A Framework of Best Practices for Caribbean Small States to meet the Challenges of Climate Change

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Declaration

I hereby declare that this dissertation is my own original work.

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ABSTRACT

Caribbean Small States are considered vulnerable by virtue of their geographical peculiarities, economic exigencies, delicate ecosystems and rate of social development among other characteristics. Their ability to meet challenges such as climate change is therefore deficient.

This research assesses the challenges faced by Caribbean Small States in view of climate change, in terms of the causes and effects, potential damages and current policies which exist to treat these issues. It emphasizes the interdependence between the alleviation of climate change, social and economic development and government policies.

It is intended to be a guide for public and private sector policy makers throughout these Caribbean Small States and provide alternatives from which even developed states may be able to benefit.

It is the researcher's hope that once the long term benefits are recognized, this devised framework will strengthen cooperation among states for development at national, regional and global levels.

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LIST OF ABBREVIATIONS AND ACRONYMS

ACCC-	Adaptation to Climate Change in the Caribbean
ACP-	African Caribbean and Pacific Countries
ACS-	Association of Caribbean States
AOSIS-	The Alliance of Small Island States
AU-	African Union
CARICOM-	Caribbean Community
CCCCC-	Caribbean Community Climate Change Centre
CDM -	Caribbean Development Mechanism
COP-	Conference of States Parties
CPACC-	Caribbean Planning For Adaptation to Global Climate Change
CREDP-	Caribbean Renewable Energy Development
EU-	European Union
GEF-	Global Environment Facility
GEF-RAF-	Global Environmental Facility – Resource Allocation Framework
GFCS-	Global Framework for Climate Services
GIS-	Geographic Information System
IMO-	International Maritime Organization
IMPACC-	Implementation of Adaptation to Climate Change
IPCC-	Intergovernmental Panel on Climate Change

MACC-	Mainstreaming Adaptation to Climate Change
MDGS-	Millennium Development Goals
SIDS-	Small Island Developing States
UNCLOS-	United Nations Conference on the Law of the Sea
UNDP-	United Nations Development Programme
UNEP-	United Nations Environment Programme
UNFCCC-	United Nations Framework Convention on Climate Change
WCC-	World Climate Conference
WHO-	World Health Organization
WMO-	World Meteorological Organization

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INTRODUCTION

The term ‘Small State’ is a relative description given to states which are unavoidably faced with increased risks of marginalization and vulnerability in the international system. This is mainly as a result of their limited economic and military capability, limited institutional capacity, limited diversification, and susceptibility to natural disasters.

Caribbean states comprise mainly of small island states with low lying coastlands and key economic sectors which are directly dependent on the natural resource base. They are richly endowed with tropical rainforest and other ecological resources that are of significant scientific and commercial value. The critical economic sectors are energy, mineral extraction, agriculture and tourism. The industries of fishing, agriculture and forestry hold considerable potential for the economies with future development. However, this group of countries remains in crisis and their potential for development continues to be at risk given the increased global challenges. The most profound of which is climate change.

The title of this research speaks of ‘Caribbean Small States’ which for the purpose of this research will refer to the Caribbean Community of States, comprising 15 members and five associate members. The geographical boundaries of the region stretch from the Bahamas Islands in the north, southward to Guyana, Suriname, and Belize in the west and to Barbados in the east. The total population of the community is more than 14 million which ranges from approximately

8.3 million to 4, 500 in Montserrat. (CARICOM Secretariat, 2005) In geographic size the community of states ranges from Guyana with an area of approximately 215, 000 sq km to St. Kitts and Nevis with 270 sq km. (CARICOM Secretariat, 2005). Within the community there is also great diversity with regard to levels of economic and social development.

New developments in the international arena intensify the challenges to these small states by increasing their vulnerabilities. Within the last fifty years more people have been added to the world's population than in all previous millennia of human existence. This vastly increased global population pursuing higher standards of living, has become a potential threat to the global environment, which is manifested in the forms of the 'depletion of the ozone layer' and 'global warming and climate change'.

The effects of global warming and climate change can be felt throughout the world and are becoming more and more visible with every major flood, hurricane, earthquake, or other environmental disaster. States, especially Caribbean small states are subject to a number of these effects that impose varying levels of vulnerability, and greatly impact on the region's level of sustainable development. (Drakes, 2008) According to scientific data, climate change is expected to translate into rapid changes in the amount and pattern of precipitation, changes in the frequency and intensity of extreme weather patterns, glacial retreat and major sea-level rise during the next century, even though some of these effects are already being observed. (Nokta, 2009)

Preserving the earth's atmosphere must therefore become a priority. There is need for strict reinforcement of laws against the destruction of the environment, protection of rainforests and the use of energy. Governments of both large and small states respond to these serious challenges by

placing them high on their policy agendas. States large and small have attempted to tackle the problem through diplomatic methods such as the negotiation of agreements.

Though resilient in their attempts to address this issue, new manifestations of climate change and its effects are still very evident. Changing weather conditions in the Caribbean concomitant with the vulnerability of these states to adverse weather conditions increase their plight. Their ecological composition remain vulnerable given their size, isolation, limited fresh water and other natural resources, fragile economies, population density, poorly developed infrastructure and limited financial and human resources. Thus, a chain-link effect exists where all sectors of society are continually affected by these challenges. This handicaps the growth potential of these states as well as impact on the capacity to address social dimensions of their developmental goals.

In this regard, small states must adopt measures to help increase their resilience to the impacts of climate change on a global, regional and national level. This paper seeks to explore the impacts posed by climate change to the development potential and policies of Caribbean Small States. It also aims to provide a workable model framework of best practices for these states to overcome their vulnerabilities and contribute meaningfully to the sustainable development of the community and the wider world.

It is perceived that the maintenance of individual sovereignty does not provide Caribbean small states with enough room to manoeuvre against the challenges of a globalize system. A diplomatic integrated approach then becomes necessary to give strength to number. Hence this model regional framework will also endeavour to promote a more structured approach for Caribbean small states to meet the challenges of climate change.

CHAPTER I

'A CHANGING ENVIRONMENT'

The central issue of this study is the vulnerability of Caribbean small states in managing the challenges of climate change. To understand the vulnerability of these states as opposed to that of the more developed states it is necessary to identify at the outset the effects and causes of climate change, as well as the current practices which contribute to this phenomenon. This chapter in defining climate change seeks to give insight into these issues.

The once pristine surroundings for all human beings, a place matured for growth and exploration, rich with natural resources and full of potential for human development have now become an embodiment of danger. EU Focus reports that "animal and plant species are disappearing; the polar ice-caps are shrinking; and natural disasters such as floods, hurricanes, fires, and droughts are 'exacting financial and human tolls on society.' 'Pollution of all kinds is affecting people's quality of life and their health.' All this unavoidably attributed to the phenomenon of climate change.

Climate change refers to any significant change in measures of climate such as temperature, precipitation, or wind, lasting for an extended period; a decade or longer.

Inherent in this is the warming of the earth's surface, scientifically termed 'global warming.' (Glossary – Climate Change, 2007)

Over the last 100 years the average temperature of the air near the Earth's surface has risen a little less than 1º Celsius (0.74 + 0.18 ºc), or (1.3 +0.32º) Fahrenheit, (Allianz Knowledge Partnersite, 2007) its highest level in the past four centuries – believed to be the fastest rise in a thousand years. The six hottest years in recorded history, according to an article on Global Warming, have all occurred within the last decade. This is however only the beginning as scientists predict that if emissions of heat-trapping carbon emissions aren't reduced, average surface temperatures could increase by 3 to 10 degrees Fahrenheit by the end of the century. (Allianz Knowledge Partnersite, 2007)

The earth's climate is already constantly changing due to natural factors such as continental drift, volcanoes, ocean currents, the earth's tilt, comets and meteorites. These have been speeded up however by increased emissions of greenhouse gases from common human activities which are mainly made up of Carbon Dioxide (CO2). (Yes world, 2008)

The world's population is multiplying at an incredible rate. Reports of the large-scale use of fossil fuels for industrial activities; increased emissions from vehicles, industries, and homes; implementation of new industries for the creation of new jobs; and urbanization are now prevalent. In addition greater consumption of natural resources within industries of construction and transport has resulted in massive deforestation and the creation of mountains of waste. (EU Focus, 2006)

Increased global temperatures can cause a number of effects to the world environment such as a significant rise in global sea levels, changes in the amount and pattern of precipitation, changes in the frequency and intensity of extreme weather patterns, glacial retreat and reduced summer stream flows. All this could result in torrential rains in some places causing massive floods, droughts in others, changes in agricultural yields, species extinction and an increase in the range of diseases. (Yes world, 2008) Millions of people would be misplaced resulting in migration, and more importantly there would be a change in the location of where particular foods are grown forcing planters to go in search of arable land for agriculture.

Small island developing states (SIDS) are particularly concerned with four effects of global warming and climate change: sea level rise, deterioration of weather patterns, loss of biodiversity and the management of forests and coral reefs. The Caribbean Community forming part of this group of states shares these concerns.

Changes in the earth's temperature have resulted in the melting of portions of polar ice caps on both ends of the Earth, causing the oceans to rise by 4-8 inches in the last century. (Australian Centre for Leadership for Women, no date) This is of major concern to Caribbean states given that in excess of 60 per cent of the population and economic activity in the Caribbean region, especially the low-lying coastal states of Belize, Guyana and Suriname exist within five miles of the shore. More so Guyana is especially vulnerable as its coast, on which 9 per cent of its population resides, lies approximately 6 feet below sea level. For these Caribbean small states any significant sea level rise would result in enhanced coastal erosion, seawater intrusion into freshwater resources, loss of land and property, the dislocation of people, the reduced resilience of coastal ecosystems, and high resource costs in response to and adaptation to these changes.

This was substantiated by the report of the Working Group on Climate Change and Development titled Up in Smoke: Latin America and the Caribbean, which found that:

> Sea-level rise is likely to hit coastal areas, particularly in vulnerable parts of the Caribbean, leading to loss of coastal land, infrastructure, and biodiversity, as well as the intrusion of soil-contaminating saltwater. (IIED, 2006)

It has been confidently predicted that climate change will not only lead to rising sea levels but will also have significant effects on weather patterns. The increased frequency and intensity of hurricanes, thunderstorms, earthquakes, tornadoes and cyclones could largely affect the livelihoods of large segments of the population of these states. Meanwhile these CARICOM states are so small that it could become highly unlikely that there will be any unaffected areas to which they can relocate.

Barcena (1992) in her article "UNCED and Ocean and Coastal Management", mentioned that small islands are especially affected by the loss of aquifers, substantial losses in total land area, and changes in stability which threaten the existence of these islands. She mentions also that it may be possible to state that some states may be rendered uninhabitable or economically unviable.

As a result of the rising temperatures, reports indicate that trees and plants around the world have relocated toward Polar Regions and up mountain slopes and thawing permafrost allow shrubs and trees to take root in colder areas. These same reports also predict that grasslands will likely become forests; and maple beach forests will shift north toward cooler temperatures. "As plant communities try to adjust to the changing climate by moving toward cooler areas, the animals that depend on them will be forced to move also." (SEBIDA News, 2007)

The Caribbean Community of states has remarkable sources of unique bio-diversity in its forests and marine areas. The significant loss of forest cover which has been occurring in some islands

and mainland states and the pollution of their coastal waters, threaten much of this biodiversity directly, through the loss of habitat and indirectly, through coral bleaching, soil erosion and run-off. (CARICOM Secretariat, 2005) These have serious implications for the rivers, coastlands and wetlands and consequently freshwater supply. These effects can cause devastating financial and social impacts on persons whose livelihoods depend significantly on these resources.

Climate Change though deemed to be a future problem has already materialized in so many ways. It is an ongoing process with dire consequences which has been confirmed by this research to worsen with time. The occurrences of the year 2005 are testament to this as its devastating effects were observed in the manifestation of several hurricanes, floods, tropical storms and landslides and even Tsunamis.

This was substantiated by the report of the Working Group on Climate Change and Development, titled 'Up in Smoke: Latin America and the Caribbean' which stated that "with 6 tropical storms and 14 hurricanes, the 2005 hurricane season is rated one of the most active and destructive in history."(IIED, 2006, p.5)

Guyana's first harsh reality was also highlighted in January 2005 when intensive rainfall persisted for many days resulting in Regions Two, Three, Four and Five being declared disaster zones after severe flooding. This resulted in the destruction of thousands of acres of farmland and the killing of livestock.

During the same period at least eight states in the Caribbean were affected by natural events. Hurricane Ivan, the most destructive of these events, caused severe damage to the islands of Grenada, Jamaica and the Cayman Islands. These islands are still trying to repair the damages

which were left in the aftermath of this hurricane. Tropical Storm Jeanne which occurred shortly after Ivan was hard hit to Haiti. It caused major floods and mudslides on the Nord-Quest and Artibonite regions of Haiti and resulted in large scale loss of lives and infrastructure. (Caricom Secretariat, no date)

The destruction caused by these natural disasters put the topic of climate change on the international agenda as the calls for governments to act immediately were heeded. In addressing the United Nations General Assembly in 2005 Secretary General Ban Ki-Moon, of the United Nations, stated that:

> Rapid environmental change is all around us. The most obvious example is climate change, which will be one of my top priorities as Secretary-General. But that is not the only threat. Many other clouds are on the horizon, including water shortages, degraded land and the loss of biodiversity. This assault on the global environment risks undermining the many advances human society has made in recent decades. It is undercutting our fight against poverty. It could even come to jeopardize international peace and security. (UNEP, 2007)

Climate change has definitely aggravated problems that could undermine security and trigger violence; exacerbating problems such as political instability, poor governance and poor economic performance. Former World Bank Chief Economist, Sir Nicholas Stern has forewarned that if global warming is not stopped, there will be drastic human consequences and developing countries will be affected most drastically as poverty will increase, trade will worsen and hundreds of millions of people will die. (BBC Caribbean Report, 2006)

The world's leading atmospheric scientists report that a gradual warming of our climate is underway and will continue. Sanders (2006) remarked therefore that global warming poses an extraordinary challenge therefore to the economy and the environment to many nations. These countries he posits will be far less able to cope with a changing climate in this regard.

The World Health Organization (WHO) reported that human-induced changes in the Earth's climate are reflected in at least 5 million cases of illness and more than 150,000 deaths every year. (Pew centre, no date) Basu (2005) in giving insight into the same report, in a University of Wisconsin news release, stated that scientists have learnt that temperature fluctuations may sway human health in a surprising number of ways. This ranges from influencing the spread of infectious diseases to boosting the likelihood of illness-inducing heat waves and floods.

The German Advisory Council on Global Change WBGU/D+C (2008) has identified four climate-induced conflict constellations which could lead to social destabilization and violence. These are:

- Changing availability of freshwater resources,
- Declining food production,
- Worsening storm and flood disasters, and
- Environmentally induced migration.

The WBGU also believes that fragile states with weak institutions will be overburdened in particular and will need support to adapt to the new environmental conditions.

This was also highlighted in the IPCC Fourth Assessment Report (2007) which emphasized that the poor communities are far less able to cope with the effects of climate change as they do not possess the resources necessary for adaptation. The same view was expressed by Jonathan Patz, a professor at UW-Madison's Gaylord Nelson Institute for Environmental Studies who was quoted in the Wisconsin news release as saying that "Those least able to cope and least responsible for the greenhouse gases that cause global warming are most affected. Herein lies an enormous global ethical challenge." (Basu, 2005)

According to a report by Dr. Ulric Trotz (2000) titled "Climate Change and the Caribbean," Caribbean countries much like all developing countries, are most vulnerable to climate change impacts and this is exacerbated by their inability to adapt to these impacts. Trotz (2000) He further posited that in order to be able to adapt to climate change, certain factors must be made present such as an:

- Availability of financial resources
- Availability of technology and trained personnel
- Access to information
- Existence of legal, social and organizational arrangements to facilitate adaptation.

Over the years, countries around the world have come to recognize that 'environmental challenges do not exist in isolation.' Loss of biodiversity, air and water pollution, waste, recycling, management of chemicals, monitoring the impact of new technologies, and other environmental issues are all inter-related, making the protection of the environment one of the greatest challenges facing the world. (EU Focus, 2006)

Clearly Caribbean Small States face dire prospects as their entire livelihood is threatened by this phenomenon. The effects are felt by large cross sections of the population as it affects not only the resources but it brings with it many socio-economic effects. These effects to CARICOM member states are likely to be magnified by the ever present poverty that exists within some of these states. To further complicate issues, the weak economies of these states may be unable to support the expenses that will inevitably arise in dealing with these effects.

Such a vast and challenging phenomenon cannot be adequately dealt with by a solitary state acting in isolation. The effects and challenges posed by Climate Change knows no borders making this a truly complex and global problem that the developed countries on whom small states rely are too busy trying to combat the effects of this phenomenon in their own states and can offer very little support.

It is therefore obvious that Caribbean small states must work in concert to tackle this issue.

CHAPTER 2

'DEFINING CARIBBEAN SMALL STATES'

The ability of Caribbean Small States to meet the challenges presented by Climate Change will be explored in this chapter. The term small state is fairly relative, hence, there is need to explore the geographical peculiarities and economic exigencies which help to determine the diminished capacity of these states.

Generally a number of criteria have been used to define small states. They include the geographic, demographic, economic and political dimensions of the state, though the combinations of some or all of these criteria are sometimes required in the categorization process. Several concepts regarding the best criterion to be used in the defining small states therefore exist. (UNECLAC, 2007)

A UNECLAC/CDCC Report (2005) explained that geographic considerations should take into account land size as the primary consideration when defining small states, as well as other characteristics such as their insular character or their location on continents. The report makes reference to various groupings which present themselves as a result, and the fact that other characteristics such as the size of the economy, or countries with a low per capita GDP; and groupings of States with population sizes of one million, or less than 1.5 million would also be defining categories.

Usually, countries like Jamaica with a population of over two million, have been included in the category of small states; while Haiti, with a GDP per capita of US$1,610, the lowest in the Caribbean, has found itself excluded in some cases given its population of over 8 million; and some otherwise geographically and demographically defined small island states have been excluded, because of the high per capita GDP as is clearly outlined in Table 1.

At the Global Conference on Small Island Developing States (SIDS) which convened in Barbados in 1994, SIDS were characterized as possessing limited size, having vulnerable economies and being dependent both upon narrow resource bases and on international trade. Small states were also identified as being entirely or predominantly coastal entities. (UNECLAC, 2007)

Defining a small state continues to be an area of contention, since there is no one absolute criteria such as land area, population size, or military or economic capability which can determine whether a state is small as opposed to large. This has led to popular agreement that the definition of a small state has to be holistic, taking into account all considerations at the same time.

For the purpose of this research the definition proposed by the conception based studies carried out by the United Nations Institute for Training and Research (UNITAR) and the Commonwealth Heads of Government will be employed. It defined small states as countries whose population are less than 1.5 million people, while taking into account other considerations such as the size of its territory, level of economic development and its vulnerability to the external environment in economic, cultural and military terms. (Sanders, 2005) This definition, it is believed, caters best for the varying attributes of these states given the disparities which exist.

Usually, given the potential attributes of the Caribbean, especially in terms of their natural resource base and strategic placement, it becomes difficult to envisage the vulnerability. Geologically, these low lying coastal developing states may be divided into four groups. The Bahamas is the first which consists of around 700 islands, many of which are uninhabited. The four largest islands in the Caribbean are Cuba, Hispaniola, Puerto Rico and Jamaica which form the Greater Antilles and owe their origins to tectonic activity at the interface between the North American plate and the northward and east moving Caribbean Plate. The Lesser Antilles comprise two parallel chains of islands: an inner arc built around volcanic cones or cone groups, such as Montserrat, Dominica, St. Lucia and St. Vincent; and a discontinuous outer arc of islands of coral limestone such as Anguilla, Antigua and Barbuda, and Barbados. The fourth group close to the South American mainland, including Trinidad and Tobago, Guyana and Suriname, although geologically varied, owe their current form and position to Andean folding and faulting. (Hillman, 2003)

Given the disparities which exist in land formation and the composition of the islands a sweeping variation in land size and population are evident. In geographic size, the Caribbean region includes states ranging from Montserrat with a total land area of 103 sq. km and St. Kitts and Nevis with 270 sq. km; to Suriname with a total area of 163,820 sq. km and Guyana with a total land area of 215, 000 sq. km. The total population of the Caribbean Community is estimated at over fourteen million with individual population ranging from 4, 500 in Montserrat, to 2.6 million in Jamaica, to 8.3 million in Haiti (See Table 1) (Hillman, 2003)

The Caribbean region lies between the equator and 28 degrees north latitude and between 55 and 85 degrees west longitude. Hence it is characterized by north-easterly trade winds and relatively

high temperature regimes with little seasonal variation. (see table 1) (Caribbean Junior Atlas, 1990) Rainfall and Sunshine are predominant and these countries are vulnerable to natural disasters such as tropical storms, hurricanes, and earthquakes which have become regular features.

In this area of relatively abundant rainfall and equable tropical temperatures, natural vegetation consists mainly of tropical and seasonal rainforest, except in rain-shadow areas, where drier forms of seasonal rainforest are found. Cactus-thorn forest shrub communities are found on the dry coastal fringes of many islands, more extensively in the Bahamas and other well-drained limestone areas. Significant vegetation community types include lowland savannah grasslands, freshwater and saltwater swamp vegetation, mountain forest formations, and coastal fringe formations including mangrove communities. (Hillman, 2003) These conditions are suitable for large scale production of alternative energy, however, the vulnerability exists where these particular countries lack the financial and human resources necessary for investment.

As a result of the geographical peculiarities, this community of states consist of key economic sectors directly dependent on the natural resource base. The volcanic soils and soils developed on low-lying coral limestone areas in the region are very fertile. These soils include those of Montserrat before its recent volcanic eruptions; and sugarcane plantations have thrived for centuries on limestone soils such as those of Barbados. The distribution of plant species vary according to rainfall regime and altitude. Seasonal rainforest is the natural vegetation cover of most of the lowland areas. (Hillman, 2003) These soils have formed a long-term basis for successful agriculture, and natural resources (see Table 1). These areas are nevertheless fragile in the wake of seasonal weather conditions such as drought and salt water intrusion due to rising sea levels which are becoming more prevalent as a result of climate change.

Even though major potential benefits exist as a result of the large scale natural resource base, the region reportedly lacks the capacity to efficiently manage these resources to cater for their sustainable development. In addition they lack the modern technologies to cater for large scale and diversified production of these resources.

New advancements in the economic and political setting of the international system also account for some of the vulnerabilities of small states, which are forced to operate as independent entities regardless of their limited capacities. The vulnerability is mainly a result of their limited economic and military capability. Where the powerful or more developed states can easily adjust to the globalization process of interdependent regimes in view of negotiations, economic prowess and technological advancement, to lead the developments of the world, small states which are faced with many challenges would have to gain recognition and acceptance by the wider international community and seek new and innovative ways and opportunities to continue improving the quality of life of their people.

Global trends tend to favour large trading blocs which can possibly marginalize these states with limited and undiversified products, as previously mentioned. The conception of small states has evolved still in recent years to be characterized by their vulnerability in the areas of defence and security, limited institutional capacity, remoteness and insularity and lack of sufficient economic resources thus resulting in the definition of a small state becoming more relative.

The region has historically enjoyed certain benefits from its location between North and South America and between Europe and the Americas. This location advantage, particularly its proximity to the United States, the world's largest market, has the potential to be an asset for

economic development, offering as it does easier access to a large market for exports and imports as well as tourism. The international arena presents a disadvantage in that the world has become globalize, and the majority of states within the Caribbean region have not yet reached globalize standards especially in terms of technology. The technology which is indispensable for the region's future economic and social development is not yet updated. As a result markets are not diversified and this is reportedly stagnating regional economies.

The vulnerabilities discussed thus far, are in keeping with those identified by the SIDS PoA which argued that:

> there were many disadvantages that derived from small size. These included a narrow range of resources, forcing undue specialization, excessive dependence on international trade resulting in vulnerability to global developments, high levels of population density in coastal areas, despite having small populations in absolute terms, thus increasing pressures on limited resources. (UNECLAC/CDC, 2005, p.2)

Caribbean States then, share a number of characteristics that make them environmentally, economically and socially vulnerable. Vulnerability is a multi-dimensional concept which encompasses biological, geophysical, economic, institutional and socio-cultural factors. (UNECLAC/CDCC, 2005) The notion of vulnerability is associated with the idea of exposure to damage, lack of protection and precariousness; and the risk of being harmed by unforeseen events. Inherent in the notion of vulnerability is a concept of resilience, which takes into account the impact of the hazard or risk, together with the capacity of the system to adapt to or withstand the impact. (UNECLAC/CDCC, 2005)

The effects of Climate Change, as exclusively examined in Chapter 1, certainly impose varying levels of vulnerability on Caribbean States. The IPCC in its Fourth Assessment Report clearly reported that these developing states were very vulnerable to climate change and that the impacts were largely adverse.

The IPCC forecast for future climate models includes regional precipitation decreases and increased seasonality, with regional rises in temperatures. This according to the report will affect terrestrial and marine ecosystems that have already been weakened. (IPCC, 2007) In many ways, this will result in loss of soil and /or marine productivity which will directly affect the livelihoods of farmers and fishermen alike. Consequently rural-urban migration will lead to greater pressure on the social systems of these Caribbean States.

Water supplies will be affected as sea levels rise and contaminate fresh water supplies; water fit for human consumption will slowly become unavailable, and water levels will recede in certain areas as droughts are manifested. These changes will significantly affect agricultural production, a sector on which the Caribbean States thrive.

Increased poverty levels, increased diseases such as malaria and dengue fever, loss of human settlements on low-lying islands and coastal areas availability of food and also migration will result, as well as the loss of habitat and species of plants and animals.

Evident vulnerability of the Caribbean States to these conditions, therefore, adequately explains its smallness, not necessarily in its land or population size, but rather in its capacity to overcome the challenges with which it is faced. The challenge they face is deciphering how to achieve strong economic growth and investment so that in the medium and long term they can be economically, socially and environmentally sustainable. In the event of these predicted challenges government policies both national and foreign, would have to be remodelled to cater for alternative development solutions in the event of the foreseen crises.

Caribbean states have many factors in common given their history, culture and economic potential, and geographical peculiarities. This presents a stronger motive to seek a solution which is common to the effects of all states.

CHAPTER 3

'IMPLICATIONS FOR GOVERNMENT POLICY'

Much has already been said of the need to develop a strategy of sustainable development of small states in view of the effects posed by climate change and the far reaching impact to the livelihoods of its citizens. This chapter will entail a closer examination of its impact on various development sectors of Caribbean small states; and the implications for government policy.

Each state has a policy, which is geared towards pursuing a national interest and which is important to the development of the state. Developing such policies is the first task of any government which will outline concrete strategies to guide them on their mission to development. These are usually referred to as a state's national or domestic policies, which are defined as a broad course of action or statements of guidance adopted by the government at the national level in pursuit of national objectives. (Answers.com, no date)

Inherent in each state's national policy is the development of its foreign policy which is a strategy based on a set of political goals that seek to outline how a particular country will interact with the other countries of the world. It is arguably an extension of a state's domestic policy. This is especially essential in the current international system where states are placed in a position to complete with other states and would have to assert themselves in the interest of the social and economic development of its nation.

National interest is defined in the Dictionary of Diplomacy (2003) as that which is deemed by a particular state to be a vital or desirable goal in its international relations. Generally, three paramount and permanent 'national interests' are proclaimed: the security and survival of the state; the pursuit of the social and economic development of citizens; and the need to develop and strengthen infrastructure, institutions and the mechanisms of national unity. Government policies, for the most part, are generally designed to help protect the country's national security, ideological goals, and economic prosperity.

Small states from the time they have gained independence have had to defend their domestic ability to prove that they had the capacity to be viable as states. This capacity included satisfying the needs of their people for the preservation of law and order; maintaining social and economic progress; security and defence from foreign intruders, including drug traffickers, terrorists, and other criminal elements. It also included providing social services such as health and education; and the advancement of their interests and values in the international arena. Policies have therefore placed more emphasis on these areas.

Caribbean Small States' government policy has been generally based on the same factors with the inclusion of a commitment to democracy and the due process of the rule of law, maintaining a working relationship with the known powers of the world, and the acquisition of assistance to combat threats in the forms of security, HIV/AIDS, disaster preparedness and education, as priority areas. (CARICOM Secretariat, 2007)

New developments in the 21st century exacerbated the vulnerability of small states that were already in many ways manifested, and this impacted greatly on policy making. In addition to the

advanced technologies, globalization increased the integration of the world economy and resulted in the opening up of markets to international influence. (Sanders, 2005) Small States were forced to make new policy decisions therefore to liberalize their markets, in order to participate in and benefit from the international community. Policies therefore involved extensive negotiations within regional and international groupings such as the WTO and the ACP Group of countries. Small states developed a policy to operate as a trading bloc, rather than independent states for overall benefits.

Operating as a bloc provided small states with an opportunity to possibly increase its very narrow resource base for large scale export products; and to some extent diversify its limited resources. Climate change which threatens the existence of these resources has further impacted on these developments and has resulted in further shifts in government policy. New policies sought alternative industries to develop and boost their economies. As a result, the tourism industry was developed to include, forms of nature and eco tourism as an addition to holiday tourism; and attempts were made to diversify the agriculture sector, to include aquaculture among other interests.

Climate change has gained prominence among Caribbean Small States as they recognize the profound impact this phenomenon has had on major sectors of development within their communities and the region. Though their contribution has been negligible they remain eager to formulate a global response, given the severity of its impact to the region. Since the Barbados meeting in 1994, the wider grouping of SIDS has accorded the highest priority of action to cope with the emerging threats of climate change. They have also pursued several initiatives to address climate change through adaptation, a stipulation in the BPoA which was agreed to at the SIDS

Meeting. Small states have also embarked on a series of negotiations with the wider international arena as their foreign policy now includes the focus on climate change as a priority.

In their bid to keep climate change priorities on the top of the global agenda, small states have been very forceful in the ongoing global debate on how to combat climate change, by calling on the industrialized countries to cut their GHG emissions to a level which would reduce temperatures to 1ess than 1.5˚C. This they have been able to do through a strong process of integration and extensive dialogue with countries and groups of countries, even the industrialized countries.

At the regional level, Caribbean Small States continue to focus on building capacities at all levels, to embed and integrate resilience building and adaptive capacity into domestic policies, and investment decision-making processes and practices. (UNDP, no date) They were making good headway with this through the adoption of the Millennium Development Goals which were adopted by the UN as a framework of finding new ways to alleviate widespread poverty and hunger.

The MDGs formed a total of 8 goals which were to be met by the year 2015. These goals included eradicating poverty and hunger; achieving universal primary education; promoting gender equality, reducing child mortality, improving maternal health and combating HIV/AIDS, malaria and other diseases; ensuring environmental stability and developing a global partnership for development. (UNDP, no date) With the adoption of these goals small states were afforded the technical and other assistance necessary to alleviate some of these problems to a large extent, especially poverty and hunger. This was possible since governments were bound by their

commitment to the MDGs to highlight progress given the strategies they employed. Their policies had to therefore include reference to various aspects of the MDGs.

Climate change now threatens the progress achieved by these states over the years, especially in the areas related to eliminating poverty and hunger and promoting environmental sustainability. It further affects these states' ability to achieve the MDGs by the year 2015. The effects as outlined in detail in Chapter 1, have presented new challenges to gain the attention of policy makers as a result of their susceptibility to a series of climatic events due to geography, physical make up and socio-cultural circumstances and heavy dependence on their coastal zones for settlements and livelihoods. These effects are linked to the vulnerability of several sectors inclusive of agriculture, poverty, health, infrastructure, tourism, migration and education among others.

The impact of climate change on agriculture is linked through its effects on water resources. The primary changes that will occur as a result include long term - water shortages, worsening soil conditions, drought and desertification, disease and pest outbreaks on crops and livestock, and salt water intrusion into coastal aquifers and soils. Adequate water supply is essential to the agricultural sector and changes in rainfall patterns will not only affect the production of crops such as banana which is water intensive, but will increase the vulnerability to certain diseases such as the onset of the Black Sigatoka disease in Jamaica in 2000 (IICA, 2005) and the current plantain disease present in Guyana.

The IPCC report of 2001 also accurately predicted through growing consensus that:

> The worst impacts of climate change on agriculture will be experienced in the tropical region, resulting in a spatial shift of crops and agriculture away from the tropics toward temperate and Polar Regions and a suggested reduction of production between 4 – 24%. (IICA, 2005)

A vast majority of the region's population depends on subsistence agriculture for at least a part of their livelihood. Many of the short-term crops grown by these farmers for example pigeon peas and vegetables, are seasonal and therefore any significant shifts in climatic conditions such as increased temperatures and changes in rainfall patterns could have adverse effects on production and food supply. This will result in increased poverty as these farmers will be left without any main source of income.

In addition, agriculture employs 40% of the work force and contributes over 20% to GDP. (IICA, 2005) The promotion of a prosperous agricultural sector is therefore vital to Caribbean small states since it generates rural employment and prevents migration to the cities; and promotes overall economic growth, employment and rural prosperity as a prerequisite for poverty alleviation and food security. As a result small states could also enjoy national and social stability.

Poor countries like Caribbean Small states also lack the infrastructure necessary, such as storm walls and proper water storage, to respond adequately to the natural events associated with climate change. This usually results in massive floods and destruction of homes, schools and other infrastructure. This is likely to increase displacement of families and result in migration. Environmental migration will mostly occur within national borders at first but then spread internationally. (D+C, 2008)

As a consequence of the natural disasters and floods posed by Climate Change diseases such as malaria, typhoid and dengue fever are likely to expand in range, impacting more people throughout the region. Climate change also threatens to worsen health primarily through

increased vulnerability to poor health conditions. This is due to reduced food security and water security; water-borne diseases associated with reduced water quality due to floods and drought; more favourable conditions for the spread of vector borne diseases; and the direct link between temperatures and heat stress. (UNDP, no date)

Sir Ronald Sanders was reported to have described Caribbean Small States as especially vulnerable given that they exist in a global economy in which more than half the population is forced to exist on less than US$2 a day; ten percent of the population enjoy 80 percent of its resources; the terms of trade are dictated by the powerful to the detriment of the weak and the gap is widening between rich and poor. (The Bahamas Journal, 2007)

In view of all the shortcomings of small states as a result of climate change government agencies are considered weak and susceptible to corruption; offering a new dilemma for development in terms of good governance. This is further exacerbated in that this and other issues mentioned before are likely to give rise to conflicts which can affect the social stability of the region.

Climate change has certainly moved beyond the categorization as an environmental issue to a development, poverty reduction, food security, economics, health, human rights, governance and equality issue. The key focus now is on building capacities of developing countries, at all levels, to embed and integrate resilience building and adaptive capacity into domestic policies, and investment decision-making processes and practices. (UNDP, no date)

The coordination of foreign policy, the third pillar of the Treaty of Chaguaramas which governs the integration of CARICOM, is a practical approach for any small state to find common ground in dealing with important issues such as climate change. This approach allows for the

achievement of almost all objectives of foreign policy such as the protection of interests of all states; the strengthening of collaboration and cooperation of countries; and the developing of strategic alliances with other like-minded developed or developing states or groups of states.

The coordination approach has been very prevalent in the strategies of governments in dealing with climate change which is so pervasive in its impact. It has resulted in a number of collaborations and partnerships among regional bodies such as the AU, OAS, the Group of 77 and China, AOSIS with CARICOM in their engagement of the international community on climate change issues.

With a general realization of the manifestation of these effects as a result of climate change, Caribbean Small States will be detrimentally affected in almost all realms of existence, be it health, homes, general infrastructure, agriculture, economy, or food security. All policies would have to be altered to include climate change as a high priority agenda item. Almost all agendas of various meetings already currently include some aspect of the effects of climate change.

Given the capacity, severity and extensiveness of this issue which is so pervasive in its impact, the powerful few of the world on whom Caribbean Small States usually rely for assistance and refuge are too busy assisting themselves. These states would have to respond to the challenges by marketing themselves as the niche area for all types of resources which could be used to sustain a prosperous life in the event of climate change. These would include: their agricultural producing capacity, energy production capacity, and their industrial capacity through a system of strong management. A strong foreign policy would also have to be employed by which they can garner support for these policies.

CHAPTER 4

'MEETING THE CHALLENGES THROUGH DIPLOMACY'

This chapter will identify diplomacy as the main instrument of policy employed by States to meet challenges. More importantly it will highlight the relevance and function of diplomacy to Caribbean Small States in their efforts to address climate change.

Climate change is gaining momentum as a major subject of 'international negotiation and of IR scholarship' (Goldstein, 2005, p. 419) with the recognition that a reduction in its occurrence is vital to the world's population. The notion that this phenomenon affects all the states of the world allows it to be examined through the globalist perspective. Globalists typically assume that the starting point of analysis for international relations is the global context within which states and other entities interact. (Viotti, et al, 1999) Globalism is therefore used in to identify a particular approach to issues such as climate change which are perceived to be global. (Evans, et al, 1998)

Developed and developing states alike are considerably affected by climate change in spite of the fact that small states are more vulnerable owing to several factors, such as their geographical peculiarities and their profound dependence on the natural environment, as was discussed in Chapter 2. For this reason the issue is perceived as a global one and any attempt to find a solution to the problem would have to be global as well.

No one state can resolve the problems of climate change, concomitantly no one state can afford to disregard or ignore the problem. The Hon. Bruce Golding, Prime Minister of Jamaica, in an address to the 12th Meeting of the Council for Foreign and Community Relations described Climate Change as:

> a crisis that is so huge, so severe, so extensive, and so pervasive in its impact, that those whom we (small states) would normally turn to for assistance and refuge, we are likely to find are very busy assisting themselves. (CARICOM, 2009)

It is recognised that devising a solution to climate change can be a complicated task, given that several invading factors persist such as national interests and economic benefit. A global solution can only be had if global cooperation exists. Of the three instruments available to states therefore; military capability, economic capability and diplomacy; only the instrument of diplomacy is likely to cater to the multifaceted task of finding a global solution to climate change. In addition, the global impact of climate change is so extensive that the other two instruments may prove powerless in their efforts.

Moreover though the increased interdependence of the twenty first century along with globalization has seemingly exacerbated the dependence of small states on diplomacy, the truth of the matter is that climate change cannot be adequately approached via the instruments of military and economic capability like human rights and terrorism. The global effect of the challenges presented by climate change has resulted in all states depending on diplomacy to find favourable solutions.

Diplomacy is one of the key instruments of policy employed by states to put into effect the aims, ideas and attitudes of a state's relations with others. (Evans, et al, 1998) A more classic definition of Diplomacy was put forward by Satow (1998, p. 15) where he conceptualized diplomacy as

"the application of intelligence and tact to the conduct of official relations between governments of independent states, extending sometimes also to their relations with vassal states."

For the purpose of this research, the definition that further qualified this by Headley Bull in his book 'The Anarchical Society' will be employed. Bull described diplomacy as "the conduct of relations between state entities with standing in world politics by official agents and by peaceful means."(Bull, 1997, p. 10) According to Sir Ronald Sanders this definition included "two elements which are essential to the process and purpose of today's diplomacy: 1) the concept that there are entities in world politics other than states; and, 2) the idea that diplomacy is a peaceful activity." (Sanders, 2005, p.128)

Diplomacy today seems to govern world politics. It involves several forms, numerous actors, more complex agendas, and varying levels of interaction. The magnitude with which climate change has impacted the interaction of states, to perceive a common solution has paved the way for a new form of climate change diplomacy. Kurbalija (2008), Director of DiploFoundation, described this type of diplomacy "as a cross cutting issue that involves all different aspects of society, hence not a typical area of diplomacy."

The assertion that Climate Change needs global solutions has therefore propelled this method of Climate Change Diplomacy which involves, for the most part, all of the characteristics of regular diplomacy aforementioned; however with a specific focus on climate change. The inclusion of climate change to mainstream international diplomacy has been a process that has gained momentum over the years given the increased scientific data that reiterates the urgency with which states of the world should treat the issue of climate change that threatens to annihilate the global environment.

The first major conference that sparked worldwide awareness of the importance of climate change was the First World Climate Conference, held in Geneva in February, 1979. This paved the way for several other forums such as the sitting of the United Nations General Assembly of 1988 which recognised environmental problems as the 'common concern of all mankind', and the UNCED or Earth Summit in 1992; as well as the two follow-up conferences on climate change. These will be discussed further in Chapter 5. Subsequently, there was the introduction of conventions and agreements such as the UNFCCC and the Kyoto Protocol which outlined the regulations for current state practices which were contributing to climate change. The sequences of diplomatic interactions which follow have signalled stakeholders' commitment to the conventions. These as well, will be explored in more detail in the following Chapter.

Climate change diplomacy is a multi-disciplinary field which includes extensive diplomatic interaction involving states as well as various non-state actors. These actors include international organizations or intergovernmental organizations such as UNEP, IMO and the UN; regional organizations such as CARICOM, AU and EU; NGOs of all kinds, such as Greenpeace and the EPA; members of civil society and the business community; and even scientists, under the umbrella of the IPCCC; that interact on all levels from the individual to the United Nations, in local, regional and international fora.

The instrument of Diplomacy provides for a tactful process of negotiation on issues of climate change. It is also used to make collaborative arrangements to manage everyday problems that transcend national borders. The art of negotiation then is to determine what the area of common interests are and through reason and persuasion to bring the parties to an awareness of it.

Diplomatic negotiations usually involve well trained and competent diplomatic personnel, inclusive of not only diplomats but also other officials of other government departments. The Ministry of Foreign Affairs is usually the key player through its embassies, ambassadors and honorary consuls resident and non-resident, who strive to further the country's interests abroad. Negotiations on issues of climate change however have evolved to include the cultivation by Governments of public opinion. This involves the interaction of private groups, scientists, the private sector, along with national policy makers. (Jonsson, 2000)

This has resulted in another form of diplomacy called 'Public Diplomacy' which according to Batora, (2006) represents an opportunity for states to exercise their soft power, in 'gaining influence and shaping international agenda in ways that go beyond their limited hard power resources, such as their military and economic strength.'

As a result of the multiplicity of actors involved in diplomatic interaction, states were forced to move away from the realist perspective in thinking that they were the only actors in world politics to the pluralist perspective which identified the state not as a unitary actor but with different non-governmental factions competing for influence and advantage in the government. This theoretical view points to the fact that there are many more or less organized interest groups in society that compete with one another to control public policy, with some groups tending to dominate in one or two issue areas, while other groups and interests tend to dominate in other issue area. (Batora, 2006) Within this framework of the Pluralist perception there is no single, unified 'power elite', but rather there are many competing power elites with different backgrounds, values and bases of support in the broader society. (Batora, 2006)

Generally, attempts at solving international issues have always put the more developed states at an advantage of having all three instruments of policy available to them: economic capability, military capability and diplomacy. Small states on the other hand were considered disadvantaged since they only had the instrument of diplomacy available to them. This view was supported by the Commonwealth Consultative Group which stated that:

> Since these states have no military or economic power to wield they are forced to rely on diplomatic means in order to convey to other countries the nature of their national interests in the different areas of international relations that are vital not just to their security but to their very survival. (Sanders, 2005, p.128)

It is through diplomacy therefore that Caribbean Small States might adopt a method of negotiation and bargaining to help persuade the more developed states and international agencies to recognize their special vulnerability and to render assistance to promote economic and social development in view of the effects posed by Climate Change.

The geopolitical setting in which small states operate is one that makes them very sensitive to the disapproval of the actions which larger states may take. This places greater emphasis on diplomacy for Caribbean small states who can only hope to allay these fears through concerted diplomatic efforts.

By employing the instrument of diplomacy the Caribbean Small States strive to maintain effective participation in a wide range of regional and international Conferences and in the wide range of international movements and organizations in which Climate Change issues are debated such as the United Nations and its multiple agencies like UNEP, the Non-Aligned Movement and the Commonwealth where crucial negotiations may take place.

One of the main functions of diplomacy for these small states is to establish diplomatic relations with other small states, who are similarly affected and who share the same concerns to lobby for support of their strategies. They also employ the use of soft power to bargain with developed sates to cut their GHG emissions by a higher percentage, to limit the rate of climate change in the future.

Diplomacy enables Small states to play an active role in the negotiating process to present arguments and lobby for favourable terms of trade in goods and services given the vulnerability of their states, as well as request much needed technical and other assistance aimed at boosting their capability to implement projects aimed at adaptation and mitigation. They also aim to reach agreement on levels of GHG emissions which cater to the vulnerabilities of small states.

In an effort to really make an impact on the international scene and receive due recognition Small Caribbean States have also adopted the strategies of associative or group diplomacy where these states, aware of their own limitation, have associated themselves with a number of groups to lend to the power of 'one voice' by making the grouping larger. RP Barston describes this as 'associative diplomacy' which he says is:

> … the co-ordination of policies and mutual assistance within the grouping. As well as the maintenance of the political, economic, or security influence of the 'primary grouping' limiting the actual or potential coercive power of other groupings and enhancement of the individual identity of members of the grouping. (Sanders, 2005, p.129)

With regard to policy co-ordination, most of the states of the Caribbean region are members or associate members of CARICOM. Under this umbrella they have pledged to coordinate their foreign policies. Hence, prior to multilateral negotiations, representatives of the states meet to co-ordinate their positions and strengthen their negotiation team by pooling their human resources and appointing a single spokesperson. (Sanders, 2005)

They also form part of more powerful groupings such as the ACS, the Group of 77 and China, and the group of SIDS. Individually, they are generally weak. However, associative group diplomacy gives them strength and a competitive advantage, that is essential to their diplomatic effectiveness. (Word press, 2008) Successful examples which attest to the success of this type of associative diplomacy are: the Caribbean Single Market and Economy; the Caribbean Court of Justice; and the "Single Domestic Space" principle arising from it. (Word press, 2008)

Henrickson (1998, p.1) substantiates this process in describing what he terms 'Group Diplomacy.' He states that "great powers have the ability to act alone; however, small states cannot act alone." This in itself subtly suggests that small states like those of the Caribbean would have to align themselves with other states to effectively push their interests in today's world.

Henrickson (1998) also indicates that there is strength and safety in numbers. This purports that a level of relationship building is also crucial to the manoeuvring of Caribbean Small States in the modern international political system when dealing with issues such as Climate change.

Although there are some negative effects which are presented by the strategy of group diplomacy, for instance, "once a group has adopted a common position, its often difficult for the group to modify its position" and also "it can prove difficult to gain particular, individual national advantages in such group dominated settings" (Henrickson, 1998, p.10) the overall advantages far outweigh the negative effects. Employing the strategy of Group diplomacy gives developing Caribbean States the opportunity to join forces with other countries with which they share a

common interest in addressing climate change. This way they acquire a bargaining leverage that they would not have had if they had operated on their own.

Caribbean Small states must continue to align themselves with groups such as AOSIS, ACS and Group of 77 and China and the Commonwealth Group of countries, where their vulnerability as a state could be overlooked and they can be given a powerful voice. They have since managed to acquire recognition through these groupings for their particular vulnerability in 1992 at the Earth Summit; "as a special case for environment and development issues because of their ecological fragility and economic disadvantages" (Sanders, 2005, p. 132) at the UN Global Conference on the Sustainable development of SIDS in 1994. They have been making great strides in their negotiating efforts as part of the group of SIDs and are looking forward to making further strides at Copenhagen.

It is obvious that responsibility for tackling Climate Change lies among numerous states and stakeholders acting on the international plain. These entities must work in concert to tackle this issue.

CHAPTER 5

'GLOBAL INITIATIVES'

This chapter will examine the international regimes which were developed to treat climate change. In so doing it aims to analyze whether these regimes have been impacting on the protection of the category of vulnerable states.

International regimes refer to those rules, regulations, norms and principles which guide and govern transactions and the solutions of problems that affect two or more states. (Holsti, 1995) Some regimes are institutionalized in the sense that they include special multinational monitoring and enforcement agencies, but many are embodied only in treaties and even in less formal undertakings. These regimes nevertheless give a legal personality to their attempts to which states are bound only if they have signed and ratified the agreements.

Climate Change is now a global issue with far reaching effects that requires both priority attention from the international community and new structures and attitudes to treat the situation effectively. This has resulted in many regimes which are aimed at regulating the problem.

International recognition of climate change as a serious problem was first substantiated at the First World Climate Conference, held in Geneva in February, 1979. The conference was sponsored by the World Meteorological Organisation (WMO), and was attended by scientists

from a wide range of disciplines, and had a main objective of examining climate data. The gathering explored how climate change might affect human activities and issued a declaration calling on the world's governments "to foresee and prevent potential man-made changes in climate that might be adverse to the well-being of humanity". (UNEP, no date) The Conference also led to the establishment of the World Climate Programme and the World Climate Research Programme. More importantly it led to the creation of the International Governmental Panel on Climate Change (IPCC) by the WMO and UNEP in 1988, which included a panel of leading scientists. (Hardnews media, 2008)

Since the 'First World Climate Conference' a number of international conferences on climate change has been held, aimed at raising international concern about the issue. The conferences addressed both scientific and policy issues and called for global action. Some of the meetings held were the Villach Conference (October 1985), the Toronto Conference (June 1988), the Ottawa Conference (February 1989), the Tata Conference (February 1989), the Hague Conference and Declaration (March 1989), the Noordwijk Ministerial Conference (November 1989), the Cairo Compact (December 1989), and the Bergen Conference (May 1990). (UNEP, no date)

The Second World Climate Conference was convened in November, 1990 in Geneva. Here the IPCC released its first Assessment Report which strongly highlighted the risks of climate change by stating that "a gradual warming of the atmosphere was occurring and that the balance of evidence now suggests that there is discernible human influence on the climate." (Hardnewsmedia, 2008)

The recognition raised concern within the United Nations General Assembly (UNGA) and an Intergovernmental Negotiating Committee was established to negotiate an effective treaty containing appropriate commitments. This resulted in the subsequent formulation of the United Nations Framework Convention on Climate Change (UNFCCC)/ (FCCC).

The UNFCCC is an international environmental treaty which was introduced at the United Nations Conference on Environment and Development (UNCED), informally known as the 'Earth Summit,' or the 'Rio Summit,' which was convened in Rio de Janeiro, in June of 1992. The aim of this Conference was to highlight the emerging linkages between environmental issues and sustainable development. (UNFCCC, 2005)

The Convention remains one of the main international environmental treaties to date since its official adoption at the 47th Session of the UNGA in 1992. Its objective as identified in Article 2 "is to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system." (UNFCCC, 2005) Upon ratification it committed its signatories to 'a voluntary non-binding aim' to take specific actions to limit or reduce greenhouse gases in the atmosphere associated with the potential of global warming. (Climate Lab, no date) This was further aimed primarily at industrialized countries to stabilize their GHG emissions at 1990 levels by the year 2000. Such a level should be achieved "within a timeframe sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner." (Climate lab, no date)

The treaty in its original form set no mandatory limits on GHG emissions for individual nations and contained no enforcement provisions. Dispute therefore arose over the convention as

environmental groups referred to it as weak stating that there was no legal obligation in the convention that specified 'exact targets to time-tables for the purpose.'(Hard news media, 2008) This was later revised with the inclusion of an Additional Protocol, which set mandatory limits.

To date 192 countries have ratified the convention which includes almost all the states of the independent world. The UNFCCC sets an overall framework for intergovernmental efforts to tackle the challenges posed by climate change. More importantly it recognizes the climate as a shared resource and admitted the "common but differentiated responsibilities and respective capabilities of states and highlighting the division between the developed and developing countries on the issue of climate change." (Hardnwsmedia, 2008) It also gave special consideration to developing nations that would have to bear an unequal burden on their economic growth as a result. (Hardnewsmedia, 2008)

To facilitate this process parties to UNFCCC committed to submitting a national inventory of emissions and removal of greenhouse gases and implementing national programmes to mitigate climate change and adapt to its impacts among other commitments. (Hardnewsmedia, 2008)

This was impacting on the category of vulnerable states that stood to benefit from the commitments of industrialized governments to tackle the challenge posed by climate change through shared resources. These states can also benefit from shared information, national policies and best practices. They also stand to benefit from the provision of financial and technical support in adapting to expected impacts and cooperation in preparing to adapt to the impacts.

The UNFCCC in its agreement seeks to control the level of greenhouse gases, such as carbon dioxide, in the atmosphere, thus controlling global warming and sea level rise. Ever since its entry into force in March of 1994, representatives of states parties to the Convention meet annually in a Conference of States Parties to review progress and make decisions that will guide action to reduce greenhouse gas emissions.

At the third Conference of States Parties to the Convention, which was held in Kyoto, Japan, a decision was made to adopt a protocol under which only the developed or Annex II countries were to reduce their quantified GHG emission by 5.2 per cent at 1990 levels by the period 2008-2012. This is commonly referred to as the 'Kyoto Protocol' and was the first step in the direction towards laying down international legal restrictions upon the environmental behaviour of states. It was significant because it called only on the industrialized or Annex I countries to reduce their GHG emissions, citing differentiated responsibility on the issue. (UNFCCC, no date/b)

The Kyoto Protocol was adopted in December 1997 and entered into force in February, 2005. The major feature of the Kyoto protocol is that it sets binding targets for 37 industrialized countries and the European community to reduce GHG emissions over the identified five-year period. The major distinction between the protocol and the Convention is that while the Convention encouraged industrialized countries to stabilize GHG emissions, the protocol commits them to do so. (UNFCCC, no date/b)

Several aspects of the Protocol have been criticised, starting with the level of reduction of 5.2 percent which some politicians and environmentalists deem to be too modest. The workability of the Protocol was also questioned in light of the 'flexibility mechanisms' i.e. the international emissions trading regime, the clean development mechanism and the joint implementation

mechanism, which were incorporated in the Kyoto accord. This, critics believe, would assist the developed countries in warding off any potential political and economic fall out while meeting their commitments. (UNFCCC, no date/b)

In addition the Kyoto Protocol had been unable to take off in the manner expected since leading emitters of GHGs like the United States, Australia, India and China had not ratified the protocol, jeopardizing the delicately crafted agreement and the future of its institutionalization. Continuous negotiations have resulted in India and China signing on to the Protocol in 2002 and Australia in 2007. The United States is not yet a signatory.

Post Kyoto Conferences of State Parties, as outlined in Table 3, placed lots of emphasis on straightening out some of the operational details of the Kyoto Protocol. For instance, the COP 6 in Germany (2000) reached agreement on issues such as flexible mechanisms which were previously outlined and financing for three new funds inclusive of a Kyoto Protocol Adaptation Fund supported by a CDM levy and voluntary contributions. (UNFCCC, no date/a)

COP 7 in Marrakesh, Morocco, in 2001, set out operational details for the ratification and implementation of the Kyoto Protocol which resulted in a set of decisions officially known as the 'Marrakesh Accords'. COP 11 in Montreal, Canada, in 2005, marked the entry into force of the Kyoto Protocol. COP 13, in Bali, Indonesia, in 2007, then produced the 'Bali Road Map' which was an agreement outlining the negotiations for a new global climate treaty which should succeed the Kyoto Protocol. (UNFCCC, no date/a)

2012 will bring an end to the first commitment period of the Kyoto Protocol and a new international framework needs to have been negotiated and ratified which can deliver the

stringent emission reductions the IPCC has clearly indicated are needed. (IOE Publications, 2009) The world is therefore engaged in a series of negotiations aimed at developing a successor agreement. Although it is clear among all nations that there is need for 'decisive action' in light of what is happening, there is some amount of discord as to the meaning of decisive action.

In the process of negotiating the UNFCCC, small island and low lying coastal states formed themselves into a grouping called the Alliance of Small Island States (AOSIS). This grouping was formed in 1990 with the objective of enhancing the effectiveness of this category of vulnerable states in demonstrating the consequences of climate change. This coalition of countries share similar development challenges and concerns about the environment especially their vulnerability to the adverse effects of global climate change. AOSIS therefore functions as a lobby and negotiating voice for small island developing states within the United Nations System. (climatelab, no date/b)

To date this group of states has been very instrumental through its concerted efforts in lobbying for better GHG emission cuts by industrialized countries throughout the current round of negotiations. They continue to reiterate the risk of 'total destruction' unless the ceiling temperature is set to a level of 1.5˚ Celsius.

AOSIS is also demanding greater commitments from industrialized countries to provide resources to developing countries for adaptation and mitigation. Countries such as Japan and those of the European Union among other nations have so far pledged amounts amounting to approximately US$100 billion; to be paid in yearly instalments, as contribution to assist developing countries to adapt to climate change. This they state is on the condition that successful political accord is achieved. The developing countries within AOSIS are adamant

however that this is not enough and that more financing and technology transfer is essential to facilitate the adaptation and mitigation which is outlined in the UNFCCC and Kyoto Protocol. Poor nations want direct aid, while the West favours schemes like carbon trading. There is therefore ongoing disagreement on how funds to mitigate and adapt to climate change will be provided. (BBC News, 2009)

Developing states want developed states to cut emissions by at least 25% by 2020 and rich nations are reluctant to go so far for the sake of national interest and want developing countries to curb emissions also. So far the United States has stated that it is not willing to accept any legally binding emissions cuts unless China does the same. China, on the other hand, though vague on allowing international scrutiny of its emission cuts, has been very vociferous in its call also for the more industrialized nations to cut their GHG emissions. Given the extremely large population that exists in China, the issue of climate change cold be could be approached as a 'bread and butter' issue. China's leadership, according to reports has identified climate change as a 'developmental issue' and argues therefore that China should follow a path that integrates sustainable development, poverty eradication and climate change in a holistic manner to find satisfactory solutions that will guarantee China's right to pursue its own course of development. (Barha, 2009)

China continues to maintain that its GHG emissions are still comparatively low to that of Japan and the United States and urges these countries to cut their GHG emissions. It also maintains that it has made steady progress in reducing GHG emissions which are reportedly based on a 2005 level. Critics within the international community, however, have stated unequivocally that emission cuts based on a 2005 level is not good enough, given that it is considerably smaller than that of the 1990 levels.

Governments have made great headway in fashioning international orders to deal with the protection of the environment. The problem is that in the process of seemingly making our lives better we create new kinds of problems that seriously degrade the accomplishments and there is no consensus on which to forge ahead. Negotiations continue in an effort to create some progress in developing a framework agreement to succeed the Kyoto Protocol by the year 2012.

At the Third World Climate Conference which was held in Geneva in September 2009 the focus was on climate predictions and information for decision-making at the seasonal to multi-decadal timescales. The Conference also aimed to increase commitment to, and advancements in, climate observations and monitoring to better provide climate information and services worldwide that will improve public safety and well-being. (WMO, no date)

All attention was then focused on the outcome of the UN talks which were expected to agree on a global climate deal in Copenhagen in December 2009. An article by Mr. Navin Chanderpaul, Presidential Advisor to the President of Guyana on Climate Change, stated at the time that current negotiations:

> …. present a tremendous opportunity to correct mistakes of the past and to develop the framework for action that will be effective. The sad reality is however, that there are still very powerful vested interests that are resisting the introduction of measures that are necessary to minimize the extent of climate change. (Chanderpaul, 2009, p. 17)

Nevertheless, the outcome of the Copenhagen World Climate Summit was disappointing as world leaders failed to produce a legally binding agreement to succeed the Kyoto Protocol in 2012. Reacting to the outcome of the Copenhagen Climate Summit, Richard Lambert, CBI (The Voice of Business) Director-General, said that:

> The Copenhagen Accord is a missed opportunity, and a disappointing conclusion to two years of negotiations. The heads of state have come up with an agreement that skates over

> difficult points and is light on detail. There is now a real need to maintain momentum in order to agree as soon as possible on a legally binding replacement to the Kyoto Protocol, which expires in 2013. (Lambert, 2010)

During the last hours of the Summit however a Copenhagen Accord was agreed to. Mr. Ed Miliband, (2010) Climate Change Secretary to the WCC 3 in referring to the accord stated that this was an important step forward on fighting climate change. Reasons for this were that it included commitment by developing countries to action on their emissions, and the accord also laid out short and long-term finance to help poor countries. It also recognized temperature rises should not go above 2 degrees Celsius and ensured countries would monitor and verify the action taken to curb greenhouse gases. (Miliband, 2010)

The accord was however only agreed to by a total of 49 countries and it did not include a timetable for a legally binding international treaty and no targets for global greenhouse gas cuts. (Miliand, 2010) Further negotiations will therefore have to treat these issues.

CHAPTER 6

'THE MARITIME INITIATIVE'

Chapter 6 aims to examine the vulnerability of the Marine Environment in view of the threats posed by Climate Change. It will also decipher whether the regimes provide sufficient protection of the marine environment inclusive of the Caribbean Sea in view of the fact that this is an important aspect of Caribbean development. In doing so, a model framework of protection which caters more to the special vulnerability of the Caribbean Sea will be developed.

The vulnerability of the earth's surface to Climate Change is not just limited to its land mass. Approximately 70% of the earth's surface consists of water which forms oceans. These oceans are just as important, if not more so, to the development and existence of humans who depend on them heavily for their sustenance. Once considered a limitless and inexhaustible resource, oceans are in jeopardy due to the effects of climate change.

Natural changes to climatic conditions of the earth are already affecting the oceans given that they are a major component of the climatic system. The oceans are known to absorb twice as much of the sun's radiation as the atmosphere or land surface. Volcanic eruption which releases large amounts of sulphur dioxide, water vapour, dust and ash into the atmosphere influence climatic patterns for years, the reason being, that these gases block the incoming rays of the sun

to the oceans, leading to a "cooking of the earth's atmosphere." (Global Greenhouse Warming, no date) Concomitantly the heat which is absorbed from the sun is usually moved across the planet by ocean currents. This is pushed horizontally against the sea surface by winds and channelled through the oceans by currents which are constantly changing direction.

Natural variability alone however, does not account for the magnitude and patterns of alterations of the oceans which are occurring today. Oceans, like forests, are attractive targets for short-term economic uses that cause long-term environmental damage. Main activities such as tourism, agriculture, deep-sea fishing and mining pose tremendous risk to the sea if not attempted carefully. A combination of circumstances including coastal development, marine-based pollution, over-exploitation and land-based pollution and erosion also add to these risks especially for the reef areas. Human activities which result in dramatic increases in atmospheric carbon dioxide and other greenhouse gases have altered the earth's climate and therefore accelerated effects to the oceans, in just a few decades. Other activities such as over fishing, dumping of toxic and nuclear waste and other garbage, and long-distance oil shipments with recurrent spills also affect the oceans. These activities aid the growing demands for development but are damaging marine ecosystems and depleting ocean and coastal resources.

The Caribbean Sea is a large sub-oceanic basin with an area of approximately 2.64 million square kilometres. Almost 90 percent of its circumference is separated from the open ocean by either continental or insular land masses. It constitutes a classic example of a semi-enclosed sea, as defined by the 1982 UN Convention on the Law of the Sea. (ACS/AEC, no date)

Large numbers of cruise ships and fishing vessels operate within the Caribbean Sea. So do large numbers of ships transporting a variety of cargo, inclusive of toxic and hazardous materials.

Countries that do not have the facilities for recycling and disposal of hazardous waste must transport it for processing. The Caribbean Sea is one of the routes used in this process between Japan and Europe. The principal countries involved in this practice are France, Japan, and the United Kingdom, who use nuclear material for the production of energy. (CARICOM Secretariat, 2007)

The Caribbean Sea is one of the world's principle waterways which connects with the Gulf of Mexico by the Yucatan channel. (CARICOM Secretariat, 2007) Tourism, both land and sea, and fishing are among the major industries in most countries in the Caribbean Sea region and which island governments see as the saviour of faltering economies. The economic benefits of tourism have however been offset by environmental degradation.

More than 60 percent of the Caribbean's reef area is at risk, due to a combination of circumstances which include coastal development, marine-based and land-based pollution. This risk is higher where onshore population concentrations are greatest such as in Jamaica, Haiti and Tobago. Jamaica exhibits some of the worst degradation with storm damage from hurricanes, reef bleaching, and unchecked algal overgrowth all adding to the range of human related sources of pollution. (Hillman, 2003) The implications of these are reduced economic activity and a higher potential for onshore storm damage. There is no doubting therefore the historical, geographical, economic, social, cultural and hugely symbolic significance of the Caribbean Sea, both within and outside the region in this regard. (ACS/AEC, no date)

Global average land and ocean surface temperatures have increased at a rate of about '0.2˚C/decade over the last few decades', and ocean temperatures down to '3000m (10 000 feet) depth are also on the rise.' (Woods Hole Oceanographic Institution, 2007) More than 80 per cent

of the added heat caused by climate change resides in the ocean. This results in increase water temperature which can cause coral bleaching, and in turn can negatively impact the entire coral system. Many species which depend on the coral ecosystem will be forced to migrate in search of the temperature conditions they need for feeding and reproduction. This alteration to the water temperature can also directly impact development, age of sexual maturity, growth and survival of most fish and other sea creatures. (Conservation International, 2007)

The Caribbean Sea is also vulnerable to natural hazards such as undersea volcanoes and earthquakes which can result in tsunamis or tidal waves, as a result of ocean warming. The sea also influences and is influenced by hurricanes which are becoming more prevalent in the region.

Atmospheric warming furthermore causes sea level rise and a change in ocean currents. The rise in sea level is due to the melting of polar ice and glaciers and the thermal expansion of the oceans. These realities cause critical habitats to be lost, such as the sea turtle nesting beaches; and severely affect the survival of coral reefs, mangroves, sea grasses, and other critical habitat-forming species.

Changes to the ocean's major current system also occur as a result of the changes in ocean temperatures and wind patterns. This is primarily caused by excess carbon found in the upper few hundred meters of the ocean and in high-latitude regions, where cold dense waters sink into the deep ocean. As these currents are altered many animals' migratory patterns are also altered since they tend to follow these currents. The species that depend on ocean currents for reproduction and nutrients are also affected, such as the reef fish that depend on the currents for the dispersal of their larvae.

Excess carbon which is absorbed from the atmosphere increases ocean acidity. This acidification directly harms the many ocean plants and animals that build shells of calcium carbonate, including many tropical reef building corals, cold water corals, crustaceans, and scallops. Many of these same shell-forming organisms provide critical habitat and food sources for other organisms.

The rates and patterns of ocean productivity have been affected so much so that the availability of sea food on which Caribbean people have relied on for centuries is severely depleted. Some species, such as sea turtles, have been afforded conservation status for fear of extinction and reports of widespread fish kills in the region have been heard. Tables 5 and 6 included in the appendix exhibit the potential of CARICOM's fisheries and aquaculture production and status of fisheries with the increase in climate change, respectively. From this the impact to the livelihoods of persons who depend on the sea for sustenance is obvious.

Climate change effects also impact the livelihoods of other inhabitants of the Caribbean region in many ways due to impact on the sea. The region consists of primarily low lying coastal states where the majority of the population inhabits the capitals which are situated on the coasts. Sea level rise is therefore expected to increase flood events of increasing recurrence and intensity. Major sea defence breaches and increased overtopping for countries such as Guyana could devastate lives and livelihoods, increasing the financial, economic and social impacts on persons whose crop lands could suffer from salt water inundation and whose produce, property and homes could be destroyed. This can further result in a reduction of productivity and loss of income.

Tourism, Agriculture and even Trade which are major sectors of development in the Caribbean will be severely affected due to damaged infrastructure, crops and other basic amenities. Industries such as the fishing industry will also be severely affected.

The increase in diseases will not only affect people but crops and livestock as well. Animals risk being displaced. Health sectors will be very fragile due to the increase in diseases. Food security will be affected, as will the economy due to the huge economic losses from low productivity on account of damage or disease. As a consequence, high poverty rates and instability of the social climate which will be plagued with crime and violence will result. Migration will also be on the rise as citizens leave in search of a better life.

Given the significance to economic and social development of the Caribbean Sea and the fact that it is ecologically fragile it must be sensitively managed. There is need therefore for the collective preserve of the environmental integrity of the Caribbean Sea and the sustainable pursuit of its resources which would also "enhance the quality of life of present and future generations of Caribbean people." (ACS/AEC, no date) This call was made by Dr. Riyad Insanally, Political Adviser to the ACS Secretary General in a presentation entitled 'The Caribbean Sea: Our Common Patrimony.'

The Secretariat of the Association of Caribbean States (ACS) reiterated the need for the sustainable utilization and preservation of the Caribbean Sea in its Synthesis Report to the ACS representatives which posited that:

> The vulnerability of this environment, in conjunction with its importance in providing income and supporting livelihoods of whole communities, highlights the need for acquiring further knowledge and formulating guidelines for coastal and management. The

> final aim of the action should be to reconcile ecological and socio-economic demands and suggest a pathway towards sustainable use. (ACS Secretariat, no date)

In this pursuit the ACS, at the Caribbean Ministerial Meeting on the Programme of Action for the Sustainable Development of Small Island Developing States (SIDSPOA) which was held in Barbados from 10-14 November, 1997, proposed to have the Caribbean Sea declared a "special area in the context of sustainable development." (ACS Secretariat, no date) This initiative reflected a more comprehensive approach to the management and sustainable development of the Caribbean Sea.

The leading global initiatives which exist to treat the marine environment are the International Maritime Organisation (IMO) and the United Nations Convention on the Law of the Sea (UNCLOS). Almost all the countries of the Caribbean have signed unto these conventions.

The IMO was established in 1948, more or less as a 'ship-owners' club' to facilitate international shipping and navigation and promote safety. It now has the responsibility to guide countries in oceanic protection in light of the effects posed by climate change.

The International Maritime Organisation (IMO) functions now as a UN Specialized Agency responsible for the safety of life at sea and protection of the marine environment through the prevention of pollution of the sea caused by ships and other craft. (United Nations Handbook, 2008) It facilitates cooperation among governments to achieve the highest practicable standards of maritime safety and security, and efficiency in navigation. It deals with legal matters connected with international shipping, including liability and compensation regimes, as well as with facilitation of international maritime traffic. It is also responsible for providing technical assistance in maritime matters to developing countries. (United Nations, 2008/a) The IMO also

acts as a secretariat in respect of the Convention on the Prevention of Marine Pollution by Dumping of wastes and Other Matter, adopted in London in 1972, which regulates the disposal into the sea of waste materials generated on land. (United Nations, 2008/a)

Four committees have since established under the implementation of the IMO, each of which has its own responsibility. More important to the role of the IMO in view of climate change is the Marine Environment Protection Committee, set up in 1973 to coordinate and administer IMO activities for the prevention and control of the marine pollution from ships; and the Technical Cooperation Committee, set up in 1969 to establish directives and guidelines for the IMO's programme of assistance to developing countries in maritime transport, monitor the programme's progressive development and review the results.

The United Nations Convention on the Law of the Sea (UNCLOS) remains one of the best international instruments that has been created to regulate the activities of private, commercial and military users of the world's seas and oceans, given that it further provided for a framework of maritime security cooperation. (IMO, no date)

UNCLOS was officially established in 1982 to govern the uses of the oceans after a period of ongoing negotiations which began in 1973, where major concerns were raised by coastal states, both industrialized and developing, over the depletion of fisheries off their coasts. This resulted in the establishment of extended Exclusive Economic Zones (EEZs). These were rules on territorial waters – 12 miles for shipping and 200 miles for economic activities, such as fishing and mining. (Inter Environment Institute, no date)

The 200-mile limit placed a substantial share of the economically profitable ocean resources in the control of about a dozen states. After there was an upsurge in conflict in this regard, UNCLOS also developed the general principle that the oceans are a common heritage of humankind. A mechanism was created, through an International Sea-Bed Authority, for sharing some of the wealth that rich states might gain from extracting minerals on the ocean floor which extends beyond 200 miles. (Inter Environment Institute, no date)

In view of the major effects posed to the oceans by climate change, the stipulations presented by the Convention on the Law of the Sea present an appropriate international regime for the effective integrated management of the oceans and encourage both national and international action. It requires states to establish national laws and regulations to 'prevent, reduce and control pollution of the marine environment from dumping.' (United Nations, no date/b) It requires express prior approval by the coastal state for dumping in the territorial sea, in the EEZs and unto the continental shelf. States also have an obligation under the Law of the Sea to ensure that their activities do not injure the health and environment of neighbouring states and the commons. (United Nations, no date/b)

The Caribbean Sea has a unique bio-diversity and highly fragile ecosystem which is shared by some 40 countries, states and territories of varying sizes and stages of economic development. Given the close proximity of the states, many have overlapping Exclusive Economic Zones (EEZs). Given the large number and close proximity of the states, countries and territories in the Caribbean Sea, its numerous and varied uses, the nature of its resources and its general vulnerability, there is need for the coordinated management as an effective means of ensuring its sustainable development.

Any model framework to guide the effective management, conservation and use of the marine resources which caters to the specific needs of the Caribbean Community must recognize that climate change is unavoidable and present clear solutions to adapt to its effects. These strategies may include:

- International monitoring data and information from general researches or studies which would have to be tailored to suit specific vulnerabilities of regional fisheries and ecosystems within the Caribbean region. This information should also be tailored to benefit other stakeholders e.g. NGOs, private citizens, small business enterprises and national policy holders.

- Public opinion to encourage transparent discussions on the risks of climate change and practical information gathering from experience sharing in the extent of uncertainties.

- An adaptation strategy to generate serious reduction in human activities such as over fishing and habitat destruction to allow more time for ecosystems to adapt. This will have to go hand in hand with awareness sessions for persons who depend heavily on these means for their livelihood.

- A process of inclusion to help avert loss of livelihood. This could be had by including persons involved in the trade such as fishermen, in an information gathering consensus. Since they are the ones working in the field, it may be possible, with some supervision to allow them to gather the information for the experts to analyze. This may also provide for a system of reimbursement for their efforts.

CHAPTER 7

'REGIONAL INITIATIVES'

This Chapter presents a summary of the attempts Caribbean Small States have made as a regional grouping, as CARICOM, to meet the challenges of climate change. In addition, it will attempt to analyse the success and limitations of these initiatives. In an effort to outline what needs to be implemented in the model of best practices for Caribbean Small States.

Global initiatives which were implemented by the international bodies to address the impacts of Climate Change, such as the UNFCCC and the Kyoto Protocol, have been signed by almost all independent CARICOM member states. These have laid a foundation for the development of initiatives related to peculiarities of CARICOM states. Most significantly, the Caribbean region, along with other small island and low-lying states, strived mainly to draw the attention of the international community to the potential adverse impacts of climate change on their economies through their active role in the work of the Intergovernmental Panel on Climate Change (IPCC).

Recognising that they cannot approach this matter individually, however, Caribbean Small states have made some great strides as a regional grouping in their regional attempts to draw international attention to their vulnerabilities through diplomatic negotiation.

Climate Change issues first gained prominence for Caribbean Small States with the Global Small Island Developing States (SIDS) Conference which was held in Barbados in 1994 under the auspices of the United Nations. The purpose of this Conference was to focus attention on environmental issues impacting on the development of SIDS and low lying coastal states such as Guyana and Belize. (CARICOM Secretariat, 2005/a) Emanating from this meeting was the Barbados Plan of Action (BPOA) which identified a programme of activities designed to deal with critical issues which SIDS needed to address in order to ensure that this development takes place in an environmentally sustainable manner. (CARICOM Secretariat, 2005/a)

The Conference identified climate change as a priority given its potential to severely disrupt the development efforts of SIDS. The BPOA therefore urged Member States to seek ways in which they could increase their resilience to the projected impacts through adaptation. This reflected the concern of Caribbean states that although they were responsible for less than one per cent of global green house gas emissions, they were among the most vulnerable to the projected impacts of climate change especially sea level rise, changing weather patterns and the increased severity of extreme events. (CARICOM Secretariat, 2005/b)

Since the SIDS meeting in 1994 CARICOM countries have embarked on a series of initiatives and activities aimed at building regional capacity to identify and implement appropriate climate change adaptation actions where necessary. (Trotz, 2007) According to a statement made by the CARICOM Secretariat, several instituted coping mechanisms exist which include the formulation of targets for energy initiatives by the forum of Ministers of Latin America and the Caribbean. For example alternative fuel sources are now being sought by many CARICOM States at very favourable terms. Additionally, the Caribbean Renewable Energy Development (CREDP) is assisting CARICOM States to develop a Regional Energy Policy. (United Nations, 2006/c)

The Statement further acknowledged the efforts made to develop a system of Solar water heating which is widespread in Barbados, a wind farm which has been established in Jamaica and hydropower which is extensively utilized in Suriname, Dominica and St. Vincent and the Grenadines. (United Nations, 2006/c) It also recognized that the abundance of sun and wind which exists in all CARICOM States have great potential for renewable energy, as well as the geothermal potential that exists in several countries including, Dominica, St. Kitts and Nevis, St. Lucia and St. Vincent and the Grenadines. (United Nations, 2006/c)

More specifically the Caribbean Planning for Adaptation to Climate Change (CPACC) Project (1997-2001) was developed. It started out as an initiative of the Caribbean governments which was supported by the Organisation of American States (OAS) and culminated as a regional project with funding from the Global Environmental Facility (GEF). The objective as outlined by Trotz, (2007) was:

> …to support Caribbean countries, following a regional approach, in preparing to cope with the adverse effects of global climate change, particularly sea level rise, in coastal and marine areas through vulnerability assessment, adaptation planning and capacity building.

To date the project has succeeded in:

- Environmental metadata - This is a catalogue of spatial data based on international standards (FGDC), which can be searched via the Internet. The catalogue describes the process and history of data created.
- Information system and dissemination - The project facilitated the use of the Internet for information access and dissemination and communication via the CPACC Website (http://www.cpacc.org), Internet training and Communication tools.

- Coral reef monitoring - development of a series of protocols for the monitoring of Climate Change, analysis of data for management and impact assessment.
- Coastal vulnerability assessment analysis - Caribbean States (particularly Barbados, Grenada and Guyana) have been conducting; coastal vulnerability and risk assessment studies for their coastal areas.
- GHG inventory/National Communication to UNFCCC (CARICOM Secretariat, 2006)

Prior to the completion of the CPACC in 2001, the region successfully negotiated another three year project: the Adaptation to Climate Change in the Caribbean Project (ACCC) (2001-2003). This project was funded by the Canadian Climate Change Development Fund and was to succeed the CPACC. The objective of the ACCC was to

> …sustain activities initiated under CPACC and to address issues of adaptation and capacity building not undertaken by CPACC, thus it further built capacity for climate change adaptation in the Caribbean region. (CARICOM Secretariat, 2006)

The ACCC's successes included:

- Development and distribution of risk management guidelines for climate change adaptation decision making; Political endorsement of the business plan and establishment of the basis of financial self-sustainability for the Caribbean Community Climate Change Centre (CCCCC)
- Development of a guide to assist environmental impact assessment (EIA) practitioners in CARICOM countries to integrate climate change in the EIA process
- A draft regional public education and outreach strategy
- Development and handover to MACC of the organization's website
- Successful launch of a Master's Programme in climate change

- Statistically downscaled climate scenarios development for Jamaica, Trinidad and Tobago, and Barbados
- Staff training and development at the Caribbean Institute for Meteorology and Hydrology (CIMH) in climate trend analysis in order to strengthen climate change capacity (CARICOM Secretariat, 2006)

These two regional projects laid the foundation for the establishment of the Caribbean Community Climate Change Centre (CCCCC), since CARICOM governments felt that climate change needed to be addressed through 'a more long term programmatic strategy.' (CARICOM Secretariat, 2005/b)

The CCCCC was officially launched in August 2005, to demonstrate the seriousness of regional policy makers in addressing climate change issues, and included funding and support from all governments and the World Bank. The Centre builds on the significant contribution of the Caribbean Planning for Adaptation to Climate Change Project in sensitising member states to the importance of adjusting to the negative consequences of climate change. It has the responsibility to implement projects which are designed to prepare for and to reduce the harmful effects of climate change and seeks ways in which the Community can benefit from opportunities arising from climate change. (CARICOM Secretariat, 2006/b) The mission of the institution is to:

> …. support the people of the Caribbean as they address the impact of climate variability and change on all aspects of economic development through the provision of timely forecasts and analyses of potentially hazardous impacts of both natural and man-induced climatic changes on the environment, and the development of special programmes which create opportunities for sustainable development. (CARICOM Secretariat, 2006/b)

A third regional initiative in the Caribbean, the Mainstreaming Adaptation to Climate Change (MACC) Project (2004-2008), is still ongoing. It is being funded by the GEF and its main objective is to:

> …mainstream climate change adaptation strategies into the sustainable development agendas of the Small Island and low-lying states of CARICOM. MACC will adopt a learning-by-doing approach to capacity building, consolidating the achievements of CPACC and ACCC. It will build on the progress achieved in these past projects by furthering institutional capacity, strengthening the knowledge base, and deepening awareness and participation. (CARICOM Secretariat, 2005/b)

More precise indications of the extent of this increased climate risk should soon be available from the work being undertaken under the present regional MACC Project. With this, regional planners and policy makers should have information to aid in rational decision making about future investments in the region's development and to ensure that such investments take into consideration how the long term impacts of climate change might undermine the sustainability of the benefits to be derived from these investments. (CARICOM Secretariat, 2005/b)

Presently, climate change is being defined in terms of 'time slices' 2020-2040 and to the end of this century. (CARICOM Secretariat, 2005/b) Limitations therefore exist where governments are presently strapped for the resources required to address current development priorities. Even without future predicted climate change, Caribbean countries are vulnerable to the present impacts. It is important therefore that the present risks be addressed as a matter of regional priority and not just wait on the projected long term effects.

Of major importance is the realisation that current action, will lay the foundation for a successful response to the longer term threat of global climate change. According to the stern report "action now will be decidedly cheaper to implement than if postponed to a later date." (CARICOM Secretariat, 2007)

The reality is that climate change is here to stay and continues to affect all states by larger degrees with each passing day. While this is so, developed countries continue at a GHG emission

that can soon render the world extinct. Negotiations have not been fruitful and any hope agreeing on a favourable GHG emission target soon is farfetched. Small states must therefore develop integrated policies which address immediate social and economic development concerns in view of climate change effects.

As negotiations aimed at reduced emissions fail Caribbean small states need to place more emphasis on joint development and shared resources. They cannot sit back and allow Climate Change to ruin their economies and livelihoods, while they wait on the international community to reach an agreement on their GHG emissions for long term relief.

CHAPTER 8

'THE EUROPEAN INITIATIVE'

Chapter 8 will seek to establish climate change as a universal problem, the alleviation of which will require a system of cooperation among a number of states. It will incorporate an examination of the effects of climate change that are unique to other regions inclusive of Europe's industrialized group of countries, which form the European Union (EU), and outline specific initiatives taken by the EU to address the issue. Further it will identify possible practices the Caribbean Community may be able to emulate in its effort to meet climate change as an integrated body.

Climate change is a universal concern which affects all regions of the world. The IPCC Fourth Assessment Report provided an overview of specific future impacts to added regions like South East Asia, inclusive of countries like India, China and Pakistan. The effects outlined included the melting of glaciers in the Himalayas, (World bank External Web, no date) which is expected to result in increased flooding that will affect water resources and water quality in many of its arid and semiarid regions; the decrease in reliability of hydro-power and biomass production; a reduction in water regulation in mountain habitats and an increased incidence of waterborne diseases such as malaria, dengue, and cholera. (Pakistan Press International, (2007)

With an extremely large population, South East Asian countries are also amongst the leading emitters of GHGs, especially India and China. China at one point in 2007 had reportedly

surpassed the United States GHG emission levels. (Pakistan Press International, 2007) They therefore struggle to combat the effects of climate change even as they strive to curb human causes. One issue of particular concern especially in ongoing debates is the fact that countries such as China is still referred to as a developing country, though over the last years it has been able to make significant achievements to boost its economic development, so much so, that it is now one of the United States' biggest competitors. This achievement was however gained at a huge cost to the environment. The international community therefore continues to put pressure on countries like China and India to take on mandatory targets for a reduction of their GHG emissions also. (Barha Nodic Asia Research Community, 2009)These countries are nevertheless constrained to find a balance between social and economic development and the protection of the environment, especially given their large populations.

Life in Africa is already a challenge. Aids reportedly kills 2.2 million people every year, along with other diseases such as malaria, lung infections and intestinal diseases. It has been reported too that the lack of simple vaccines for the more common diseases results in the deaths of another 600,000 annually, while war, malnutrition and life in filthy slums result in even more countless deaths every year of both children and parents. (Climate change fraud, 2009) It is not difficult to imagine therefore the enormous impact that climate change will have on this group of states, with its accompanying extreme weather patterns which can exacerbate the number of deaths each year. Current concerns of climate change include long periods of drought in some territories and lack of food, where the land is so dry it is no longer suitable for agriculture. Citizens therefore are forced to migrate in search of arable land.

Negotiating within the block of the African Union and the group of Small Island Developing States, African leaders maintain that their territories, like those of the Caribbean, are among the most seriously affected even though they are among those least contributing to the emissions of

GHGs, and insist that the more industrialized countries cut their GHG emissions. (Climate Hotmap, no date)

South America is a continent heavily dependent on natural resources, from the rangelands at the foothills of the Andes, to the plants and animals of the Amazon rainforest of Brazil and Suriname, to the fisheries off the coast of Peru. The region's ecosystems are very vulnerable to changes in temperatures, in precipitation and unavailability of water especially in the mountainous communities. According to leading scientists, this breeds a danger of extinction for rear and endangered species of animals and plants such as such as the 'golden toads' and the 'blue ray frogs.' (NCAS, no date) The danger also exists for 'landbird extinction' as the recorded higher temperatures have chased them up mountain slopes in search of cooler temperatures. (Stanford University, no date) Forest fires have been prolonged by increased high temperatures resulting in acres of land being burned especially in Argentina and Nicaragua; and the *Aedes aegypti* mosquitoes that can carry dengue and yellow fever viruses have recently appeared as an added worry to the health sector. (Climate Hotmap, no date/b)

The Pacific Islands which range from the lush tropical rainforests of Indonesia to the interior deserts of Australia are particularly affected by climate change which is strongly influenced by the ocean and the El Nino phenomenon. (Climate Hotmap, no date/c) Small island nations and the coastal regions, where much of the population is concentrated, are very vulnerable to increased coastal flooding and erosion due to rising sea levels. Warming sea temperatures in recent years have damaged many of the region's spectacular coral reefs, threatening one of the world's most diverse ecosystems. (OERC Environment News, no date) Total inundation, tidal waves and Tsunamis are among the major common concerns.

As an industrialized group of countries the European Union accounts for about 14 percent of the global emissions released into the earth's atmosphere. (OERC Environment News, no date)

Though major contributors and more developed than most of the other regional groupings, there is no exception to the effects which are experienced on account of climate change. The source of the effects may however be different.

Ecosystems in Europe have suffered more human-induced damage than those on any other continent. One to three percent of Europe's forests can be classified as undisturbed by humans and it has lost more than half of its wetlands. The speed of urbanization and the over-exploitation of resources are having an enormous impact on biodiversity; and species of animals and plants are threatened with extinction. (OERC Environment News, no date)

The EU was officially established by the Treaty of Maastricht in 1992 upon the foundations of the pre-existing European Economic Community. The competencies and actions of the twenty-seven member states now operating within the Union continue to be governed by this Treaty. Together these states under the umbrella of the EU work to promote sound policies for the social and economic development of their communities.

The 1992 Treaty directed the EU to promote sound environmental policies and actions at the national, regional and international levels. The Union therefore enables its twenty seven member states to speak with a unified voice on priority issues of the environment such as climate change, and has been leading the way internationally to help foster global cooperation and solutions.

What has been significant about the EU, compared to other regional bodies, is the recognition that it is among the major contributors to the phenomena of climate change and its willingness to prioritize initiatives which will aid in the adaptation and mitigation of the effects of climate change in accordance with stipulations depicted in the UNFCCC.

The EU has been the first major player to take steps to develop a low-carbon economy with the development of its European Climate Change Programme (ECCP), which has led to the adoption

of a wide range of policies and measures to combat climate change. Collectively they have established a well functioning system for trading emission quotas within the EU. (EU Focus, 2006/a) This system provided a financial incentive to curb CO2 emissions and companies across the EU were reportedly establishing CO2 management systems, and new roles and services such as carbon traders, auditors, management specialists and verifiers had emerged in response to the opportunities created by the ETS. (EU Focus, 2006/b) The pioneering of the ETS has become the cornerstone of the achievements of the EU in reducing their GHG levels cost-effectively.

As they continue to lead the world in their efforts to meet the challenges of climate change, the EU has now channeled focus to encouraging the global community to reach a successor agreement for the post Kyoto Protocol in 2012. This resulted in the publishing, in January 2007, of proposals and options in its communication, "Limiting Global Climate Change to 2 degrees Celsius: the way ahead for 2020 and beyond." (BBC News 2010)

This was endorsed by EU leaders at the European Council Meeting in March 2007 as they committed the EU to what critics refer to as an ambitious target. The proposal committed the EU to cutting its greenhouse gas emissions by 30% of the 1990 levels by 2020, providing that other developed countries commit to making a comparable reduction effort via a new global agreement. They also committed to transforming Europe into a highly energy-efficient, low-carbon economy by cutting their emission by at least 20% independently of what the other countries decided to do. (NILGA, no date)

In an effort to strengthen these commitments the following targets were set:

- A 20% cut in greenhouse gas emissions by 2020, compared with 1990 levels.
- A 20% increase in use of renewable energy sources by 2020
- A 20% cut in energy consumption through improved energy efficiency by 2020.

The United Nations is on record for backing the EU climate change efforts and signaling its full support. However scientists and critics including environmental groups are on record for recognizing the potential of the deal, but still criticizing it for being too ambitious. These groups have also expressed their dismay about 'a number of concessions it offered to industry'. (BBC News, 2010)

In January 2008, criticisms arose further over a major package of climate and energy legislative proposals to implement the commitments and targets which were previously set. Critics made reference to the fact that this package presented a more 'diluted version' of the original proposals of 2007, with an original 30% emission reduction reducing to 20% emission reduction. Campaigners say that this move by the EU has weakened the proposal. (Environmental Leader, 2009)

The European Union is considered one of the best examples of successful regional integration to have ever existed. The Union's particular strength is its role of adopting common policies for its 460 million citizens on several issues of concern to them. Environmental protection is one such concern with climate change as a priority area. The Union works to ensure that sound climate change policies are integrated into EU policy as a major focus, and even other policy areas such as agriculture and health. Learning from the European experiences could be quite a beneficial lesson for the Caribbean Community, (CARICOM).

The EU has put in place more than 30 successful initiatives to counter climate change since the year 2000. Undoubtedly, CARICOM lacks many of the resources that are so readily available to the European Union which may render adopting similar practices farfetched. There are however, quite a few initiatives that CARICOM may be able to emulate, especially with the support of its developed counterparts, in its bid to meet the challenges of climate change. These include:

- Instituting a flexible system of rules designed to protect habitats and animal and plant species to balance economic and recreational activities such as farming, fishing, hunting and mineral exploration, all of which can continue if protective and compensatory measures are in place.
- Integrating biodiversity considerations into non environmental policies such as agriculture and health.
- Encouraging farmers and fishermen to be guardians of nature as well as providers of food.
- Engaging the international community through bilateral and multilateral diplomacy in active pursuit of international recognition for its common but differentiated responsibility.
- Reducing tariffs on new vehicles which would encourage fewer emissions and pollution from old vehicles.
- Collaborating efforts to produce alternative energy sources such as the low carbon strategy and solar and hydropower energy sources which are viable in the tropical environment.
- Introducing incentives for proper management of resources.

Climate change, as was mentioned before, is a global concern, beyond the capacity of any single country or group of states to address alone. It requires a coordinated approach which integrated bodies like CARICOM and the EU can provide in the form of a system of cooperation among states to address their concerns.

In addition integrated policies will ensure a support system for each member state along with reinforcements which will encourage them to confirm to the policies. This type of collaboration could unleash major benefits in efforts to adapt and mitigate in the event of climate change.

CHAPTER 9

'BEST PRACTICE INITIATIVES FOR CARIBBEAN SMALL STATES'

This Chapter will highlight the limitations of current approaches engaged by Caribbean Small States to address climate change and provide a framework of best practices for these states to meet the challenges presented by this phenomenon through workable recommendations. Further, it will attempt to highlight how the established model could assist Caribbean Small States to overcome their vulnerabilities and be able to contribute meaningfully to the protection of the global environment.

International approaches to climate change, alluded to in Chapter 5, inclusive of comprehensive negotiations have failed to generate agreement on controlled levels of GHG emissions. Fuelling the tensions within the negotiations is dispute over the scientific data on climate change. Sceptics deny that climate change, more specifically global warming, exists as a result of human activities. They rather contend that it is a natural phenomenon. Others contend that "selective data is used to support the claim that climate change is a reality". (Caribbean Climate, no date). Some countries such as the United States have adopted this methodology as a way of explaining their delayed commitment to reduced levels of GHGs. The IPCC continues however to advance evidence which shows that most of the observed warming over the last fifty years is likely to have been due to an increase in GHG concentration that natural variability alone cannot account for. (IPCC, no date)

The same degree of scepticism was presented within the Caribbean region, which reportedly contributes less than one percent of GHGs to the atmosphere. (IPCC, 2001) Nevertheless the region remains very vulnerable to current climate and weather extremes that were alluded to in Chapter 1. There is no dispute therefore of the nature of climate change that is occurring in the Caribbean. This was supported by Chanderpaul (2009) in an article titled 'Controlling Climate Change', where he opined that:

> As a result of the profound reports (IPCC 4thAassessment Report and the Stern Report), there is no Government or Nation that can plead ignorance of the reality and the consequences of climate change and hence the need for decisive action.

Caribbean Small States through negotiating blocs have been contributing to the global efforts to address the issues arising from climate change. Together with other world leaders they continue to negotiate with the aim of making crucial decisions to assist in coping with and adapting to the reportedly inevitable increase in temperature globally.

The continuous negotiation process which began roughly around seventeen years ago, has so far failed to present a successor agreement to the Kyoto Protocol. More importantly, during the ongoing process Caribbean Small States find themselves further marginalized as their economic and social development become stagnated by the pressures of climate change. Numerous articles refer to this dilemma of Small Caribbean States which highlights a number of limitations of current practices that are being employed to bring relief to these states.

In an excerpt from the Times of India, which was printed in the Guyana Times (2009) the author made reference to the need for urgency in treatment of climate change issues which affect developing states, indicating that there is a lack of immediacy in addressing the issue. He noted that:

> At present climate change negotiations are limited to mitigation, adaptation, financing and technology transfer. However the vulnerable groups to climate change such as the poor, elderly, women, children and the indigenous communities need to be acknowledged by the international community. (Guyana Times, 2009, p. 15)

According to scientific data presented by the IPCC, developing countries together contribute a meagre 25 percent of total GHG emissions. (Caribbean Climate, no date) This however does not exclude this group of countries from the major impacts of climate change which threaten their every livelihood. So says Lumumba Stanislaus Di-Aping of Sudan, Chair of the Group of 77 and China, in his address to the gathering at the Preparatory Session in Barcelona in December:

> …failure to reach an agreement (in Copenhagen) will condemn developing countries to a total destruction of their livelihoods, their economies, their land and their forests. (Stabroek News, 2009, p. 5)

The Environmental Protection Agency (EPA) referred to the fact that:

> Caribbean countries lack the finances to develop adaptive and mitigation initiatives such as waste management, renewable energy, sea defence infrastructure, and developing the agricultural sector as the developed states do.(Sunday Chronicle, 2009, p. 19)

General observations and interviews indicate that citizens who are not involved in the policy-making process continue with their daily practices without regard of future impacts of climate change. Concomitantly, governments have failed to provide incentives or alternatives for persons who may have lost or are likely to loose their livelihood in the adaptation process. For example only recently in Guyana conflict has arisen between government and local miners after they were told that they would have to cease all mining operations in region 7. This has left the miners with no alternative option to protect their livelihood and conflict ensues between the two groups. Miners have indicated via various interviews that they are open to compromise, to find best practices to facilitate alternative development.

In addition, prevailing vested interests, lack of methods of enforcement, lack of resources and lack of immediate alternatives were all found to be limitations which exist in current approaches to treat climate change.

In Chapter 1 the writer made reference to the effects of climate change which include floods, droughts and other extreme natural disasters that have become increasingly prevalent over a short period of time. In Chapters 2 and 3 the writer observed how these effects have had, and are likely to have severe impact on the lives and livelihoods within the Caribbean region especially given their smallness. The findings presented in these chapters fuelled the observation that these states would have to extend themselves in the international arena through concerted effort for a favourable and immediate solution.

Presently an increase in the exposure of the population to these risks is obvious. Climate change though, is currently being examined by international bodies in terms of time slices such as '2020-2040' and 'to the end of the century,' as was highlighted in Chapter 6, even though there is the fear that some of these islands because of their geographical peculiarities may not be able to withstand certain conditions. Regional strategies are therefore necessary to cater for the immediate treatment of the risks involved, endorsing climate change as a matter of national and regional priority. Simple, clear and decisive action is needed which should be clearly identified in regional government policy to cater for the mitigation of these risks.

Any attempt to resolve policy issues with positive results entails a structured approach which would treat the micro-environment then the macro-environment as outlined in Table 2, which clearly defines activities within the respective environments. The micro-environment includes the immediate physical habitat and spatial setting in which persons live and interact; and the macro-

environment involves the wider settings in which persons interact. For the purpose of this paper the micro-environment will refer to the nation state and the macro-environment will refer to the regional and international arena. In this case therefore Caribbean policies would have to be determined which treat issues of the individual states and then extending to regional and international programmes.

Those to be implemented under national state policy include measures of identifying and recording specific peculiarities and abilities that uniquely exist within each state. Clearly outlined capabilities would assist in developing frameworks to aid the region based on the resources which exist within. States could also be encouraged to support each other given the strengths and weaknesses which are peculiar to them. For instance countries like Suriname and Guyana have large forested areas that hold tremendous potential in the energy sector, as well as arable land for agriculture. For example Guyana has proposed the implementation of its LCDS, which has been developed to outline Guyana's plans to protect its massive rainforest area and to promote a low carbon economy throughout the Caribbean. This strategy focuses on how Guyana can forge a new economy in an environmentally sustainable way. This has been estimated to produce significant benefits for the entire community of nations if they are developed accordingly.

It has been realized that the delayed process of determining policies to cater for the effects of climate change is partly due to the fact that it is not readily understood and may also be easily forgotten unless an extreme event occurs. As an immediate precaution citizens must be made fully aware that climate change is imminent. There needs to be a system of public sensitization in each nation state throughout the Caribbean which would adequately cater for all aspects of public awareness of climate change, inclusive of its effects; the public's role in contributing to; and preventing the phenomena. The increased temperatures, the natural disasters, and rising sea levels

must all be explained in simplest of terms to the layman who operates on a 'business as usual' routine everyday. Constant reinforcement of this information is also necessary through all forms of media.

Education can play a key role in averting actions which contribute to the phenomena of climate change. Children who are in school proved to be valuable vehicles for disseminating information at all levels, from kindergarten to secondary. Programmes should therefore be included at all levels in the education system, aimed at sensitizing the wider school population about standards of right and wrong, through popular means of drama, song and dance.

The institutions of higher learning such as the tertiary institutions could be involved in research and surveys to ascertain what the wider populace knows about climate change; what they need to know; what they think could be done; and even ways in which they could support and influence government efforts. Interviews with university personnel indicate that no collaborations exist presently on issues related to climate change. A viable solution to the problem of the lack of human resources may be to organize joint training programmes for the universities throughout the Caribbean such as UWI campuses in Barbados and Trinidad, University of Guyana, and St. George's University in Grenada.

The public also needs to be sensitized and encouraged by setting rules of behaviour for the alleviation of climate change. This would involve methods of infomercials and the more popular forms of media like television programmes, radio programmes and the internet. These methods should serve to inform as well as provide feedback on issues via call-in programmes and discussions on social networks such as face book and twitter. This system of education and

awareness must be followed up and evaluated, results of which would also serve to inform government policies on the alleviation of climate change, an evident form of public diplomacy.

Effective action in response to climate change must include changes in individual and community behaviour if it is to be deemed successful. Industrial workers who operate within the development sectors especially health, agriculture and mining are very resourceful personnel in the alleviation of climate change. Governments need to recognize this and include them in their research and surveys when formulating policies, especially where incentives are awarded. At the recently convened WMO Third World Climate Conference which was held in Geneva in September, 2009, a similar method of inclusion was established in the form of a 'Global Framework for Climate Services (GFCS)'. This proposed framework sets out to address the need for improved climate information through the cooperation of scientists, service providers and decision-makers as a collective whole. (CARICOM Secretariat, 2005)

The strategies aforementioned would encourage best results, through a system of inclusion and encourage willingness of citizens to participate in the process of adaptation; thereby improving civil society involvement in policy making; a strategy that should become a more effective diplomatic tool. These measures would also assist in influencing attitudes of citizens to climate change and would serve to limit some of the individual practices which contribute to the speed of climate change.

Just as building on the education and awareness of the public seeks to inform government policy, Caribbean countries need to 'mainstream' climate issues into national development planning as a way of 'climate proofing' (CARICOM Secretariat, 2005) national development policies, as put forward in Chapter 3. This would entail the incorporation of climate change alleviation strategies into policies of agriculture, health, water, housing, sea defences, draining, and mining among

other sectors, along with the anticipation of likely impacts. For example, in allocating housing areas, future settlement along the coasts of the Caribbean countries should be informed by some analysis of the exposure of the proposed area to inundation "under present day and projected extreme events." (CARICOM Secretariat, 2005) Building codes should also be re-examined and rules and laws strongly enforced to prevent total destruction in the event of large scale earth quakes and hurricanes. In addition, capacities to deal with increased diseases as well as different strains of diseases would have to be boosted in the health sector.

National meteorological departments in most Caribbean countries are severely understaffed and under resourced. A clear and decisive plan for recruitment and training of interested personnel is needed therefore to strengthen this mechanism. (CARICOM Secretariat, 2005) A series of collaborative programmes could also be organized to jointly train persons in this field throughout the Caribbean thereby providing a bank of experts of human resource personnel on whom to rely. The most important resource in any region is its human resource. In order to harness its true potential therefore, Caribbean nations need to channel their investment into education and training of its people, along with the provision for their basic needs and creative employment opportunities.

Currently there is need for the development of a Caribbean Climate Change Information Centre, which would be similar to the Caribbean Community Climate Change Centre and would be responsible for storing and updating information on climate change regulations and ensuring that this information is readily available and easily accessible to all member states as well as evenly distributed to all Caribbean Member States. The centre must provide information that serves to give more precise indications of the extent of the increased climate risks and the process of climate change adaptation. It could also serve as the focal point where states could submit the

results of their surveys for further evaluation, aiding further their mitigation and adaptation strategies.

A Caribbean Climate Change Fund for Caribbean States could also be developed which could be resourced by a small percentage of revenue from each member state. This fund would cater for immediate relief approaches to climate change such as the training of personnel and further research efforts. It could be further supplemented by the international community via international organizations and other regional groupings who would have been encouraged to pledge their support through negotiations.

In any event of climate change Caribbean Small States can overcome their vulnerabilities to contribute to the global environment through a process of intense diplomacy. Diplomacy is an art that holds many facets, most of which are described in Chapter 4. The evolution of diplomatic practice to include different fractions of participation such as the NGOs; IGOs; regional groupings such as OAS, EU, UN and AOSIS; and other international models is a strength which is truly exceptional and beneficial to small states like Caribbean States. They must not hesitate therefore to open themselves up to the potential benefits available as a part of these groupings.

The 1990s for example were characterized by the proliferation of non-governmental initiatives which played a key role in mobilizing community development on a number of issues apart from environmental concerns. In many ways such initiatives reflect a more enlightened and progressive attitude on the part of national, regional and international policy holders. Creating synergies with these organizations as well as other regional groupings such as the EU and UN will present resounding benefits for this group of small states.

Group diplomacy was highlighted in Chapter 4 as well, as one of the best types of instruments to be employed by Caribbean Small States to elevate themselves in the international arena. This type of diplomacy gave strength to their abilities as a group of states which can effectively engage the international community in lobbying for special consideration. These states would have to continue to engage the international community through this method of diplomacy. Regional negotiating capacity could be strengthened at all levels, with these groups of states bringing more leverage to the negotiating tables, as part of what they could offer as a group. Negotiations cold then be for mutual and beneficial gain given that climate change is a universal issue. This constitutes an example of a structured approach.

Niche diplomacy is one form which can present major benefits for Caribbean Small States in light of the challenges posed by climate change. This type of diplomacy entails the marketing of the countries for investment and mutual benefit. In view of climate change Caribbean Small States may want to move away from allowing the international community to make agricultural and infrastructural investments which can contribute to the speed of climate change; and to instead encourage them to invest in viable industries which would spin off good benefits to result in the protection of the environment not just for the Caribbean but the wider world.

Opportunities which exist include investing in renewables such as wind; solar; geothermal; industries. (CARICOM Secretariat, 2005) Developed countries can therefore be encouraged to invest in these types of projects in developing countries which would provide energy benefits and help to curd GHG emissions. It would allow them to benefit from the opportunities offered under the ‘Clean Development Mechanism’ of the Kyoto Protocol as they would be eligible to claim credit for the certified emissions reductions (CERs). (CARICOM Secretariat, 2005)

Jamaica has already implemented a 15ww wind energy CDM project and Guyana is presently promoting its Low Carbon Development Strategy for same gain. Since most Caribbean countries spend significant percentages of their GDPs to purchase fossil fuel, projects such as these could be mutually beneficial. Opportunities would exist for countries of the region to significantly reproduce their dependency on imported fossil fuels and depend on regional renewed energy supplies.

If these approaches are to be successful in averting climate change, all Caribbean States must be willing to cooperate and look beyond their vested national interests for the benefit of the community. Most likely there will be fewer states within the Caribbean who would have much to offer the region. Nevertheless, governments must be willing to cooperate for the benefit of the community and recognize the multiplier effect of creating synergies.

In order for systems such as this to work and produce benefits to its highest potential, Caribbean Small States would have to work in concert and reflect a system of true integration. Presiding national interests would have to be overlooked and a system of cooperation employed in every national government policy, somewhat like that of the EU.

As the Hon. Bruce Golding, Prime Minister of Jamaica to the 12th Meeting of the Council for the Foreign and Community Relations, in May 2009 opined:

> If ever there was a time when we need the sense and strength of community, it is now. If ever there was a time when we need to resist the latent instinct that resides inside of everyone of us in the Caribbean; that sometimes when we face trauma we can resist thinking that we perhaps would stand a better chance of making it if we break away from the pack and try to go it alone- we have to resist that. As tedious sometimes as Caribbean consultation and Caribbean action is we are going to have to ban together in a way that perhaps we have never felt was necessary to do before. (Golding, 2009)

No state in the Caribbean has the strength to operate successfully alone. Though they are individually weak, however, together they represent a significant amount of land and resources which offer much potential if they are managed effectively. This can be beneficial for both the regional as well as the global environment. It is hoped that this model framework will guide Small States in the formulation of its policies in the future, and will be sufficiently impacting on the wider international community.

CONCLUSION

Caribbean Small States face a multiplicity of challenges through the effects posed by the phenomenon of Climate Change. These effects are manifested not only through changes as a result of natural variability but also through a variety of common human practices.

Sea level rise, deterioration of weather patterns, loss of biodiversity and the management of forests and coral reefs as outlined in Chapter 1 are currently being experienced. Should these effects be further manifested, these states as well as their international counterparts will be detrimentally affected in almost all realms of existence. It is imperative therefore to take up the mandate to adopt sensible measures to alleviate these challenges.

CARICOM member states by any definition comprise a group of small states, which share the same constituencies and face similar vulnerabilities presented by climate change. They therefore would have to pursue strong cooperative links across geographic limits, and create networks to gain mutual advantage to overcome these vulnerabilities.

Thus there would be a shift in the focus of their foreign policy objectives which would rely on building strong integrated relationships to facilitate negotiating through regional blocs. Diplomacy will remain the best tool employed to meet these challenges for small

Caribbean states. The efficiency and effectiveness of this will however be determined by their approach and full cooperation.

Regardless of an agreement by the international community to cut their GHGs for a reduction in temperatures of 2 degrees Celsius or 1.5 degrees Celsius, the reality remains that consequences will continue to impact Caribbean Small States, threatening their developmental gains. It is essential therefore that immediate adaptation and mitigation strategies be employed in order to increase resilience for the natural, built, social and economic systems of these states in addition to current negotiation strategies.

A structured approach detailing micro-alternatives which mainstream climate change into national government policies; and macro-alternatives which mainstream climate change into regional and international policy objectives is therefore necessary.

Climate Change sees no borders and it affects what we deem the 'global commons' therefore, it demands a global response which would have to be lead by those who contributed least to it but are affected the most. The foreign policy of Caribbean States would have to include the measures outlined in this research as a method of overcoming their vulnerabilities to meet climate change and by extension serve to benefit states at the national, regional and global levels.

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Table 1: Summary of Socio-economic and Geographic Characteristics which contribute to vulnerability.

STATISTICS	Ant. & Barb.	Bahamas	Barbados	Belize	Dominica
Population	76 485	312 000	269 916	257 310	71 079
Area	443	13, 040	431	22,966	774
Coastline	153	3542	97	386	148
Climate	Tropical Maritime	Tropical Maritime	Tropical rainy season	Tropical, hot/humid, rainy/dry season	Tropical heavy rainfall
Terrain	Low-lying dryland, no inland water	Flat low rounded hills, no rivers	Flat central highland, no inland water	Flat swampy plains, low mountains; inland water and rivers	Rugged mountains; no inland water
Highest Point (m)	402	63	336	1 160	1447
Natural Resources	Negligible	Salt, aragonite, timber, arable land	Petroleum, fish, natural gas	Timber, fish, hydro power	Timber, hydropower, arable land
Natural Hazards	Hurricanes, tropical storms, drought	Hurricanes, tropical storms	Hurricanes, landslides	Hurricanes, coastal flooding	Flash floods, hurricanes
Environmental Issues	Limited fresh water, deforestation, rainfall runoff	Coral reef decay, solid waste disposal	Ship pollution, soil erosion, solid waste disposal	Deforestation, water pollution, industrial waste, solid/sewage waste disposal	Crops vulnerable to climate change
GDP per Capita	11 000	17 700	16 400	6 500	5 500

STATISTICS	Grenada	Guyana	Jamaica	St. Kitts and Nevis	Saint Lucia
Population	102 638	774 800	2 641 600	46 710	159 133
Area	344	214 970	10 991	269	616
Coastline	121	459	1022	135	158
Climate	Tropical	Tropical, hot/humid, two rainy seasons	Tropical, hot, humid	Tropical, rainy season	Tropical, dry/rainy season
Terrain	Volcanic central mountains, no inland water	Highlands, coastal plains, savannah, inland water	Mtns., coastal plain, inland water	Volcanic, mtns., no inland water	Mtns., fertile valleys, little inland water
Highest Point (m)	840	2835	2256	1156	950
Natural Resources	Timber, fruit, harbours	Minerals, timber, fish	Bauxite, limestone	Arable land	Forests, minerals, minerals, geothermal potential
Natural Hazards	Hurricanes	Flash floods	Hurricanes	Hurricanes	Hurricanes, volcanic activity
Environmental issues	Na	Water pollution (sewage, agri/industrial chemicals), deforestation	Deforestation, water pollution (waste, sewage, oil spills), coral reef damage	Na	Deforestation, soil erosion
GDP per capita	5 000	3800	4100	8800	5400

STATISTICS	St. Vincent &Grenadines	Trinidad
Population	109 164	1 088 644
Area	389	5 128
Coastline	84	362
Climate	Tropical, rainy season	Tropical, rainy season
Terrain	Volcanic , mtns, no inland water	Plains, hills, low mtns., no inland water
Highest Point (m)	1234	940
Natural Resources	Hydropower, crop land	Petroleum, natural gas, asphalt
Natural Hazards	Hurricanes, volcanic activity	Hurricanes, tropical storms (outside usual path)
Environmental Issues	Water pollution (effluents)	Water pollution, beach pollution, deforestration, soil erosion.
GDP per Capita	2900	10 500

Source: www.cia.gov

Table 2: Model of Best Practice Initiatives for Caribbean Small States – Structured Approach

	Best Practices	**Level of Impact**
Micro-environment	- Identify and record specific peculiarities and abilities that uniquely exist within each state. - Sensitize public about the realities of climate change and how they could assist in curbing GHG emissions through lifestyle changes. - Educate students of both secondary and tertiary institutions who would be able to spread awareness as well as assist with data collection. - Include civil society in policy-making. - Include civil society in data collection activities. - Adopt a system of cooperation between prominent citizens, decision-makers and service providers. - Explore added incentives or alternatives for citizens severely affected by climate change. - Mainstream climate issues into national development planning.	National
Macro-environment	- Organize collaborative programmes to jointly train personnel throughout the Caribbean thereby providing a bank of experts on whom the region can rely. - Develop of a Caribbean Climate Change Information Centre which would store data specific to the region and for the benefit of the region, to give more precise indications of the extent of the increased climate risks and the process of climate change adaptation. - Develop a Caribbean Climate Change Fund for Caribbean States which would be resourced by a small percentage of revenue from each member state. This fund would cater for immediate relief approaches to climate change. - Outline regional policies to strengthen cooperation and collaboration within the region. Clearly outline incentives as a result of cooperation among member states to encourage stronger integration.	Regional

	- Create synergies with other regional groupings such as the EU and NGOs - Continue participation in international negotiations outlining specific vulnerabilities of region. - Market potential of the region to attract investment for the development of energy alternatives.	Global