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Small Island Economies:

Vulnerabilities and Opportunities[1]

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Small Island Economies: from Vulnerabilities to Opportunities[1]

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[1]This Reader is not intended to exhaustively cover the issue of the challenges facing ACP Small island economies, but to provide some background information and selected information resources, focusing on the implications for rural development. The Reader and most of the resources are available on http://brusselsbriefings.net

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1. Context of the Small Island Developing States

1.1. SIDS: a diverse group

Small Island Developing States (SIDS) comprise small islands and low-lying coastal countries that represent a diverse group in a number respects.[2] The United Nations currently classifies 52 countries and territories as SIDS. More than 50 million people live in these countries. They are located across the Indian, Pacific and Atlantic Oceans with the highest concentration of SIDS in the Caribbean and southwest Pacific[3] - forty-three of them are located in the Caribbean and the Pacific regions. The group includes countries that are relatively rich by developing country standards, such as Singapore and Bahamas, but also some of the poorest countries in the world, including Comoros, Haiti, Kiribati and Timor-Leste.

SIDS also face a **greater risk of marginalization from the global economy than many other developing countries** as a result of their small size, remoteness from large markets, and high economic vulnerability to economic and natural shocks beyond domestic control. With their fragile ecosystems, SIDS are also highly vulnerable to domestic pollution factors and globally-induced phenomena, such as sea level rise.

List of Small island Developing States (UN Members)			
1	Antigua and Barbuda	**20**	Federated States of Micronesia
2	Bahamas	**21**	Mauritius
3	Bahrain	**22**	Nauru
4	Barbados	**23**	Palau
5	Belize	**24**	Papua New Guinea
6	Cape Verde*	**25**	Samoa*
7	Comoros*	**26**	São Tomé and Principe*
8	Cuba	**27**	Singapore
9	Dominica	**28**	St. Kitts and Nevis
10	Dominican Republic	**29**	St. Lucia
11	Fiji	**30**	St. Vincent and the Grenadines
12	Grenada	**31**	Seychelles
13	Guinea-Bissau*	**32**	Solomon Islands*
14	Guyana	**33**	Suriname
15	Haiti*	**34**	Timor-Lesté*
16	Jamaica	**35**	Tonga
17	Kiribati*	**36**	Trinidad and Tobago
18	Maldives*	**37**	Tuvalu*
19	Marshall Islands	**38**	Vanuatu*

List of Small island Developing States (Non-UN Members/Associate Members of the Regional Commissions)			
1	American Samoa	**8**	Guam
2	Anguilla	**9**	Montserrat
3	Aruba	**10**	Netherlands Antilles
4	British Virgin Islands	**11**	New Calendonia
5	Commonwealth of Northern Marianas	**12**	Niue
6	Cook Islands	**13**	Puerto Rico
7	French Polynesia	**14**	US Virgin Islands

*** Also LDCs**

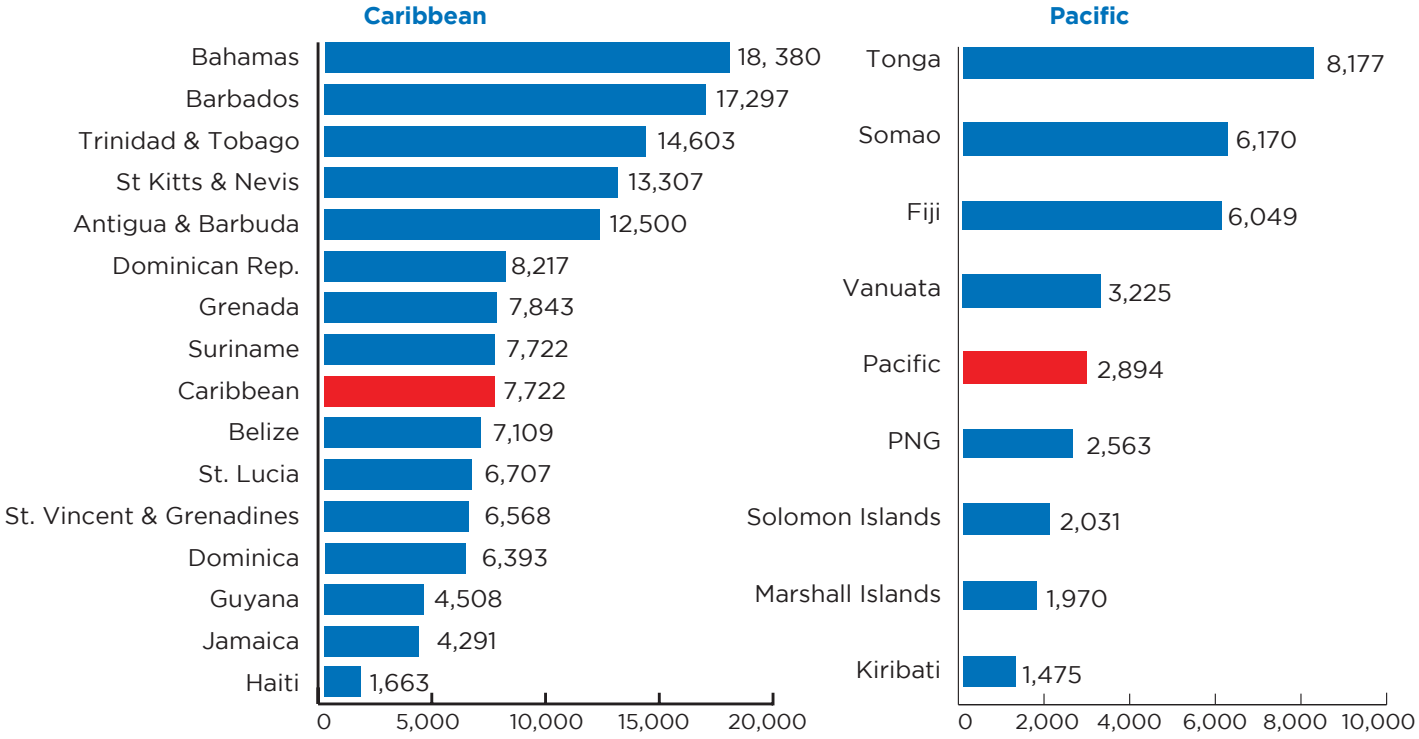
Small Island Economies: from Vulnerabilities to Opportunities

Major environmental and socio-economic challenges in SIDS

- Productive sectors heavily dependent on their limited natural resource base (e.g., agriculture, forestry, fishing, tourism).
- Susceptibility to the vagaries of international trade.
- High transportation and communication costs.
- Serious vulnerability to extreme climate events and other natural disasters.
- Scarce land resources.
- Increasing pressures on coastal and marine environments and resources.
- Small domestic markets.
- Limited ability to develop economies of scale.
- High import content (especially of strategic imports such as food and fuel).
- Limited economic diversification possibilities.
- Limited extent to which domestic competition policy can be applied.
- Dependence on a narrow range of export products.
- Inability to influence international prices.
- Uncertainties of supply due to remoteness or insularity.
- Shifting rainfall patterns and cyclones, typhoons and hurricanes.

Source : UNEP 2005, UNFCC 2007b

As Figure 1 shows (comparing GDP per capita in the Caribbean and Pacific), GDP per capita ranges from $US 28,000 in Singapore to only $US 369 in the Comoros.



Source: Adapted from Naudé, McGillivray and Santos-Paulino, eds. Vulnerability in Developing Countries, Chapter 10

1.2. International recognition

Small Island Developing States (SIDS)[4] were recognized as a distinct group of developing countries facing specific social, economic and environmental vulnerabilities at the United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit, held in Rio de Janeiro, Brazil (3-14 June 1992). This recognition was made specifically in the context of Agenda 21 (Chapter 17 G). The United Nations recognizes the 38 UN Member States belonging to the Alliance of Small Island States (AOSIS)5, an ad hoc negotiating body established by SIDS at the United Nations. AOSIS also includes other island entities that are non-UN Member States or are not self-governing or non-independent territories that are members of UN regional commissions. It should be noted that Bahrain is not a member of AOSIS.

In the Cotonou Agreement signed in 2000 between the European Union and ACP countries, island countries continue to be mentioned and the 26 island ACP countries are referred to in Annex VI, Article 4, including larger island states, such as Haiti, the Dominican Republic and Madagascar.6

Three geographical regions have been identified for the location of SIDS, namely, the Caribbean, the Pacific and the Atlantic, Indian Ocean, Mediterranean and South China Sea (AIMS). Each of these regions has regional bodies to which the respective SIDS may belong for purposes of regional cooperation. These are the Caribbean Community (CARICOM), the Pacific Islands Forum (PIF) and the Indian Ocean Commission (IOC). There are also sub-regional organizations for similar purposes.

The United Nations has been assisting and extending cooperation to SIDS in their sustainable development efforts through the Programme of Action for the Sustainable Development of Small Island Developing States finalized at the Global Conference held in Barbados in 1994, known also as the Barbados Programme of Action (BPOA). The BPOA highlights the vulnerabilities of SIDS and outlines their responsibility for their own sustainable development as well as the need for regional cooperation and the role of the international community in supporting the sustainable development of SIDS.[7] The BPOA recommends that, in order for SIDS to achieve sustained economic growth and sustainable development, it is necessary to develop overseas markets for value-added exports in areas in which they are internationally competitive.[8] Prior to the BPOA small islands issues, challenges and vulnerabilities were marginal to international environmental diplomacy.[9]

This programme was reviewed and revamped at the five-year review held at the twenty-second special session of the General Assembly in 1999, and the ten-year review held in Mauritius (10-14 January 2005). The latter outcome is known as the Mauritius Strategy for Implementation of the Programme of Action for the Sustainable Development of Small Island Developing States (MSI) which further strengthened the social and economic dimensions for the BPOA by placing a more targeted emphasis on certain issues, such as culture, health and knowledge management, education for sustainable development, consumption and production. It also highlighted the implications of globalization and trade liberalization for SIDS in addition to the difficulties being experienced by SIDS in integrating into the global economy.[10] The UN-OHRLLS mandate from the General Assembly calls upon the Office to engage in advocacy and mobilization of international support and resources for the implementation of the Programme of Action for SIDS[11].

UN recognition of the problems of small island developing States

The United Nations has recognized the particular problems of Small Island Developing States (SIDS) since 1994, after UNCTAD had advocated the special consideration of 'island developing countries' for two decades. It was the first body to recognize the necessity of supporting these countries and bring the international community's attention to the importance of economic vulnerability as a more meaningful criterion for guiding development partners in their treatment of SIDS.[12] However, the UN never established criteria to determine an official list of SIDS. In this context, UNCTAD uses an unofficial list of 29 SIDS, for analytical purposes only.

The Mauritius Strategy recognizes the seriousness of the disadvantages most SIDS suffer from in the global economy, and implicitly, the need for a range of answers to these problems. Since 1985, the World Bank has maintained a 'small island exception' in its policy of eligibility for IDA concessionary treatment. In the WTO, proposals for special treatment modalities of interest to SIDS have been considered under a "Work Programme on Small Economies" since 2002.[13] Thus, there

has not been a lack of reference to the vulnerability of SIDS nor has there been a lack of declaration in favor of SIDS, but there has been an absence of response to the recognized problems, and skepticism remains among many development partners about the legitimacy of SIDS as a category requiring special attention.[14]

Small island nations are singled out for special mention in the Millennium Development Goals (MDGs) of the United Nations. Under Goal 8, the development of global partnership for development, Target 14 is said to address the special needs of landlocked countries and small island developing states (through the Programme of Action for the Sustainable Development of Small Island Developing States).

1.3. The definition problem

One of the main conceptual problems underlying the question of the definition of SIDS hinges on how to define 'small'. Different definitions of smallness have been envisaged in the relevant literature, with criteria ranging from population to land area, national income, or the share of world trade. The most commonly used criterion, in recent years, has been a population threshold of 1.5 million, as proposed by the Commonwealth Secretariat and reflected in the report of the Commonwealth Secretariat/World Bank Joint Task Force on Small States.

A more recent definition of a 'small economy' relates to trade issues. It is the 'share of world trade', as suggested by Michael Davenport[15] who envisaged a threshold of 0.02% of overall merchandise trade, thereby accepting a group of 42 'small and vulnerable States'. While it makes sense, in trade negotiations, to define smallness through the share of global trade, it should be noted that this variable is only weakly correlated with the population size criterion, and would generate a different set of countries.

In any case, neither the definition based on the population criterion nor any other definition of smallness has ever been formally validated by an intergovernmental body.

Defining 'smallness' is, in itself, problematic, but the interchangeable use of, or loose reference to, terms such as "small island developing States" (Barbados 1994), "small economies", "small and vulnerable economies" (Doha 2001), or "structurally weak, vulnerable, and small economies" (São Paulo 2004) gives rise to a great deal of confusion. In any particular forum, the lack of clarity about what category is actually under consideration is invariably a reason or pretext for decision makers not to take the issue seriously.

The absence of a definition of the SIDS category has been the most fundamental reason for which countries that claimed to fall in that category were not able to gain special treatment on grounds of 'small islandness'. Historically, there has been external support to most SIDS in the framework of international cooperation, essentially by virtue of North-South arrangements such as those maintained by the European Union to benefit ACP countries, or by the United States in favor of specific regions involving island states (e.g. through the Caribbean Basin Initiative)[16].

However, little has been done by development partners to translate the recognition of SIDS-specific issues into genuine SIDS-specific concessions, although this specificity has been advocated and sought by SIDS. Considering the exceptional economic disadvantages faced by most small island developing economies as a result of their permanent handicaps, the notion of special treatment by virtue of SIDS status is important to genuine SIDS in the multilateral trading system and in the area of development financing.[17]

2. The vulnerability of SIDS

There are many disadvantages that derive from small size, which are magnified by the fact that many island states are not only small but are themselves made up of a number of small islands. Their disadvantages include:

- a narrow range of resources, which forces undue specialization
- excessive dependence on international trade and hence vulnerability to global developments
- high population density, which increases the pressure on already limited resources
- overuse of resources and premature depletion
- relatively small watersheds and threatened supplies of fresh water
- costly public administration and infrastructure, including transportation and communication
- limited institutional capacities and domestic markets, which are too small to provide significant scale economies, while their limited export volumes, sometimes from remote locations, lead to high freight costs and reduced competitiveness
- the tendency to have high degrees of endemism and levels of biodiversity, but the relatively small numbers of the various species impose high risks of extinction and create a need for protection
- heavy dependence on coastal and marine resource for their livelihood including food security
- heavy dependence on tourism which can be easily impacted by climate change and natural disasters
- limited land resulting in land degradation, which affects waste management[18]
- frequently poorly developed infrastructure (except for major foreign exchange-earning sectors such as tourism)[19]

Many small island developing States are entirely or predominantly coastal entities. Due to the small size, isolation and fragility of island ecosystems, their renowned biological diversity is among the most threatened in the world. This requires that in pursuing development special attention must be paid to protecting the environment and people's livelihoods. It also requires the integrated management of resources.

Although SIDS vary in their geography, climate, culture and state of economic development, they have several common characteristics that highlight their vulnerability, particularly relating to sustainable development and climate change.[20] SIDS share a number of socio-economic challenges, such as heavy dependence upon the natural resources base (agriculture, forestry, fishing, tourism, mining and light manufacturing), susceptibility to the vagaries of international trade, lack of economies of scale, high transportation and communication costs.[21]

There has been an ongoing interest in the consequences of country size on the socio-economic development of newly emerging developing countries in both the academic and policy-making fora.[22] This interest emanates from a number of circumstances, including the challenges of independence, globalization and the need to promote sustainable development. During the early post-independence period the principal focus of attention was on the economic viability of small developing states and their capacity and capability to survive as sovereign states. In the last 15 years after the 1992 Earth Summit in Rio where the international community acknowledged in Chapter 17 of Agenda 21 that small islands developing states are a special case and important part of the diversity of nations, the challenges of sustainable development have featured high on these nations development agenda .

The Rio Summit highlighted that small islands and low lying coastal developing states shared structural characteristics that made them economically, environmentally and socially vulnerable to shocks over which they have little or no control, placing them at a distinct disadvantage in the global economic system. This recognition led to the convening in 1994 of the United Nations Global Conference on Small Island Developing States in Bridgetown, Barbados and the Barbados Programme of Action (BPOA), which outlines a blueprint for action.

2.1. The concept of vulnerability

The concept of vulnerability relates to ecological fragility, proneness to natural disasters and concentration of exports on a limited range of products and markets. These characteristics were stressed,between 1974 and 1994, by numerous UNCTAD reports and UN General Assembly resolutions on island developing countries.

Generally, SIDS have small populations and limited resources that are already heavily stressed[23], small domestic markets, a high concentration on a few export products and a high dependence on intermediate imports. These situations are often further compounded by rigidities in factor markets, which prolongs the cost of adjustment to changing circumstances. Many of these countries also face problems associated with their isolation which translates into high unit costs of transport, uncertainty of supplies of necessary goods and services, high stocks and financial costs. SIDS are also characterized by limited public and private institutional capacity, few qualified human resources as well as the tendency to be perpetually affected by natural hazards which destroy the productive infrastructure and cause loss of human life. This situation is further compounded by the greater pressure on the environment and natural resources, particularly, the greater use of coastal resources, high levels of competition for land use and water as a result of a greater level of demographic pressures. These structural circumstances contribute to the vulnerability of SIDS, which is reflected in the high volatility of the rate of growth of Gross Domestic Product (GDP). As a consequence of these characteristics, the economic growth in many SIDS is often unstable and there is uncertainty over investment and development plans.

2.2. The measurement of vulnerability

To measure the vulnerability of SIDS the 1998 pioneering work of the Commonwealth Secretariat[24] and the World Bank provided a benchmark for important policy analysis. These institutions, using mainly economic data, designed an index which attempts to explain the volatility of the rate of economic growth by the impacts of external shocks on the basis of the concentration and dependence on exports and by the effects of natural disasters expressed in terms of the percentage of the affected population. The response capacity to external shocks was estimated on the basis of the GDP. Other studies using similar methodological approaches have concluded that small developing countries are more vulnerable than larger countries and have attempted to outline policy options to ameliorate external shocks.[25]

Thomas (2004) has indicated that the measurement of the vulnerability of SIDS poses a number of complex problems. Among the most significant are the classification of small developing states and the usefulness of the concept for decision-making as a result of the heterogeneity of small developing states in relation to a host of available socioeconomic indicators. Faced with these challenges, he suggests that further statistical investigation is required to determine a manageable cluster of indicators that would provide useful benchmarks for decision making in SIDS. This is critically important to demonstrate the level of policy ownership in SIDS and the tasks in sequencing policy implementation.

The work of Liou and Ding (2002) has created a data set working with 25 key indicators.[26] Using cluster analysis they have underscored a number of factors that lead to the vulnerability of SIDS and create the basis for designing policy.

The macro vulnerability of SIDS has been an increasing concern for the international community, which has resulted in the design of an economic vulnerability index (EVI), set up at the United Nations by the Committee for Development Policy to assess the structural economic vulnerability resulting from natural or external shocks faced by countries and from their exposure to these shocks.[27] However, Thomas has underscored the importance that small developing states do not confuse the circumstances relating to their vulnerability with those based on other characteristics.

2.3. Economic vulnerability of SIDS

All SIDS are vulnerable to economic shocks and natural hazards to a degree that few other countries or regions are and this is reflected in the volatility of SIDS GDP

growth. SIDS located in the Pacific region record the lowest average and by far the most volatile GDP growth. Pacific SIDS growth rates range from 2.0 to 9.1 percent and the volatility, as measured by the coefficient of variation, is more than twice that of all developing countries and the SIDS group as a whole. Volatility in GDP growth rates is also higher in SIDS located in Africa and the Caribbean, respectively, than in all developed countries.

SIDS rely heavily on trade to drive growth, hence the volatility of their growth. Work carried out for WIDER, for instance, shows that in the Caribbean the top five export commodities represent between 70 and 96 per cent of the regions' exports. This creates economic vulnerability to changes in export demand and commodity prices. Trade flows, expressed as the sum of commodity exports and imports relative to GDP, are far higher in SIDS than in all other Developing Countries (DCs) and Least Developed Country (LDCs). Commodity exports and imports as a percentage of GDP in any one year were no less than 95 and as high as 141 per cent, and averaged 110 per cent over the period of 1980 to 2007. The equivalent numbers for all developing countries were 64, 94 and 78 per cent, respectively.

More pertinent is volatility in trade given its implications for vulnerability to external shocks. Indeed, SIDS trade is more volatile than for other developing countries. The coefficient of variation for SIDS trade relative to GDP for the period 1980 to 2007 is 10.23, compared to 7.56 and 8.80 for DCs and LDCs respectively.[28]

Several SIDS are single commodity exporters and rely heavily on export earnings. This external dependence increases their vulnerability to external economic threats and shocks.[29] High unit costs of producing goods and services and high transportation costs result in non-competitive prices.

Their costs of importing and exporting goods are further increased because of extended periods required for storing their imports and exports because of the infrequency of their shipping and air transport. Furthermore, market competition is frequently lacking in international transport to remote island communities so that monopoly charges may apply to such transport. Economies of scale in relation to the volume of trade often result in it being uneconomic for more than one carrier (or a couple at most) to service an international transport route for such small nations. Within these economies themselves, there also tends to be business concentration in the economic distribution of imports and also in many of their industries.

Tourism - a double-edged sword

The travel and tourism sector is the key economic sector for SIDS in terms of earnings and jobs. Indeed, many SIDS are highly dependent upon revenue gained from tourist arrivals and through tourist-related activities. Tourism is the largest foreign exchange for many SIDS, focusing primarily on fragile biotic systems like beaches, reefs and other coastal resources that are often over-exploited as tourism products.[30] With regard to the Caribbean, travel and tourism accounts for 14.8 percent of GDP, 12.9 percent of employment and 14.6 percent of total exports, and much higher fractions for some islands.[31] Tourism is the life-blood of many Caribbean economies, which will shrink with the estimated impacts of climate change, although Caribbean nations have contributed little to the release of greenhouse gases that drive climate change.[32] Relative to its size, the island population of the Caribbean is more dependent on income from tourism than that of any other part of the world. [33]

The Pacific has a similar economic profile with GDP shares of travel and tourism at 11.7 percent, employment shares at 12.4 percent, and export shares at 16.9 percent of GDP. However, for both regions ten-year forecasts (2018) by the World Travel and Tourism Council (2008) suggest declining contributions from travel and tourism to GDP and employment, but not to exports.

SIDS, which generally are long-haul destinations from key source markets like North America and Europe, have raised concerns regarding the potential adverse impact of prospective climate regulation of the air travel and shipping sectors and consumer preferences shifting in favor of short-haul destinations. Some governments and companies have also adopted environmentally friendly charges, levies and technologies, some of which have caused the cost of travel and

transportation to increase. Such cost increases will likely have adverse effects on travel and tourism to SIDS. On the other hand, the cost of inaction on climate change could be even more dismal. According to a recent study[34], in the case of the Caribbean, the cost of inaction would amount to

- 22 percent of GDP for the Caribbean as a whole by 2100
- the costs of inaction will reach an astonishing 75 percent or more of GDP by 2100 in Dominica, Grenada, Haiti, St. Kitts & Nevis and Turks & Caicos
- the Caribbean's largest island, Cuba, faces a nearly 13 percent economic hit by mid-century, and a 27 percent loss by 2100, unless there is swift action to address climate change.

In addition to export dependency, external vulnerability is accentuated by the fact that for most households in SIDS, remittances from abroad is a very important source of income. While this creates a vulnerability towards global downturns, when remittances decline (as during the recent global financial crisis) it also acts as a buffer in the case of local hazards – it is often found that remittances to SIDS increase in the wake of a natural disaster.

In the 1980s, Bertram and Watters (1985, 1986) characterized South Pacific micro-states as MIRAB economics, that is, economies relying on overseas migration (MI) which in turn generates remittances (R) for their residents and foreign aid (A) used to support their government bureaucracies. With growing globalization, the migration and remittance component of the MIRAB model has increased in relative importance for many South Pacific island countries. As foreign aid to these countries is falling, many governments have introduced value added taxes (VAT or GST). This provides their government indirectly with income from remittances from overseas when these are spent by recipients on commodities in these economies.

2.4. Environmental vulnerability of SIDS

SIDS are located among the most vulnerable regions in the world in relation to the intensity, frequency and increasing impact of natural and environmental disasters and, thus, face disproportionately high economic social and environmental consequences.[35] In contrast to larger countries, a natural disaster occurring in a small island developing state can lead to a complete breakdown of economic processes, extensive environmental damage and substantial and extensive disruptions in the social fabric of the island states in question. Furthermore, a complete inundation of some islands due to sea level rise is a real possibility.[36]

Economic losses resulting from the negative effects of climate change on agriculture will vary among island states, for example Fiji's costs could range from US $23 to 52 million per year by 2050 and Tarawa, Kiribati 8 – 16 million.[37]

Environmental vulnerability is related to the risk of damage to a country's natural capital. The series of environmental vulnerabilities faced by SIDS includes

- natural hazards (e.g. hurricanes, earthquakes, tsunamis and volcanic eruptions)
- internal anthropogenic hazards (e.g. deforestation), which over time reduce intrinsic ecosystem resilience
- externally driven, anthropogenic hazards (e.g. transport of toxic waste)
- global climate change, the effects of which are particularly severe on SIDS (UNEP 2005)

Although SIDS contribute less than one percent of global GHGs emissions (UNFCCC 2007a), they already experience adverse effects of climate change, including sea level rise, tropical cyclones/hurricanes, droughts, increasing sea surface temperatures, coral bleaching and other adverse phenomena.

The fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) identified small states as being the most vulnerable to the adverse impacts of climate change[38] and concluded in 2007 that a sea-level rise resulting from a global temperature increase of 4 degrees Celsius would completely submerge low-lying island states like Tuvalu, Kiribati and the Maldives.[39]

SIDS are particularly vulnerable to global climate change, climate variability and sea level rise. As

their population, agricultural land and infrastructure tend to be concentrated in the coastal zone, any rise in sea level will have significant and profound effects on their economies and living conditions; the very survival of certain low-lying countries will be threatened. [40] Inundation of outlying islands and loss of land above the high-tide mark may result in the loss of exclusive economic rights over extensive areas and in the destruction of existing economic infrastructure as well as of existing human settlements. Global climate change may damage coral reefs, alter the distribution of zones of upwelling and affect both subsistence and commercial fisheries production. Furthermore, it may affect vegetation and saline intrusion may adversely affect freshwater resources. The increased frequency and intensity of storm events that may result from climate change will also have profound effects on both the economies and the environments of SIDS.[41]

Increase in Tropical Cyclone Intensity

One of the fears of global warming is that it might result in an increase in the frequency and intensity of tropical cyclones due to the increases in surface sea temperatures.[42] In the Caribbean, Hurricane Ivan devastated Grenada in 2004 (losses amounting to 200 per cent of the GDP), damaging or destroying over 90 per cent of hotel guest rooms, 80 per cent of the island's nutmeg trees (both the island's main foreign exchange earners) and causing massive damage to the country's socio-economic infrastructure.[43] Also in 2004, in Haiti Hurricane Jeannie left 2 754 people dead, 298 926 suffering negative effects, and caused extensive destruction of property and livelihoods (UNEP 2005).

In August 2007, Hurricane Dean caused 42 fatalities - 39 direct, 3 indirect – and damage of US $3.8 billion (2007), affecting St. Lucia, Martinique Dominica, Puerto Rico, Dominican Republic, Haiti, Jamaica, Cayman Islands, Belize, Mexico, and some regions in Central America. Most of the natural disasters were climate-related: floods, drought, landslides and hurricanes. There has been a noticeable upward trend in losses, particularly in the past two decades (Trotz 2004). In 2008, since the 15th August 2008, the Caribbean region has been affected successively by the tropical storm Fay, hurricanes "Gustav", "Hanna" and "Ike" that claimed more than 350 lives so far, affecting more than 2,8 million persons and damaging more than 600,000 houses while assessments are still ongoing. In Cuba, some 500,000 houses were damaged of which 63,000 result completely destroyed. The infrastructure and the agriculture have sustained significant damage. As a consequence of these impacts, the vulnerability throughout the Caribbean has increased dramatically (OCHA 2008).

Due to their unique geophysical features, social, economic and unique cultural characteristics, Pacific Island countries are particularly vulnerable to the effects of global warming, including more frequent and intense natural disasters, such as cyclones, floods and land droughts – as has recently been experienced.

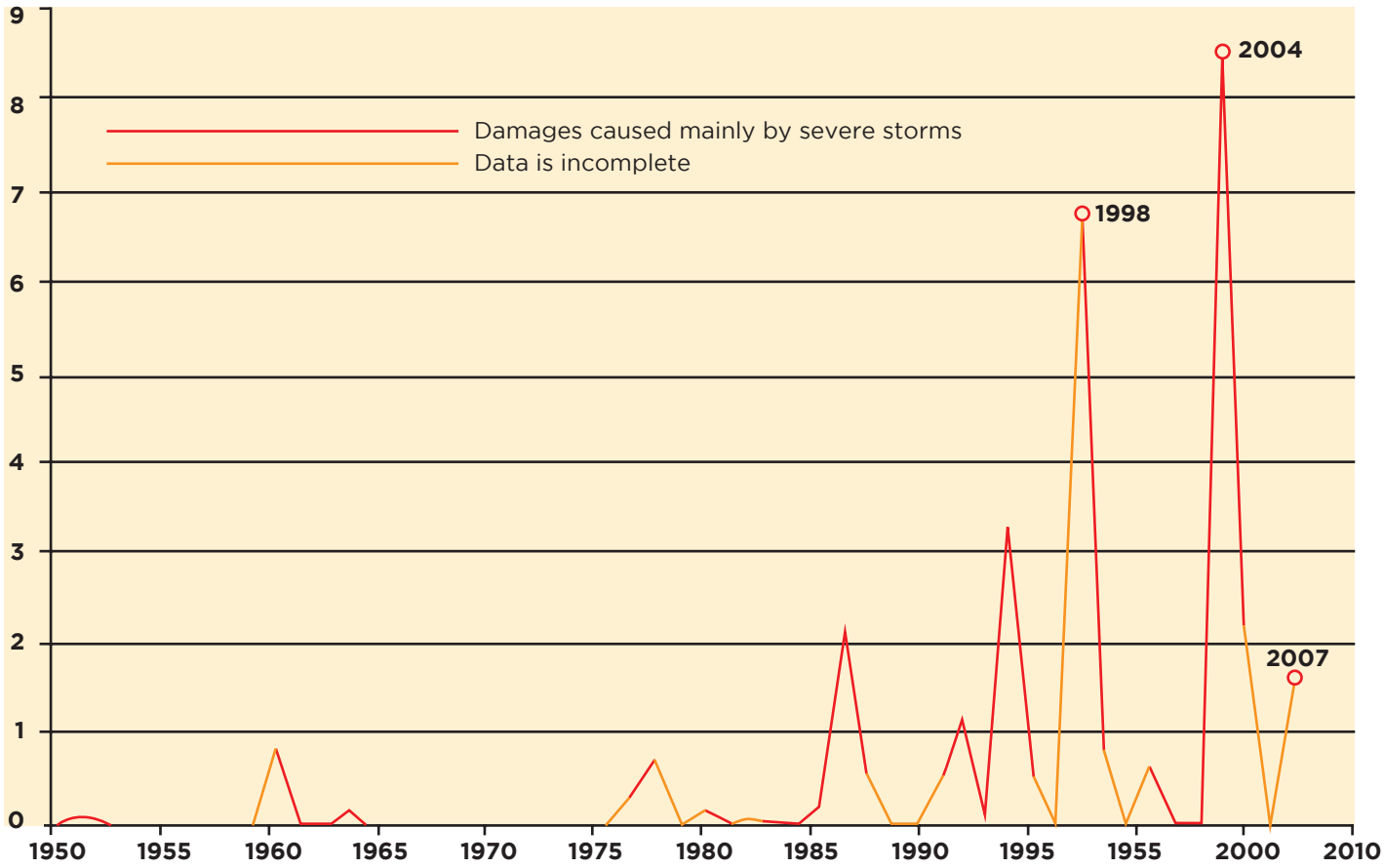
In the 1990s, for example, the cost of extreme events in the Pacific Island region is estimated to have exceeded US$1 billion (Bettencourt and Warrick, 2000). This included the cost of Cyclones Ofa and Val, which hit Samoa in 1990/91, causing losses of US$440 million, which was greater than the country's average annual gross domestic product (GDP) in recent years. In Niue, Cyclone Heta is estimated to have caused an impact of about NZ$37.7 million, which is approximately 25 percent of its GDP (McKenzie et al., 2005). In 2006, typhoon Cyclone Val hit Samoa in December 1991, the worst storm to hit the island in over 100 years, and destroyed over half of the coconut palms. The country was devastated by a tropical cyclone again in 1998. However, serious damage from typhoons is not limited to less developed countries. In August 2009, Typhoon Morakot struck Taiwan, leaving hundreds dead, and many were buried alive or trapped by mudslides and floods.

In February 2008, Fiji incurred in excess of FJ$45 million in damages to agriculture (excluding the sugar industry), infrastructure, utilities and properties as a result of Cyclone Gene. In addition, the government had to provide FJ$1.7 million worth of food rations.[44]

Other foreseen impacts include:

- A shortening of the sugarcane growing season in Guyana would result in an acceleration of maturation and would reduce yields by 29.8 per cent.
- In St. Kitts and Nevis the climate would be too dry for rain-fed

Natural disaster economic damages in the Caribbean



Source: www.em-dat.net The OFDA/CRED international Disaster Database. Universite Catholic de Louvain, Brussels, Belguim

Economic damages due to natural disasters in the Caribbean have increased between 1950-2007. The highest economic losses were experienced in 2004 (over US$8,000 millions).

agriculture making it economically unfeasible and there would be a 20 per cent decrease in productivity in St. Vincent and the Grenadines.

- Mangrove accretion on land may or may not be able to keep pace with rising sea levels, depending on the composition of the forest, tidal range and sediment supply. Three per cent of Cuba's mangrove forests would be lost with a one meter rise in sea level. The same rise in sea level , it is predicted, would cause a complete collapse of the Port Royal mangrove wetland in Jamaica because this system has shown little capacity to migrate over the last 300 years. A 50 cm rise in sea level could lead to 60 per cent of beaches in some areas of Grenada being lost (UNFCCC 2007a).

Disappearing islands

The long-term survival of Atoll Island States[45] is compromised, as they could become submerged in the course of the next century by a combination of sea level rise and coastal erosion resulting from higher levels of tropical cyclone activity. As a result some of these Island States might lose one of the basic requirements to be a state: their

own territory. This potential problem raises a number of questions regarding the sovereignty of these islands and the status of their current inhabitants.

Most of the infrastructure and houses tend to be located close to the sea, making these types of islands extremely vulnerable to tropical cyclone damage. Furthermore, the tourist installations from which many of these islands extract a large part of their revenues are often also located near the coastline and hence are vulnerable to coastal erosion. The IPCC notes how tourism is a major contributor to GDP and employment in many small islands (for example, tourism provides more than one-fifth of the GDP of Kiribati and 28 per cent of that of the Maldives[46]), and that the effects of climate change are likely to be direct and indirect, and largely negative, especially for those in low latitudes (such as atolls).[47]

3. From vulnerability to resilience

3.1. The need to strengthen resilience

Building resilience to growth volatility and external shocks requires appropriate trade policies alongside measures to stabilize earnings and strategic import dependence. Developing the capacities of SIDS to diversify production, enhance productivity and add value to exports requires indigenous capacities to innovate and develop new technologies and absorb adaptation and mitigation technologies.[48]

More needs to be done in articulating and implementing natural disaster mitigation and insurance measures as well as progressing in adjustment and fiscal reform, and governance still remains weak. This would entail an increased emphasis on efforts to exploit and create comparative and competitive advantage in the service sectors, including tourism, finance, insurance, health, education, internet services and e-commerce, while at the same time not neglecting scope for competitiveness in other sectors, including agriculture and niche markets. Indeed, service sectors are less vulnerable to high transport and other infrastructure costs faced by many remote small states and have robust long-term market prospects.

Due to their small size, individual small states will be unable to deliver all the necessary government policy, regulatory and service functions required of a modern state and to service the needs of a vibrant private sector. Success will depend on accelerating the reform process, including the creation of a conducive investment climate, empowering and improving the quality, health and safety of their human resources, enhancing regional cooperation, building environmental and other resilience mechanisms specifically designed to offset their unique vulnerabilities and improving the quality of international assistance and aid designed to support these efforts.[49]

Resilience is often constrained by the fact that the quality of governance varies tremendously among SIDS and many are prone to state failure – SIDS are over-represented in the fragile state category countries. This is made worse by evidence that fragile and failing states are less able to absorb aid effectively.

The economic wealth of South Pacific island countries lies mainly in their natural resources, and those are their main sources for earning foreign exchange. The ways in which these resources are exploited have important implications for the sustainability of their economies. Some Pacific island nations have depended or now depend on exploitation of non-renewable mineral resources to a large extent, and most have a large degree of dependence on living natural resources, such as fisheries. These resources are renewable but can also be depleted if over utilized. With a huge market demand for such resources in a global economy, there is always a risk that these resources will be exploited at a higher and faster rate than is desirable. For example, the forests of the Solomon Islands and PNG have experienced timber harvesting on an unsustainable basis and there is a risk of tuna stocks being over exploited in the Pacific by distant water fishing nations. In the past, countries such as Nauru and Kiribati have had their only important mineral deposit, phosphate, completely mined out. Although British authorities provided some compensatory funds after the event to the countries concerned, Nauru now faces considerable economic difficulties because of unwise investment of these funds.[50]

Services and Tourism

In order to move from a position of vulnerability and dependence to one of resilience, policy tools within the international trade arena can be used to boost the capacity of SIDS. The services sector, and in particular tourism, represent a genuine opportunity for SIDS to expand their economic activity while earning foreign currency.[51]

In addition, SIDS can seek to liberalize trade in energy efficient goods in a bid to decrease their collective carbon footprint. This policy could include both tax incentives and zero-tariff measures for the import of environmentally friendly products. The trade arena could also facilitate the transfer of technologies that contribute to the development of capacity among service providers. This can indeed be particularly useful as practitioners from SIDS within the tourism industry (and other industries as well) sometimes find the cost of technological devices to be prohibitive.

Technology transfer can also be important for environmentally-friendly technologies for local industries, and meteorological technology to inform tourists and industry officials of impending bad weather, especially severe natural hazards, enabling officials to take pre-emptive action to ensure the safety of citizens and tourists.

3.2. Strengthening sustainable economic development

SIDS are beneficiaries of a variety of trade preferences, many of which overlap with one another. Several SIDS are heavily dependent on international trade in services, while others export goods under "most favoured nation" (MFN) duty-free conditions. Thus, some SIDS are not much threatened by the phenomenon of preference erosion in the context of trade liberalization.

There is no special trade preference by virtue of SIDS status. However, all SIDS qualify for at least one preference scheme. While SIDS that fall within the LDC category benefit from LDC-specific preferences, all other SIDS — a majority — are beneficiaries of preferences through special programmes such as the Caribbean Basin Initiative of the United States, Caribcan of Canada, or SPARTECA of Australia and New Zealand. The European Union grants special trade preferences to a large majority of SIDS by virtue of the Cotonou Partnership Agreement between African, Caribbean and Pacific (ACP) countries on the one hand, and members of the European Union on the other. Some countries demonstrate trade preferences towards SIDS, for example Canada or Australia and New Zealand, which given their geographical location, are important markets for SIDS.[52]

International trade negotiations in WTO are pursued under the Doha development agenda, which includes specific provisions concerning trade related issues relevant to small and vulnerable economies.[53]

Changes in global markets and loss of preferential market access for traditional products, such as sugar, bananas, rice as a consequence of WTO processes, have caused a further marginalization of many SIDS, putting them under increased pressure. This factor exacerbates the vulnerability of SIDS to climate change by adversely affecting their economies, and therefore their resilience and adaptive capacity.[54]

In order to have productivity growth that comes from larger-scale activities, these countries must participate in international trade, however they cannot achieve the scale necessary to compete internationally in standardized, low-value products such as undifferentiated agricultural products. Thus, they must establish niche markets that will allow them to charge prices that will cover their high international trade costs. For this to happen they must be open to trade and investment to allow access to global technological development and to new ideas from overseas, tourism is the exploitation of a market niche, for example Dominica has developed a niche market for processed or preserved organic products.[55] SIDS should be assisted in exploring niche markets for environmentally preferable products and eco-tourism, which can be two precious diversification avenues for island economies.

In this context, the need to win acceptance for the principle of Special and Differential Treatment in the global trading negotiations is of great significance due to the fact that individually, and more importantly as a group, Small Developing States' participation in total world trade is small.

The future of Caribbean agriculture lies in production of value-added goods and services, and to achieve this, it is necessary to ensure that producers receive the right incentives, and that governments make strategic investments of an institutional and infrastructural type that will bolster the potential of the sector and assist with its transformation.[56]

Certification

Resorts in several SIDS (mostly in the Caribbean: Antigua and Barbuda, the Bahamas, Barbados, Dominica, Jamaica, St. Lucia) have obtained the Green Globe 21 environmental certification label. The investment and training needed to comply with commercial environmental certification has meant that only large hotel chains have so far been able to obtain this certification. However, organizations such as the Caribbean Alliance for Sustainable Tourism are actively helping small- and medium-sized tourism enterprises and tour operators to

obtain internationally recognized environmental certification. A number of hotels in the Maldives and Mauritius have also obtained certification. The Government of Fiji endorsed the Green Globe 21 programme in early 2003.

3.3. Developing resilience through better understanding of vulnerability

There is a need to ensure that models, tools and methodologies are available that are appropriate for making assessments in SIDS, as well as the training and technical support needed to be able to use them. Vulnerability and adaptation (V&A) assessments are vital tools to help SIDS to evaluate and implement responses to climate change. Efforts to improve and reduce the cost of adaptation assessments are also vital. Socio-economic information needs to be better integrated into V&A assessments. This includes linking climate vulnerability to socio-economic studies, long-term periodic and socio-economic assessments, studies on coping strategies, and gender specific vulnerability assessment. Top-down (scenario-based) and bottom-up (based on analysis of current vulnerability) approaches as well as consideration of community-based participatory approaches, need to be complementary.

Sustainable high-quality and long-term observational monitoring of climate, agro-climate, and sea level is vital for SIDS. Improved rescue and data inventories are needed, and better use should be made of geospatial information to increase data access as well as to integrate high-resolution downscaling models. It is equally important to bridge the gap between assessing, planning and implementing adaptation as well as community needs and national and sectorial planning.

SIDS must have a better understanding of their current climate vulnerability and how to manage risks (for instance by developing and implementing early warning systems). Increased collaboration between the climate change and disaster risk reduction community on applying and exchanging methods and tools can help, as well as more public awareness through education. New technologies and strategies should be used, building codes and standards need to be improved so that key sectors and areas such as the agriculture sector, water, health, infrastructure and biodiversity are included.

Although many adaptation measures can be implemented at a low cost, comprehensive estimates on adaptation costs and benefits are currently lacking. Furthermore, adaptive capacity is uneven across and within countries. To remedy this situation, institutional development and technical assistance to respond to climate change must be strengthened, and the SIDS must continue to focus on improving knowledge about regional climate trends and their projected impacts.

The energy sector: the example of SIDS DOCK [57]

Sustainable development in SIDS has to be built on a sustainable energy foundation. Despite international support for implementation of the Barbados Programme of Action (BPOA) for the Sustainable Development of SIDS and the Mauritius Strategy for the Further Implementation of the BPOA (MSI), there is currently no mechanism that is in place to help SIDS transform their energy sector. There is also no mechanism to facilitate the sharing of experiences, pursuing of mutual goals, and sharing resources across regions. So despite having, in the vast majority of cases, abundant endowments of renewable energy resources, SIDS remain dependent on imported fuels. High energy cost in SIDS is a combination of small volume, high transportation cost and low levels of energy efficiency. SIDS DOCK was developed to be the institutional mechanism that will support transformation of their energy sectors.

SIDS DOCK has been developed jointly by the Caribbean Community Climate Change Centre (5Cs) and the Secretariat of the Pacific Regional Environment Programme (SPREP), the two regional government institutions with foremost responsibility for assisting the SIDS in the Pacific and Caribbean regions to address the impacts of climate change, working in cooperation with Alliance of Small Island States (AOSIS). It is an initiative among member countries of AOSIS[1] to provide SIDS with a

collective institutional mechanism to assist them in transforming their national energy sectors into a catalyst for sustainable economic development and help generate financial resources to address adaptation to climate change.

3.4. New potentialities in growing sectors

Agriculture and fisheries

Agriculture has been the mainstay for survival and economic development in many SIDS. Subsistence agriculture provides local food security, while cash crop agriculture has enabled SIDS to earn export revenue and participate in world trade. An increase in atmospheric carbon dioxide may benefit agriculture, but these positive effects are likely to be negated by thermal and water stress associated with climate change, along with changes in pests' voracity and weeds' growth, loss of soil fertility, increasing coastal inundation, salinization and erosion. This may contaminate and reduce the size of productive agricultural lands, thereby threatening the sustainability of both subsistence and commercial agriculture as well as of food security at the household and local levels.[58]

In some countries large-scale deforestation has led to monoculture crop production solely aimed at earning foreign exchange, which has led to higher prices of locally produced crops compared to imported goods such as rich and flour. Many urban populations are now very much dependent on cheap foreign imports for their daily sustenance.[59]

Agriculture provides more employment than any other sector in the Pacific Island countries – 80% of the workforce in Papua New Guinea and the Solomon Islands - yet agriculture is still operating below its potential with infrastructure and limited access to the latest technology and market information being a particularly important constraint for agricultural growth.[60]

Future food security would depend in many countries on access to land. Already, agricultural development experts in the Pacific are concerned that changing development priorities have seen the loss of arable agricultural land to housing, tourism developments and industries. In Papua New Guinea, large tracts of forests are being cleared to make way for palm oil production, which is proving to be the next generation of fuels developed in many developing countries for global markets.

There is a worrying trend throughout the Pacific today that demand for food is increasingly being serviced by imports. Basic staples such as rice and wheat for flour are key substitutes of traditional diets that are now part and parcel of a Pacific Islander's daily diet. This is a critical situation in terms of food security and nutritional security, given the volatility of international commodity prices.[61]

Fisheries are the most significant renewable resource that Pacific Island countries and territories have for food security, livelihoods and economic growth.[62] Per capita consumption of fish in the Pacific is very high by global standards with an average of 70 kg of fish consumed per person per year in the early 1990s.[63]

Fisheries are bound to be affected by climate change. The combination of increasing temperatures and sea-level rise will result in changes to coastal circulation patterns, thereby affecting nutrient supply, lagoon flushing, coastal erosion, and possibly ocean acidity and coral bleaching (SPREP and PIFs, 2007). These will affect both the reef-building capacity of corals as well as the spawning cycles of reef fishes and invertebrates. Increased incidences of ciguatera fish poisoning will also be seen (Adger, *et al.,* 2007). Given that coastal fisheries provide a significant source of food and economic security for coastal populations (most Pacific Islanders are coastal dwellers), climate change poses a serious threat to the livelihood of the Pacific populations.[64]

In the Caribbean, fish provides a vital resource for poor communities in terms of food security, employment and income. It is estimated that more than 200,000 people in the region are directly employed as fishers, some 100,000 work in the processing and marketing of fish and many others in net-making, boat-building and other supporting industries.[65] A combination of increasing temperatures and sea-level rise will result in changes to coastal circulation patterns, thereby affecting nutrient supply, lagoon flushing, coastal erosion and possibly ocean acidity and coral bleaching[66], resulting in a large gap in the fish needed for food security.[67]

Green economy

Many SIDS have identified the development of sustainable energy systems as a priority, for example the Pacific Islands have set as a priority the development of technology for moderate-scale production of clean, renewable energy to initially complement and eventually replace existing sources of energy.[68] The green economy or green growth approach is based on improving human well-being and social equity, that significantly reduces

environmental risks and ecological scarcities. It recognizes the value of and invests in natural capital: biodiversity, natural assets, such as forests, lakes, wetlands and river basins, which are vital in ensuring the stability of the water cycle and its benefits to agriculture and households.[69]

The term 'blue economy' has emerged to refer to sustainability and equitable benefit-sharing towards the development and management of the ocean and the coasts. This term has been used to ensure that the health and vitality of the marine environment and ocean resources are featured prominently in the agenda of the upcoming Rio +20 in June 2012. [70] This Conference will mark the twentieth anniversary of the 1992 United Nations Conference on Environment and Development (UNCED) and the tenth anniversary of the 2002 World Summit on Sustainable Development (WWSD). The Conference will provide an opportunity to review the institutional framework for the sustainable development of SIDS and seeks to appeal for a more coherent UN institutional structure that caters to the needs of SIDS and reflects their sustainable development priorities. It is expected that concrete actions based on national and regional priorities and the provision of adequate financial resources to facilitate the transition to sustainable green economies will be met.[71] The aims are to pursue the following priorities:

- the use of existing regional roadmaps, such as the Pacific Plan or the Pacific Islands Ocean Policy
- improving ocean governance, particularly the capacity to enforce internationally agreed fisheries rules on the high seas, monitoring and surveillance of IMO standards to ensure maritime safety, security and marine environment protection
- a new international programme to address reducing the impacts of climate change, promoting renewable energy and energy efficiency, coastal protection and re-vegetation, the conservation of wetlands and mangroves, the expansion of Marine Protected Areas, improved management of land-based activities and sources of pollution, combating invasive species as a key threat to the health of the oceans particularly from ballast water and hull fouling
- sustainable development and management of ocean resources, including fisheries, which is by far the largest use of ocean resources in the region, more equitable sharing of the benefits of fisheries within the region, tourism as a major industry for SIDS, most of which takes place on or is related to the coast and ocean, sustainable alternative sources of aggregate (sand and gravel) and exploration of coastal and offshore oil and gas under suitable precautionary principles and in line with best international practices [72]

Greening the fisheries and aquaculture sectors will require a comprehensive governance framework, implementing an ecosystem approach to fisheries and aquaculture with fair and responsible tenure systems. Greater investments in research and development are needed to support technical advances and enable rapid progression in marine-based renewable energy. Investing in green tourism can reduce costs and enhance the value of ecosystems and cultural heritage. In that context, the private sector must be mobilized to support sustainable tourism and needs access to financing for investing in greening practices.[73]

In recent years, many countries around the world have begun to recognize the important role of low-carbon development as a means by which they can reduce dependence on fossil fuels and manage forests and other ecosystems sustainably, while still pursuing economic growth and development. Although substantial investment will be required to build the technologies and skills needed to support low-carbon development, such investment will open up new markets, create jobs and economic growth, as well as stimulate innovation. For low-income countries, the challenge is to reconcile the goals of economic development and poverty alleviation with the need to adapt to and mitigate climate change. Developing countries will require support in the form of transfer of technology and skills as well as funding from the developed world in order to build low-carbon, climate-resilient economies.

Guyana's Low-Carbon Development Strategy (LDCS) is a development model that is both pioneering and

opportune, and could set the country on a path to realize the benefits of low-carbon growth, while playing an important role in mitigating climate change. Guyana's LDCS is an innovative approach to combating climate change while simultaneously promoting economic growth and development. The LDCS sets out how, given appropriate economic incentives, Guyana can avoid significant emissions of greenhouse gases from deforestation that would occur following an economically rational development path. These incentives will be generated through interim payments for the carbon storage service provided by Guyana's forests from Guyana's partnership with the Norwegian government and other sources, and ultimately through a REDD+ mechanism established under the United Nations Framework Convention on Climate Change (UNFCCC). These payments will be used to expand economic growth and will enable Guyana's economy to be realigned along a low-carbon development trajectory. This will catalyze Guyana's efforts to diversify its economy and provide new economic opportunities, employment and more efficient use of resources, while maintaining the valuable forest ecosystem.[74]

3.5. Financing the development of SIDS

SIDS will not be able to build economic resilience and competitive economies without the support of their development partners. Resilience is often constrained by the fact that the quality of governance varies tremendously among SIDS and many are prone to state failure – SIDS are over-represented in the fragile state category countries. This is made worse by evidence that fragile and failing states are less able to absorb aid effectively.[75]

Adapting to the changing climate and rising sea level is already a major economic cost to SIDS; additional changes in climate and increases in seal level rise will require increasing amounts of financial resources. With many SIDS already highly indebted, reducing outflows of funds to pay for energy imports represent the best option of generating additional resources to address climate change.

Adaptation costs can be devastating. Adaptation measures include adjustments of natural or human systems in response to actual or expected climatic stimuli, their effects and impacts that moderate harm or exploit beneficial opportunities associated with climate change, such as relocation, prevention and spread of losses through insurance or government relief, research and monitoring, public awareness and sensitization. [76]

Adaptation is the only option, in order for SIDS to be able to cope with the effects of climate change. Many SIDS have already started implementing adaptation strategies on a local scale, often in an ad hoc manner, for instance by placing concrete blocks on top of zinc roods to prevent them from being blown away during hurricanes. In Vanuatu, where frequent flooding and erosion has made some settlements uninhabitable, the South Pacific Regional Environmental Programme has moved 100 villagers living in the Lateu settlement to higher ground – 600 meters from the coast and 15 meters above current sea level.

Adaptation can also occur through the prevention and removal of maladaptive practices that inadvertently increase vulnerability to climatic stimuli, for example a relaxation of coastal setback regulations, laws preventing the use of recycled water for hotels and an absence of comprehensive coastal zone management and planning.[77]

A popular tool to help SIDS manage climate change risks and build resilient economies has been the use of insurance, particularly for coastal communities and tourism. In the Caribbean, the Catastrophe Risk Insurance Facility (CCRIF) has been established, which provides participating governments with immediate access o liquidity if hit by a hurricane or earthquake. The CCRIF capacity to service claims is based on its own reserves, combined with the financial capacity or the international financial markets. [78]

There should be an international insurance mechanism to help SIDS manage climate risk and build risk resilient economies for which an internationally sourced pool of funds is needed. Collective loss sharing mechanisms and international solidarity funds could address high impact extreme events that are beyond the scope of even subsidized insurance mechanisms. An international insurance mechanism can use internationally-agreed triggers for payments to countries and communities, based on wind speed, flood levels, a drought index, and sea level rise.

Most SIDS lack the technical and human capacity and resources to integrate climate change concerns into their development activities and to implement the necessary adaptation actions. For example an estimated US$71 million are needed for Antigua and US$50 million in St Kitts and Nevis. Although there are some global funds to assist this group of countries, such as the Adaptation Fund, which obtains its resources through a 2% levy on

the Clean Development Mechanism projects mandated by the Kyoto Protocol, there is no specific fund that addresses the climate change concerns of SIDS.[79] Thus, funds for adaptation need to be increased from international financial institutions and multilateral organizations.[80]

Furthermore, adaptation can only be successful if it is integrated with other policies, such as disaster preparedness, land-use planning, environmental conservation, coastal planning and national plans for sustainable development.[81]

Thus, there is a need for the continuous development of climate change research and modeling, in order to produce more relevant information for regional and national studies and to overcome the limitations of existing results.[82]

The way forward

Equitable and sustainable development in SIDS will face new challenges.[83] Many crucial but unresolved issues remain. Many global uncertainties, amongst which global climate change, rising oil and food prices, and changing patterns of south-south trade, are of rising concern to SIDS. The importance of strengthening governance, establishing political stability, implementing better macro-economic policies and building human capital are immediate priorities.

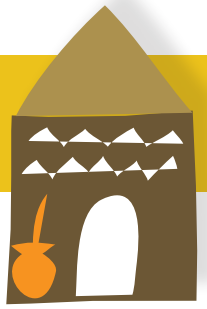
However, Doing Business in Small Island Developing States 2009[84] finds that a third of SIDS introduced regulatory reform to make doing business easier in the past year. At the same time, island nations currently boast some of the world's most efficient practices. The report is the second in a series to examine the performance of 33 small island states—from Antigua and Barbuda to Vanuatu—using *Doing Business* indicators. The report finds that small economies can attain a relatively high level of GDP per capita if they adopt appropriate policy stances, a phenomenon described as the 'Singapore Paradox'. Singapore, although highly exposed to exogenous shocks, has managed to register high rates of economic growth and attain a high GDP per capita due to its ability to build resilience in the face of external shocks.[85]

The economic vulnerability of small island states can never be fully prevented, as their economies and populations are too small to allow for a large manufacturing sector. As a result, they should pursue their comparative advantage by exporting raw or semi processed materials, tourism and the filling of niche markets. The best way they can protect themselves is by good economic management.[86] Regional integration and sharing of best practices within region and across regions will be determinant.

Mauritius, for instance, has become a middle-income country due to proper economic and social policies that have reduced the vulnerability of Mauritius to external factors, and increased its resilience to both economic and political shocks.[87]

SIDS are also advancing a proactive agenda looking at adaptation and mitigation in tandem, urging the development, dissemination and transfer of efficient energy technologies that can assist developing countries in mitigating the effects of climate change. Overall, developed and developing nations tend to respond to the threat of climate change in a way that is consistent with international consensus (as expressed through the UNFCCC), where nations take measures to protect the earth's ecological system through policies and instruments that reflect their common but differentiated responsibility.

SIDS will have to collect data on the effects and implications of climate change and sea-level rise, to improve public understanding of the issue, to promote more efficient energy use and to formulate their own comprehensive adjustment and mitigation policies to be able to cope with and respond to climate change. In this context, the role of the international community is crucial to the future development of SIDS.



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CBI – Caribbean basin Initiative
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CCCCC - Caribbean Community Climate Change Centre
http://www.caricom.org/jsp/community/ccccc.jsp?menu=community

CIMH - Caribbean Institute for Meteorology and Hydrology
http://www.cimh.edu.bb

Climate Funds Update
http://www.climatefundsupdate.org/

CMO - Caribbean Meteorological Organization (CMO)
http://www.cmo.org.tt/

CRFM – Caribbean Regional Fisheries Mechanism
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DIREKT. Small Developing Island Renewable Energy Knowledge and Technology Transfer Network.
http://www.direkt-project.eu/

FAO – Small Islands Development States
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FAO- Petits Etats insulaires en développement
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GCCA - Global Climate Change Alliance
http://www.gcca.eu/pages/1_2-Home.html

Alliance Mondiale contre le Changement Climatique
http://www.gcca.eu/pages/1_1-Accueil.html

GIN – Global Island Network
http://www.globalislands.net/

IICA. Inter-American Institute for Cooperation on Agriculture.
http://www.iica.int/eng

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IOC- COI Indian Ocean Commission-Commission de l'Océan Indien
http://www.coi-ioc.org/

IPCC - The Intergovernmental Panel on Climate Change
http://www.ipcc.ch

Groupe d'experts intergouvernemental sur l'évolution du climat (GIEC)
http://www.ipcc.ch/home_languages_main_french.shtml

OECS – Organisation of Eastern Caribbean States
http://www.oecs.org/

OTN - Office of Trade Negotiations-CARICOM
http://www.crnm.org/

PACE-SD - Pacific Centre for Environment and Sustainable Development
http://www.usp.ac.fj/index.php?id=570

PIFS- Pacific Island Forum Secretariat
http://www.forumsec.org/

SIDSnet - Small Islands Developing Network
http://www.sidsnet.org/

SOPAC- Applied Science & Technology Division - SPC
http://www.sopac.org/

SPC- Secretariat of the Pacific Community
http://www.spc.int/

SPREP – Secretariat of the Pacific Regional Environment Programme
http://www.sprep.org/

UNESCAP – United Nations Economic and Social Commissions for Asia & the Pacific
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http://www.un.org/ohrlls/

Bureau du Haut représentant pour les pays les moins avancés, les pays en développement sans littoral et les petits Etats insulaires en développement des Nations Unies
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UNWTO- World Tourism Organisation
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http://www.wmo.int/pages/index_en.html

Organisation météorologique mondiale
http://www.wmo.int/pages/index_fr.html

The World Climate Research Programme
http://www.wcrp-climate.org

Acronyms

ACCPIR	Adaptation to Climate Change in the Pacific Islands Region
ACP	African, Caribbean, and Pacific
ACS	Association Alliance of the Caribbean States
ADB	Asian Development Bank
AOSIS	Alliance of Small Island States
APN	Asia Pacific Network for Global Change Research
BPOA	Barbados Programme of Action
CARICOM	Caribbean Community
CARIFORUM	Caribbean Community and the Dominican Republic
CASDEC	Caribbean Sustainable Development Centre
CBI	Caribbean Basin Initiative
CCA	Climate change adaptation
CCCCC	Caribbean Community Climate Change Centre
CDERA	Caribbean Disaster Emergency Response Agency
CMO	Caribbean Meteorological Organization
COTED	Council for Trade and the Economic Development
CRFM	Caribbean Regional Fisheries Mechanism
CRNM	Caribbean Regional Negotiating Machinery
CROP	Council of Regional Organisations of the Pacific
CSME	Caribbean single market and economy
CVI	Commonwealth Vulnerability Index
DRR	Disaster risk reduction
DSAP	Development of Sustainable Agriculture in the Pacific
EBA	Everything but Arms

ECCB	Eastern Caribbean Central Bank
ECLAC	Economic Commission for Latin America and the Caribbean
EEZ	Exclusive Economic Zone
EPA	Economic Partnership Agreement
EVI	Economic Vulnerability Index
FAO	Food and Agriculture Organization
FDI	Foreign direct investment
GATT	General Agreement on Tariffs and Trade
GCCA	Global Climate change Alliance (GCCA)
GDP	Gross domestic product
GEF	Global Environment Facility
GHG	Greenhouse gas
GIN	Global Islands Network
GIS	Geographical information system
GNI	Gross national income
GSP	Generalized System of Preferences
HIPC	Heavily-indebted poor country
IAESD	International Architecture for Environment and Sustainable Development
IATA	International Air Transportation Association
IOC	Indian Ocean Commission
IPCC	Intergovernmental Panel on Climate Change
LDCs	Least Developing Countries
MDG	Millennium development goal
MEAs	Multilateral Environmental Agreements

MSI	Mauritius Strategy for the further Implementation for the Barbados Programme of Action
NAP	National Action Plan for Disaster risk reduction and disaster risk management
NGO	Nongovernmental organization
ODA	Official Development Assistance
OECS	Organization of Eastern Caribbean States
PACE-SD	Pacific Centre for Environmental and Sustainable Development
PACC	Pacific Adaptation to Climate Change
PCIDRR	Pacific Community focused Integrated Disaster Risk Reduction
PIC	Pacific islands countries
PIF	Pacific Islands Forum
PIFACC	Pacific Islands Framework for Action on Climate Change
PIFS	Pacific Islands Forum Secretariat
PIGCOS	Pacific Islands Climate Observing System
PIREP	Pacific Islands Renewable Energy Programme
PISLM	Partnership Initiative for Sustainable Land Management
RCM	Regional Coordinating Mechanism for the Implementation Mauritius
SDT	Special and differential treatment
SIDS	Small Island Developing States
SOPAC	Pacific Islands Applied Geoscience Commission
SPC	Secretariat of the Pacific Community
SPREP	South Pacific Regional Environmental Programme
UNCED	United Nations commission of Environment and Development
UNCED	United Nations Conference on Environment and Development
UNCLOS	United Nation Convention on the Law of the Sea

UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNECLAC	United Nations economic Commission for Latin America and the Caribbean
UNEP	United Nations Environment Programme
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNFCCC	United Nations Framework Convention on Climate Change
UNISDR	United Nations International Strategy for Disaster Reduction
USP	University of the South Pacific
UWI	University of the West Indies
WAMIS	World Agricultural Meteorology Information Service
WHO	World Health Organisation
WMO	World Meteorological Organization
WTO	World Trade Organisation
WWSD	World Summit on Sustainable Development

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