

**Project Name:** *Integrated Coastal Zone Management Programme*

**Problem/Issue:** Lack of coordination among sectors is causing inefficient use of limited resources and donor support.

**Objective:** To improve management of coastal resources (e.g. beaches, coral reefs, fisheries, coastal waters) and provide coordinated guidance for development projects.

**Description:** Establish a programme for integrating the management of the coastal resources across sectors. The ICZM plan, as required by the NCEPA, should focus on economic policies and incentives that would promote conservation and sustainable development with reduced dependence on command and control mechanisms. The program will include the implementation of a long term marine biological monitoring program with assistance from regional agencies such as CEHI.

**Duration:** Five (5) Years

**Cost:** US \$2.7 Million

**National Agency:** Ministry of Agriculture, Lands, Housing and Development

**Project Name:** *Forestry Management*

**Problem/Issue:** Substantial loss of forest cover and the need for improved watershed management.

**Objective:** To improve the management of forest resources and increase public awareness of environmental issues.

**Description:** In conjunction with the FAO Tropical Forestry Action Plan, develop agro-forestry, watershed management, and soil conservation projects; complete studies that indicate water quality values (measured by water treatment plant capital and operating costs that will be necessary if land is deforested); develop and implement public awareness programme for forest conservation and watershed management.

**Duration:** Five (5) Years

**Cost:** US \$6.7 Million

**National Agency:** Ministry of Agriculture, Lands, Housing and Development/Forestry Division

**Project Name:** *Protected Area System Plan*

**Objective:** Arrest loss of bio-diversity and deterioration of cultural heritage by preserving sites of cultural, historic, scientific or educational significance, protecting endangered or threatened species of wildlife, controlling the rate of exploitation of economically useful species, preserving examples of terrestrial and marine ecosystems and maintaining the habitat of plants and animals in designated areas, and by creating national and marine parks.

**Description:** Identify, evaluate, and designate national parks and protected areas under the NCEPA, and ensuring adequate environmental management of protected areas and cultural landmarks; design user fees for natural and cultural heritage sites to promote sustainable use and generate revenues.

**Duration:** Five (5) Years

**Cost:** US \$3.2 Million

**National Agency:** Ministry of Agriculture, Lands, Housing and Development/National Conservation Commission

**Project Name:** *Environmental and Tourism Awareness Programme*

**Problem/Issue:** General lack of public awareness of the link between the environment, tourism and national development.

**Objective:** To develop and implement a combination of national and community level activities designed to promote among the population:

- (a) a better understanding of the value of natural resources and the need to develop a common responsibility for the protection and enhancement of these resources; and,
- (b) a better understanding of the national value and opportunities of Tourism, and sensitise them to the need for a common dedication to the provision of an outstanding tourism product.

**Description:** The programme addresses the importance of linking the Environment and Tourism. It will help to demonstrate their natural complement to each other and their dependency on each other for successful growth and development. In the first year, attention will be focussed on selected environmental issues, that will build linkages through on-going activities that will tie together the importance of environmental conservation and preservation to the development of the Tourism sector. The environment will also be portrayed as a valuable asset from which each individual in St. Kitts and Nevis can benefit through conservation and preservation. Technical assistance is being provided by the Organisation of American States (OAS).

**Duration:** Three (3) years

**Cost:** US \$225,000

**National Agency:** Ministry of Development and Ministry of Tourism.

**Project Name:** *Wingfield National Park*

**Problem/Issue:** Inadequate conservation and development of natural resources.

**Objective:** To carry out a feasibility study with a view to establishing guidelines for the development and management of a National Park at Wingfield Estate.

**Description:** The feasibility study is the first stage of an effort to develop a National Park in the highland areas of St. Kitts. The project will incorporate the lands bounded by the Wingfield Estate ruins, on the Caribbean side of the island and a boundary to be determined below the Phillips Level on the Atlantic side. Technical assistance is being provided by the Organisation of American States (OAS).

**Duration:** Eight (8) months

**Cost:** US \$76,000

**National Agency:** Ministry of Agriculture, Lands, Housing and Development/Forestry Division

**Project Name:** *Marine Park Study*

**Problem/Issue:** Inadequate conservation and development of natural resources.

**Objective:** The undertaking of technical feasibility study for establishing a Marine Park in Nevis. In general, the project seeks to enhance the protection of the environment within the context of the development of eco-tourism on the island.

**Description:** The study will identify and examine possible sites for the location of the park. It will include recommendations for protecting reefs, some of which are presently threatened by human activity. Consideration will also be given to the identification of ways to protect the marine life which lives in the vicinity of the reef. In addition, the study will look at ways of making the Marine Park a visitor attraction. The project will form part of GOSKN's plan for environmental protection and conservation which is assuming higher priority as the Tourism sector develops. Technical assistance is being provided by the Organisation of American States (OAS).

**Duration:** Six (6) months

**Cost:** US \$72,000

**National Agency:** Ministry of Agriculture, Lands, Housing and Development/Fisheries Division

**Project Name:** *Drinking Water Project*

**Problem/Issue:** Inadequate supply of potable water to meet the demands resulting from growth and development within the country.

**Objectives:** To efficiently satisfy the demand for potable water in St. Kitts and Nevis by increasing the ground water supply resources, improving the existing distribution networks and extending the existing network to areas not presently serviced.

**Description:** The project involves the construction of a number of reservoirs, pump houses and an office building, along with the installation of new pipelines, and the construction and drilling of production wells.

The project will help to improve the general water system of the country. It will help to address the water shortage problem associated with the introduction of new housing developments in various parts of the Federation. It will also enhance the development potential of the South-east Peninsula. In addition, it will enable the Water Department to provide adequate service to large hotels and address the situation of increased access to and demand for government supplied water in Nevis. Assistance is being provided by the Kuwait Fund for Arab Economic Development.

**Duration:** Three (3) years

**Cost:** US \$6.5 Million

**National Agency:** Ministry of Communications, Works and Public Utilities/Water Services Department

**Name of Project:** *Hamilton Heritage Center*

**Objectives:** This is a heritage and nature tourism project to:

- (a) preserve and restore buildings of national historic interest;
- (b) provide a viable, joint-venture enterprise between GOSKN and the private sector that will benefit the community and provide employment; and,
- (c) provide an additional attraction for tourist and tourism growth in St. Kitts and Nevis.

**Description:** To restore and develop the Hamilton Estate into an integrated tourism amenity, called the Hamilton Heritage Centre. The centre will include a museum-botanical garden complex in the first phase, followed by the construction of a small hotel in the second phase.

**Cost:** EC \$9.7 million

**National Agency:** Ministry of Development, Nevis/Hamilton Estate Trust

## **4: Conclusion**

The NEAP examines constraints to the sustainable development of St. Kitts and Nevis and devises appropriate and innovative solutions to these problems. The devising of such solutions takes into account the need for equity, particularly in relation to access to resources and opportunities for sustainable development. An important element of equity will be the provision of basic needs to vulnerable groups in the society. The strategic solutions also takes on an integrated approach, involving multi-sectoral planning, recognising the pre-eminence of human resources development. Moreover, the strategies are capable of implementation.

Financial support for sustainable development activities will be provided by GOSKN in order to give greater significance to sustainable development in National Development Planning. Such support for national activities must nevertheless be matched by a coordinated regional approach to private sector investment and concessional financial assistance from the international community.

The NEAP reflects St. Kitts and Nevis vision of environmentally sound development and sustainable growth. It highlights the special challenges facing the country and the strategies identified, as specific actions, to address such challenges. The challenges and strategies are cross-cutting and the plan recognises the need for a multi-sectoral, integrated approach to sustainable development planning.

It also recognises that actions at the National level, involving all groups (including the private sector and NGOs) require regional support and co-operation, as well as international assistance which conforms to the national priorities of the country. This collaboration and co-operation is essential if sustainable development is to be achieved, taking account of the special circumstances and particular vulnerabilities of St. Kitts and Nevis.

Finally, the NEAP suggests that the sustainable development of St. Kitts and Nevis can be made more feasible through the transfer of environmentally sound technologies and the provision of new and additional financing by the developed countries.