CLIMATE CHANGE POLICY DEVELOPMENT ISSUES IN ST. VINCENT AND THE GRENADINES.

1.0 Introduction

1.1 Location

St. Vincent and the Grenadines lies between 13°.7″ and 13°.23″ North Latitude and 61°.7″ to 17″ West Longitude. The total land area is approximately 150 square miles (345 km^2).

1.2 Physical Features

St. Vincent is roughly oval in shape with a central spine of mountains running from north to south and steep ridges radiating to the east and west. The highest mountains are in the north (the Soufriere mountains). In one of the peaks lies la Soufriere volcano, which last erupted in 1979. Other mountains in the range (from north to south) include the Morne Garou Mountains, Grand Bonhomme, Petit Bonhomme and Mount St. Andrew. A large number of very steep lateral ridges emanate from the central massif culminating in high almost vertical cliffs on the Leeward coast while the Windward coast has a wider flatter valleys and truncated spurs which are lower and more rounded than most of the leeward coast.

The Grenadines are much smaller and less rugged than St. Vincent. They are more likely to have white sand beaches due to the deposition from the fringing reefs that surround these islands.

1.3 People

St. Vincent and the Grenadines has a population of 111,105. Of that total, 102,375 residents (91.4 percent of the total) live on mainland St. Vincent. Most of the people are concentrated in towns and villages along the coast. The remaining 8,730 residents (8.6 percent) live on the Grenadines.

The population is young, 48 percent being under the age of 20 years. The average life expectancy is 68 years for males and 73 for females. Improvements in nutrition, sanitation, immunisation and family planning have contributed to lower mortality rates and increased life expectancy. The population is expected to increase to 130,765 by the year 2021, an increase of 17.7 percent above the current population.

1.4 Economic Activity

Agriculture, in particular the banana industry, has been the main source of foreign exchange earnings and employment, and the major contributor to GDP. Agriculture's annual contribution to the GDP, at factor cost and at current prices, averaged 18.2 percent between 1983 and 1992, but declined to 10.2 percent in 1994. The setback in 1994 was due to a severe drought coupled with uncertainty surrounding the EU Banana Regime introduced in 1993. These tragedies affected the performance of the banana industry and by extension the national economy.

The 1998 Gross Domestic Product (GDP) amounts to EC$630. 95 million. Of that figure, 12.6 percent was derived from agriculture, 8.5 percent from manufacturing, 15.4 percent from trade and 17.4 percent from government services. Unemployment figure is estimated at 22.0 percent, while inflation is 3.6 percent. The value of imports has been relatively constant in recent years at about EC$355.9m, but the value of exports has fallen from EC$210.9m in 1992 to EC$125.3m in 1996. As a result, the trade deficit has increased by 58 percent during that period.

1.5 Climate

St. Vincent and the Grenadines has a tropical climate, with a dry season from December to May and a wet season from June to November. The mean annual rainfall is approximately 380 centimeters with a maximum of 650 centimeters in the mountains and a minimum of 50 centimeters in the Grenadines. The average daily temperature is 28 ^{0}C.

2.0 Key Issues With Respect to Climate Change.

2.1 Potential Impact of Climatic Changes on

2.1.1 Beach and shoreline stability. The geographic location of St. Vincent and the Grenadines puts it in the path of energetic tropical waves and hurricanes coming off the Atlantic Ocean. Many of these disturbances result in strong waves crashing against unprotected shoreline causing extensive damage. The most recent example is that of hurricane Lenny. Although this storm never got close to St. Vincent and the Grenadines, the waves it generated caused millions of dollars worth of damage. The new cruse ship berth in Kingstown, constructed at a cost of EC$ 32 million, received substantial damage before it was officially commissioned. Ten meters of shoreline including the main access road was washed away in the Richmond area. A similar situation obtained in Sandy Bay on the northeastern corner of the island. The islands of the Grenadines did not escape this pounding.

Despite the fact that most of the national infrastructural investment is situated on the coast and that shoreline retreat is very evident in St. Vincent and the Grenadines, sand mining continues unabated. Draft legislation against sand mining was never implemented and beachfront development continues to defy the planning regulations. Thus, if the phenomenon of sea-level rise becomes more pronounced, all remaining beaches and coastal development in St. Vincent and the Grenadines could be inundated.

2.1.2 Marine ecosystems. The marine ecosystems of SVG have suffered considerable negative impact from human activities making them very vulnerable to natural disasters. Large patches of sea-grass were removed during the construction of the Canouan resort. Frigate Island and Red Island have been bulldozed for marina construction and Patches of mangrove cleared for housing construction in Union Island. There are concerns about a Coast Guard base being constructed in a Fisheries conservation area also in union Island.

Poor solid waste management and agricultural practices in St. Vincent and the Grenadines has resulted in the deposition of plastics and sediments on coral reefs and the entry of chemicals into coastal waters. The resulting stress on marine ecosystems has increased their vulnerability to natural disasters occasioned by climate change. Coral bleaching and die off has been extensive in the coastal areas of SVG. Death of coral results in the loss of associated marine biodiversity.

Any change in ocean depth, temperature or salinity will cause further loss of marine ecosystems and increased economic and nutritional hardships for residents

2.1.3 Hydrological Characteristics. Except for rainfall data and some river flow, there is no real hydrological data in SVG vis-à-vis runoff, changes in stream volume, state of aquifers and coastal circulations. There are no projections or economic forecast as per El Nino, La Nina or

Southern Oscillations. Being an island state with heavy dependence on coastal and fresh water, there is need for a policy on water as it relates to coastal quality and management.

2.1.4 Food and Nutrition. The demand for quality fruit by the European Union and the desire to maintain production levels have forced the banana industry to introduce irrigation as a part of its production mechanism. The consequences of this move have not been fully determined. It is therefore necessary to commission an environmental impact assessment of this activity with special reference to salinization, effects on aquatic and marine ecosystems, and the availability and quality of recreational waters.

The Ministry of Agriculture has no policy regarding climate change. The country is therefore ill prepared to deal with a fall in food production occasioned by drought or reduced precipitation which will negatively affect its irrigation programme. There has been no attempt to look at alternative agricultural technology or plant species that will yield satisfactory returns with change in precipitation or microclimate.

2.1.5 Settlement and Infrastructure. In recent years, significant public investments have occurred along the coast. In 1965, the capital city of Kingstown was extended by the addition of approximately 20 acres of reclaimed lands. The newly constructed cruise ship berth also used reclaimed land. All of the airports in SVG (Arnosvale, Bequia, Canouan, Union Island) are built on some portion of reclaimed land.

Cost wise, the Ottley Hall Marina in west Kingstown ran over $110 million. Going further north is the Container Port at Campden Park built at a cost of over $12 million. At the southern most tip of the island is the town of Calliaqua. Recent construction in the Calliaqua area includes the Coast Guard Base (1990) with an infrastructural value of $5.4 million and the Calliaqua Fisheries Complex (1998) with an estimated cost of $6 million. With inflation rates averaging 2.5% between 1995 and 1998, replacement coast for these structures can be as high as 25% above the cost of construction.

At the same time, there has been substantial private sector investment along the shoreline especially at the southeastern end of St. Vincent. With over 85% of the nation's infrastructure less than 3000 meters from high water mark, it is imperative that serious thought be given to issues of climate change and sea-level rise.

2.1.6 Tourism and Human Health Impacts. Tourism activity in St. Vincent and the Grenadines has lagged behind that in other Caribbean destinations. This is due mainly to inaccessibility and the lack of white sand beaches particularly on mainland St. Vincent. Still, visitor arrivals have increased by 37.1 % sine 1990. The greatest increases have occurred at Bequia and Canouan in the Grenadines where visitation is up two and three-fold respectively. In the Grenadine islands however, there is no surface water. The islands depend on rainfall, water imports and to a lesser extent ground water. All of these sources would be seriously impacted by

climate change making tourism a very difficult product to sell. Additionally, sea-level rise will inundate most of the islands of the Grenadines.

The increased temperatures caused by global warming may reduce visitor arrivals since the northern hemisphere is likely to get warmer. The increase temperatures may create heat waves in the Caribbean turning visitors away. The less frequented islands like SVG are more likely to be first and hardest hit.

The issue of health will occupy the minds of the local authorities since changes in temperature and precipitation may create conditions conducive to the proliferation of vectors borne diseases. There may be the resurgence of fatal diseases once thought extinct. Additionally, changes in temperature can prove challenging to the more sensitive sectors of the population – the very young and very old.

2.2 PRIORITIES

ISSUE	RANK	REASON (S)
Tourism	1	Coastal erosion is threatening beach tourism. The Grenadines may be inundated. Eco-tourism not well developed or managed
Infrastructure/development	1	Most of the country's physical assets lie along the course. Transportation, communication, commerce are all coastal activities.
Agriculture	2	Irrigation is becoming increasingly important but river flow is decreasing. What if there are droughts?
Fisheries	3	While deep sea fishing occurs, seign fishing along the coast would be destroyed by sea-level rise and sedimentation. Coral death will also affect fisheries resources.
Water resources	3	It is becoming evident that water resource in this country is finite and that competing and growing demands is likely to impact future development.
Electricity generation	4	Although only about 10% of our electricity demand is generated by water, it represents a significant saving on foreign exchange. If it can be maintained it is the most secure and desirable.

3.0 Institutional and Legal Arrangements

Although ministerial responsibility for environment was established within the Ministry of Health and the Environment in 1985, environmental management remains largely a shared responsibility among a number of ministries and statutory bodies. The Following table lists the key institutions and identifies their environmental portfolio.

3.1 Allocation of Responsibilities

Min/Institution	Division/unit	Responsibility
Health and the Environment	Environmental Health Dept. Environmental Unit	-Maintenance of environmental health, -Solid waste management - Public sanitation. -Policy advisory board to government regarding directions and focus of the Ministry. - Coordinate environmental activities among agencies.
	Central Water and Sewage Authority.	-Conservation and management of water resources. - Management of sewerage and solid waste.
Agriculture and Labour	Agriculture Division Forestry Division Fisheries Division Land and Surveys Division Pesticide Control Board	-Extension services. Soil conservation. Research and agronomy. Pesticide management. -Management and protection of forests. Wildlife and beaches -Management and protection of fisheries, marine reserves -Enhancement of catch productivity, research and stock assessment, -Surveys for Government agencies. -Custodian of crown lands. -Control of importation and use of pesticides
Finance and Planning	Central Planning Division/Physical Planning Unit	-Preparation of physical development plans, -Review of EIAs - Control of mining/quarrying. -Co-ordination of development projects - Administration of development control - Advise on environmental matters
St. Vincent National Trust		-Conservation and protection of historic and natural resources
Communication and Works	Engineering and roads division	- Infrastructure development and civil works.

3.2 LEGAL INSTRUMENTS

St. Vincent and the Grenadines is developing legislative/regulatory framework for the proper environmental management, with specific laws dealing with Public Health, Forestry, Fisheries Wildlife Protection, Water Resources, Beach Protection, Pesticide Control, and Land Use And Physical Planning. However, no provision is being made for the translation of international policies and regulations relating to environmental conventions into the local system.

3.2.1 Environmental Legislation

Environmental Law	Date	Authority	Regulations
Town and Country Planning Act	1992	Makes provision for the orderly and progressive development of land, the proper planning of Town and Country areas and also for the control of development	Under development
Forestry Resources Conservation Act	1992	Establishment and management of forests reserves and protected forest	Under developed
Wildlife Protection Act	1987	Protection and manage wildlife and habitat, establish wildlife reserves	Wild life Regulations
Fisheries Act	1986	Protect and manage fisheries resources, designate marine reserves	Fisheries Regulations
St. Vincent National Trust Ordinance	1969	Establish National Trust for conservation of historic and natural areas	None
Beach Protection Act	1981	Protect beaches, control sand mining	None
CWSA Act	1985	Conserve and protect national water resources, ensure water supply.	Water Regulations
Public Health Act	1977	Gives authority to the Environmental Health Department to control pollution, abate nuisance and protect national health.	None
Pesticides Control Act	1973	Regulate the importation and use of pesticides	None
Anti-litter Act		Control litter disposal	None
Noise Act	1988	Control of noise	None

3.2.2

The role of environmental legislation in promoting sustainable development in St. Vincent and the Grenadines is affected by a number o factors including:

- **A lack of political commitment to environmental programmes**
- **A lack of financial resources with which to support environmental programmes**
- **Organisational weakness in the implementation of programmes and their co-ordination at both the national and local levels**
- **A lack of environmental awareness, technical expertise and experience at national and local levels among regulatory enforcement agencies such as the judiciary, police and immigration officers**
- **The influence of the policies of the International agencies currently providing financial assistance to the country**
- **A lack of integration of environmental cost into economic accounting.**

4.0 Public Expectation and Reaction

To date, decision-making in SVG as it relates to multilateral environmental agreements is solely the domain of government authorities. Authorities were of the view that their mandate entitled them to act on behalf of the nation without further consultation and that the citizens were only recipients of the benefits or misfortune resulting from their actions. A recent survey carried out to determine national perception of climate change issues and the associated response mechanism indicated that citizens would like to be more involved in the process and that the private sector should pay a greater role.

It should be borne in mind that several public awareness exercises (workshops, seminars, radio programmes, public speaking competition, newspaper articles and television releases) were conducted in St. Vincent and the Grenadines during the last two years. These activities were fairly well received and the target groups were varied.

4.1 Summary Response From Questionnaires and Interviews.

Forty questionnaires (Appendix 1) were sent out to selected individuals and agencies representative of the population composition i.e. students, civil servants, private sector, NGO, professionals etc. Only fifteen responses were returned. To fill the gap, interviews were done with representatives of the sectors from which no written responses came. The results are summarized in the matrix that follows.

Questions	Summary of Response	%	Comments
1. How can CC impacts affect livelihood	-Affect agriculture and food security -Loss of homes causing relocation -Affect communication and create economic hardship -Affect health	20 35 25 15	Several persons gave multiple answers. 5% of the respondents had no idea.
2. List local examples of CC impact that you have observed.	-Coastal erosion in Sandy Bay. -Loss of houses in North Leeward	10 5	Many persons were unaware of the realities on the ground.
3. Role of Public and Private sector.	-Govt. should establish environmental fund supported by the private sector. -Early warning systems should be put in place.	40 10	This question was often confused with 6and 7 so that the answers were the same.
4. Do you support a CC policy	-Yes -We should go beyond policy to preparedness	100 10	The private sector was strong on the need for mitigation and e.g. EIAs.
5. How can CC issues be inserted into national policy debate	-Highlight events observed -Consultations -Greater media involvement -Public education -Support to management agency	10 10 45 35 15	I t was felt that there should be more documentation to provide data for media reports. Everyone responded to this question.
6. What should be the role of government in policy implementation	-Leadership and regulation -Enforcement -Institutional strengthening -Educate	55 10 10 25	It was generally felt that government should lead but with the involvement of the people.
7. How can business (private sector) help in the delivery of the vision	-Offering incentives -Financial support -Be environmentally friendly in their trade policies	20 10 35	Partnerships with government was the most desired mode
8. What guiding principles should be included	-Collaboration -Education -Regulatory framework by govt. -Broad-based -Changes in life style	25 40 60 20 10	There was a general feeling that the loss of forest and the increase use of fossil fuel is a major obstacle to be overcome.

4.1.1 Identification of Priorities

Respondents were required to rank some given issues in order of priority in a Vincentian context. The matrix below summarizes the results

ISSUES	RANK	NO OF TIMES RANKED	REASON FOR RANKING 1-3
Tourism	1	6	It's a coastal activity with economic significant.
	2	0	
	3	1	The industry is fragile but important
	4	1	
	5	3	
	6	3	
Agriculture	1	1	Still the backbone of the national economy.
	2	3	Important to food security.
	3	5	Critical to the livelihood of a large percentage
	4	3	of the population.
	5	0	Economically significant.
	6	1	
Fisheries	1	1	-----
	2	1	
	3	1	
	4	6	
	5	3	
	6	0	
Marine Ecosystem	1	0	It is the base for infrastructural development.
	2	3	Involves other sectors such as tourism.
	3	6	
	4	1	
	5	1	
	6	1	
Settlement and infrastructure	1	5	Large part of national income invested here.
	2	5	Impact all other sectors.
	3	0	Mostly coastal and hence vulnerable.
	4	1	
	5	0	
	6	3	
Human health impact	1	6	Without health, everything else is worthless.
	2	3	National development depends on having a
	3	1	healthy workforce.
	4	0	
	5	3	
	6	0	

In many instances, the respondents were unwilling to rank the issues claiming insufficient knowledge of the possible impact on the various resources or lack of knowledge of the true economic value of the resource. In other cases, attempts were made at ranking but no reason was given for the choices.

If the number of first place ranking given was used as an indicator, then **tourism** and **human health impacts** are the major concerns followed by **settlement and infrastructure** with

agriculture and **fisheries** ranking third. If a second scenario was considered in which the average of the cumulative first, second and third place ranking was considered, then **human health impacts** and **settlement and infrastructure** would be the major concern followed by **agriculture** then **marine ecosystems**. This second scenario gives a better reflection of priorities as they exist in St. Vincent and the Grenadines.

The priority attached to tourism is more a reflection of national investment into this sector than its true economic worth to the country vis-à-vis its contribution to GDP.

APPENDIX 1

INTRODUCTION

DEVELOPMENT OF A NATIONAL CLIMATE CHANGE POLICY

The Government of St. Vincent and the Grenadines is embarking on a public consultation process to develop a ***National Climate Change Adaptation Policy and Implementation Plan***. This initiative is being developed under Component Four of the Caribbean Planning for Adaptation to Global Climate Change (CPACC) Project.

The objective of this policy is to support the development of a policy framework for the preparation of integrated planning and management for cost-effective response and adaptation to impacts of global climate change. The policy is intended to provide for the development of and integrated planning and management framework.

Caribbean states are primarily small islands or low-lying coastal states with fragile ecosystems. Tourism and agriculture are their main source of foreign exchange earnings. The vulnerability of the region stems from the scarcity of natural resources, heavy dependence on coastal and marine resources, scarcity of technical skills, limited physical size and generally high population densities in coastal areas. The scarcity of reliable data and lack of suitable information systems or coordinate institutional structures to manage resources aggravate the difficulties.

It is anticipated that climate change is likely to have profound impacts in the region. Some of these include:

- Sea level rise
- Coastal erosion
- Increased intensity, frequency and duration of storm activity
- Changed weather patterns resulting in droughts, floods, heat waves and changes in hurricane paths
- Loss and changes in natural ecosystems-mangroves, coral reefs, wildlife
- Disruption to essential services and infrastructure e.g. Roads and utilities (particularly freshwater supply)
- Increased social and economic costs as a result of damage to natural and man-made productive systems
- Changes in agricultural patterns
- Effects on human and animal health

As part of the process to develop a National Climate Change Adaptation Policy the government of St. Vincent and the Grenadines is seeking the views of the public on the following:

1. How can the above mentioned climate change impacts affect individuals lives and livelihoods?

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2. List examples of the above mentioned impacts or other impacts resulting from climate change that have been experienced.

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3. What should be the role of the public and private sector in managing and /or addressing climate change impacts?

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4. Do you support the development of a policy to address Climate Change?

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5. How can climate change issues be inserted into the National Policy Debate?

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6. What should be the role of Government in implementing this policy?

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7. How can the business sector and the general public help in the delivery of such a vision?

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8. What are some of the guiding principles you would like to include in this adaptation policy to ensure that the anticipated impacts of climate change are mitigated?

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_____

IDENTIFICATION OF KEY ISSUES WITH RESPECT TO CLIMATE CHANGE

Impact of potential changes in seal level, hurricane characteristics, storm surge, rainfall patterns and temperature on

- Marine ecosystems
- Food and nutrition: agriculture and fisheries
- Settlement and infrastructure
- Tourism
- Human health implications

Other Key Concerns, if any (specific to St. Vincent and the Grenadines)

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IDENTIFICATION OF PRIORITIES

While all the issues identified above will be significant concerns, some are likely to be assigned a higher priority than others. Ranking these possible impacts provides a tool, which can assist in making choices in the allocation of resources for adaptation, especially in circumstances where such resources may be limited.

- **Using numbers, one being the highest priority rank these issues accordingly.**

ISSUES	**RANK**	**REASON (S)**
Tourism		
Agriculture		
Fisheries		
Marine ecosystems		
Settlement and infrastructure		
Human health implications		

VALIDATION

Agency _____

Job Title _____**Date** _____