Section A1

Introducing Vulnerability

Introducing Vulnerability

The Caribbean region is prone to a number of natural hazards, which either exhibit their effects on a cyclical basis, or are entirely random. In particular, the region experiences *meteorological* phenomena such as:

- Hurricanes and tropical storms;
- Excessive rainfall leading to flooding; or
- Drought;
- Damaging wind effects; and
- Storm surges and coastal area flooding.

Based on an analysis of large databases of information pertaining to hurricanes and dry/rainy seasons, we can see that these phenomena occur within a relatively predictable timetable.

In addition, the region is also prone to *geophysical* phenomena, which can be unpredictable. These include:

- Landslides (may be triggered by excessive rainfall);
- Earthquakes;
- Tsunamis; and
- Volcanic activity.

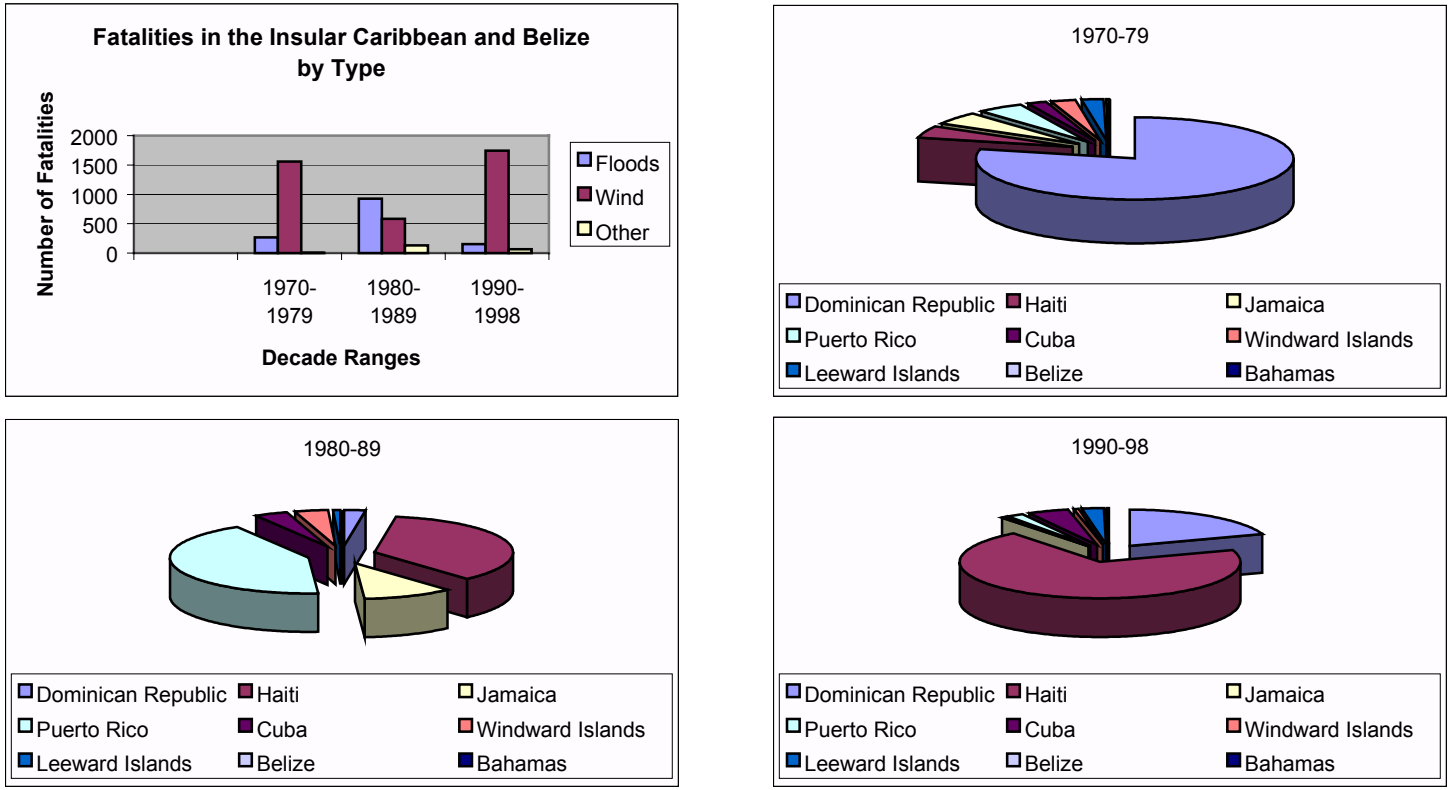
In general, while the timetable of occurrences of some of these hazards is predictable, the intensity of their impacts is not. This level of uncertainty, therefore, means that disaster preparedness planning is an essential tool for the region.

Over the past several decades, population increases and developmental pressures have led to the expansion and/or creation of centres of population in areas that are vulnerable to these natural hazards. For example, in some of the islands of the eastern Caribbean, the physical terrain has forced the development of towns and villages to be within the coastal zone. In addition, main roadways connecting these towns frequently run in close proximity to the coast. During times of tropical storms and hurricanes, these towns and their associated infrastructure are often threatened.

In the north-western Caribbean, Jamaica for example, developmental pressures and the resultant move from rural to urban centres has seen the upsurge of informal settlements in areas that are at risk during times of hazards. These communities are typically established outside of the formal land use and physical planning process, and are to be found on the banks of rivers or in areas prone to landslides and/or flooding.

In the past decade, repeated disasters have resulted in excessive damage to infrastructure and some loss of life. In 1999, Hurricane Lenny caused extensive damage to infrastructure and disruption to civil society in several islands of the eastern Caribbean. Later, between October 2001 and September 2002, four separate flooding events affected Jamaica. During these events there was loss of life as well as complete dislocation of several communities. Following each of these events, much-needed funding had to be re-allocated to address the recovery and rehabilitation efforts. This cycle of damage, dislocation/loss of life and recovery/rehabilitation places a severe strain on the resources of these island nations and their ability to respond to the needs of citizens.

Chart 1
Distribution of fatalities by type and by country, 1970-1998



In an attempt to properly come to grips with the issues of vulnerabilities facing them, several Caribbean countries lobbied successfully during the 1980's-1990s for a global platform within which the special and unique challenges to their development could be appropriately discussed. Coming out of this lobby, a global summit took place, which was followed by the formulation of the SIDS POA in 1994. For these Small Island Developing States (SIDS), vulnerability encompasses economic, ecological and social issues.

From the perspective of an economic consideration, it must be remembered that the economies of the Caribbean are in general quite "open", are often not diversified, have small domestic markets and are therefore susceptible to external shocks. For example, changes in prices of primary commodities such as bauxite, citrus, bananas and sugar cane can result in immediate impacts on the economy of an island nation. In addition, the economies of the SIDS are subject to changes in global trade regimes. For example, as a result of trade liberalization, which led to the lowering of taxes on trade, and the development of regional trading blocks, some countries experienced a serious decline in revenues. In Jamaica, for example, the setting up of NAFTA has led to the loss of jobs in the manufacturing sector to Mexico. Partially as a result of this, the contribution of that sector to the GDP has declined from 20% to 15% between 1990 and 2000. Changes in global trading have also resulted in a loss of preferential access for bananas as well as a new dispensation for sugar and rum.

From an ecological perspective, it is necessary to consider the fragility of the natural resource base, the vulnerability to sea level rise and the exposure to natural disasters. At present, there is uncertainty as to this increased cycle of disasters. On one hand, it is believed that this may be due to more frequent and intense weather systems, as a result of global warming. The other school of thought holds that the cycle of disaster has been exacerbated by development trends. In the final analysis, while it is of the greatest importance to understand the science of the hazards to which the region is exposed, it is also of critical importance that the vulnerability of the region's population be reduced. This latter goal may be achieved through the application of proper planning, encompassing both the physical planning process and the development of emergency response initiatives.

Finally, from a social perspective, issues such as the high rates of migration ("brain drain") and the lack of a large skilled workforce must be considered.