



# **GLOBAL CLIMATE CHANGE AND SMALL ISLAND DEVELOPING STATES: FINANCING ADAPTATION**

**--Green Paper Draft for Review--**

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## List of Acronyms

<b>ACCC</b>	<b>Adapting to Climate Change in the Caribbean</b>
<b>ADB</b>	<b>Asian Development Bank</b>
<b>AFDB</b>	<b>African Development Bank</b>
<b>AOSIS</b>	<b>Alliance of Small Island States</b>
<b>CARICOM</b>	<b>Caribbean Community</b>
<b>CBD</b>	<b>Convention on Biological Diversity</b>
<b>CCCCC</b>	<b>Caribbean Community Climate Change Centre</b>
<b>CCRIF</b>	<b>Caribbean Catastrophe Risk Insurance Facility</b>
<b>CDM</b>	<b>Clean Development Mechanism</b>
<b>CDP</b>	<b>United Nations Committee on Development Policy</b>
<b>CHMCBP</b>	<b>Caribbean Hazard Mitigation Capacity Building</b>
<b>COP-13</b>	<b>Council of Parties</b>
<b>CPACC</b>	<b>Caribbean Planning for Adaptation to Climate Change Project</b>
<b>CRIF</b>	<b>Caribbean Catastrophe Risk Insurance Facility</b>
<b>EBRD</b>	<b>European Bank for Reconstruction and Development</b>
<b>EVI</b>	<b>Environmental Vulnerability Index</b>
<b>GCOS</b>	<b>Global Climate Observing System</b>
<b>GDP</b>	<b>Gross Domestic Product</b>
<b>GEF</b>	<b>Global Environment Facility</b>
<b>GHG</b>	<b>Greenhouse Gas</b>
<b>IDB</b>	<b>Inter-American Development Bank</b>
<b>IFAD</b>	<b>International Fund for Agricultural Development</b>
<b>IPCC</b>	<b>Intergovernmental Panel on Climate Change</b>
<b>KP</b>	<b>Kyoto Protocol</b>
<b>LDC</b>	<b>Less Developed Countries</b>
<b>LDCF</b>	<b>Least Developed Countries Fund</b>
<b>LDS</b>	<b>Least Developed Countries</b>
<b>MACC</b>	<b>Mainstreaming Adaptation Climate Change</b>
<b>MDG</b>	<b>Millennium Development Goals</b>
<b>NAPA</b>	<b>National Adaptation Program of Action</b>
<b>NGO</b>	<b>Non-Governmental Organizations</b>
<b>OECD</b>	<b>Organization for Economic Corporation and Development</b>
<b>SCCF</b>	<b>Special Climate Change Fund</b>
<b>SEFI</b>	<b>Sustainable Energy Finance Initiative</b>
<b>SIDS</b>	<b>Small Island Developing States</b>
<b>SOPAC</b>	<b>South Pacific Applied Geosciences Commission</b>
<b>SPA</b>	<b>Strategic Priority Adaptation</b>
<b>SPREP</b>	<b>Secretariat of the Pacific Regional Environment Programme</b>
<b>SPSLCM</b>	<b>South Pacific Sea Level &amp; Climate Monitoring</b>
<b>UNF</b>	<b>United Nations Foundation</b>
<b>UNFCCC</b>	<b>United Nations Framework Convention on Climate Change</b>
<b>UNCED</b>	<b>United Nations Conference on Environment &amp; Development</b>
<b>UNEP</b>	<b>United Nations Environment Program</b>
<b>UNDP</b>	<b>United Nations Development Program</b>
<b>UNCCD</b>	<b>United Nations Convention to Combat Desertification</b>
<b>UNFAO</b>	<b>United Nations Food and Agriculture Organization</b>
<b>UNIDO</b>	<b>United Nations Industrial Development Organization</b>
<b>WWF</b>	<b>World Wildlife Federation</b>

## EXECUTIVE SUMMARY

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*Climate Change has reached the top of the global agenda and is the single biggest long-term threat to the existence, human habitats, natural resources, and economic prosperity of small island states and low-lying coastal states. The group of 44 such United Nation member and observer states comprises the Alliance of Small Island States (AOSIS).*

*Even if all carbon emissions were stopped today, global warming will continue, and already AOSIS member states are feeling the impacts of climate change. While they continue to lobby for aggressive mitigation actions by the major historic emitters— and call upon emerging economies to seek more sustainable paths to development—the island states have an urgent need for adaptation actions now.*

*The Adaptation Fund, recently operationalized in Bali in December 2007, will satisfy only a fraction of the adaptation financing needs of the global community. As Sir Nicholas Stern, former Chief Economist of the World Bank estimated, adaptation funding requirements could be in the tens of billions of dollars per annum. AOSIS occupies a board position on this Fund and will work closely with the managers to maximize the effectiveness of this fund. Nonetheless, the financing resources for such adaptation of public, private, and community sectors are limited.*

*Recognizing the urgent need for further action in this arena, AOSIS has teamed with the UN Foundation and the Friends on Climate Change to urgently consider innovative financing mechanisms to address not only adaptation measures and resources but also the desire of small island states to be at the forefront of mitigation opportunities, including the implementation of new renewable technologies and energy sources.*

### **The SIDS**

Despite their geographical and cultural diversity, small island developing states share similar environmental and economic vulnerabilities and sustainable development challenges. These include susceptibility to natural disasters; vulnerability to global developments (e.g., economic and natural shocks beyond domestic control); scarce resources; lack of economies of scale; remoteness from large markets; dependence on international trade; and a small but rapidly growing population. SIDS has few if any opportunities to create economies of scale, relatively high transportation and communication expenses, and disproportionately expensive public administration and infrastructure.

As evidence on the causes and consequences of climate change mounts, SIDS are on the front lines of the global effort to address climate change while supporting sustainable development. Although these states contribute the least to the causes of global climate change, they will bear the brunt of the much projected impacts.

The annual costs of climate change impacts in developing countries are significant and expected to range from several percent to tens of percent of gross domestic product (GDP), according to The World Bank (2006). Further, The Bank projects that much of these costs would not accumulate gradually and incrementally—conversely, they will be in the form of severe economic shocks.

For example, Hurricane Ivan, which struck Grenada in 2004, destroyed 90% of the housing stock, 80% of agricultural assets, and left damages of US\$800 million, or 200% of GDP. This was followed by a second hurricane in 10 months. Prior to these events, Grenada was considered outside the Hurricane belt.

### **The Enormity of the Challenge: Imperatives of Adaptation**

SIDS, whether located in the tropics or higher latitudes, are especially vulnerable to the effects of climate change. Impacts include increases in extreme weather events, rises in sea level, reductions in water sources, diminished marine resources, displacement of local species, reduced agricultural productivity, decline in tourism, and increased hazards to human health.

To address this situation, AOSIS— a voice for the SIDS within the United Nations (UN) system—is calling for action among the international community on the importance of climate change and the need to confront the adverse impacts at the global, national, and sub-national levels. AOSIS is working with partners to focus urgent attention on this topic through the United Nations Framework Convention on Climate Change (UNFCCC) process, in accordance with the Bali Road Map established at the 13th session of the Conference of Parties (COP-13) in Bali, Indonesia, in December 2007.

To respond to climate change, two key responses are in play—*mitigation* practices to tackle the causes of global warming and reduce GHG emissions, and *adaptation* activities to cope with its effects. This Green Paper recognizes the important role of each of these measures, however, it places particular emphasis on *adaptation*, as this is a priority for SIDS and there has been significantly less attention devoted to this field by the international community. Adaptation provides an important means of increasing resilience and reducing vulnerability to observed or expected impacts of climate change. (See Textbox.)

At this time, SIDS are undertaking several activities to incorporate adaptation principles and practices into planning and investment activities, dedicating their own resources to this critical area. Yet, these activities are not sufficient; partnering with external organizations for financing and technical assistance is required.

#### **Short and Long Term Adaptation Practices**

- Agricultural Diversification
- Food Security Protection
- Water Conservation
- Catastrophic Risk Management
- Coastal Zone Management
- Human Re-settlement Programs
- Developing Private Sector Resilience
- Economic Resilience and Transformation
- Planning Public

## Financing Adaptation

Today, a limited number of financing options exist, or are in development, that are dedicated to adaptation. These include GEF specialized adaptation facilities, the new Adaptation Fund which will draw from Clean Development Mechanism (CDM) sources, and the World Bank Catastrophe Risk Insurance Facility (CRIF) which is piloting a scheme for small states to buy insurance coverage against natural disaster risks. Though critical, these sources are neither at the scale nor magnitude needed to address the climate change problem and can be challenging for SIDS to access in a timely and responsive manner. New financing players, partners, and programs are needed to support adaptation responses to climate change—and timing is of the essence.

This paper outlines a menu of activities that can be taken to increase funding for adaptation, leverage existing financing sources, and improve the overall investment climate in this area. These include:

- **Portfolio of Sector Specific Projects**, with preference to those that generate income and help transform economies (e.g., agriculture, tourism).
- **Inventory of Available Financing Sources**, including public and private capital to support climate change projects and programs.
- **Partnerships with Additional Funding Sources**, such as multilateral development banks, bilateral agencies, and other funders, to support adaptation practices and apply “climate resistant” conditionalities to lending operations. Also work with local financial institutions lending in SIDS nations to support adaptation activities (e.g., Caribbean Development Bank) and tap into existing funds in infrastructure and related sectors.
- **Global Islands Green Finance Facility**, establish a dedicated facility to provide seed funding for economic transformation in SIDS. The facility could catalyze development of a global islands “Fair-Trade” branding for agro-industries and other manufactures and services.
- **Establish an Electronic Hub**, to facilitate above. This hub could include a database of projects and funding sources, project preparation and form filling service, a clearing house linking projects with funding sources, informal Social Networking (e.g., Facebook/MySpace), library of key documents, online multi-party Diplomatic Negotiating Tool, discussion forums, etc.
- **Global Climate Finance Community**, creation of an informal network of financiers, project developers, finance ministers, and diplomats with an annual calendar of activities to encourage networking, matchmaking, project development and relationship building. This could begin with a Green Finance Conference in one of the Island States. The Prime Minister of Grenada has expressed interest in hosting such a meeting in 2008.

- **Creative Carbon Finance**, to include developing opportunities with investors, dedicated funding streams financed by carbon credits and offsets, and bundling of projects to help attract such credits.
- **Catastrophic Risk Insurance**. Assess existing and new financial risk management instruments for their application to climate change and SIDS—insurance, reinsurance, credit enhancement products, catastrophe bonds, etc. Catalyze new Catastrophic Risk Insurance products for island states.
- **Living Laboratories for Renewable Energy**. Islands could serve as pilots for new renewable energy technology options and applications. This could entail implementation of energy networks/technologies to conserve energy, expand consumer choice, and allow mini-producers and households to feed into a national grid. The role of nanotechnology in PV, fuel efficiency, and electric storage could also be piloted.
- **Global Islands Remittance Network**. Using mobile telephony, this network would enable remittances to be transferred and collected through a government endorsed service which also provides ATMs for cash disbursements and government payments. This system allows governments to harness the economic power of remittances and the informal economy.
- **Offshore Financial Services**. Island states are adept at attracting international financial services seeking tax-efficient jurisdictions. A global islands initiative could promote synergies and information exchange among island states with off-shore financial centers and those interested in developing this industry. It could also explore ways to attract more green/carbon financing to island states and develop key off-shore locations to become global centers for green investments and sustainable financing
- **Establish a Global Islands Stock Exchange**. This could be based on the technology platform used by the East Caribbean Stock Exchange. This will pool private sector companies into a single exchange with access to a greater number of investors and a market with enhanced liquidity. It would attract more venture capital to invest in the private sector. The stock exchange could also specialize in green, ethical, and fair-trade investment vehicles and funds.
- **Sovereign Wealth Funds**. Mobilize local finances into a pooled Multi-Sovereign Wealth Fund owned by island states. Such funds could be used for high-growth opportunities in SIDS and other markets. Also, explore investment opportunities from sovereign wealth funds of other nations.

AOSIS looks forward to working with interested partners on the design and implementation of these activities to stimulate financing for adaptation and mitigation measures in susceptible nations.

## 1. INTRODUCTION

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### 1.1 Background

“While small island developing States are among those that contribute least to global climate change and sea-level rise, they are among those that would suffer most from the adverse effects of such phenomena and could in some cases become uninhabitable....”<sup>1</sup>

*1994 Global Conference on the Sustainable Development of SIDS*

Today, 13 years after the Global Conference on the Sustainable Development of SIDS, the scaling-up of efforts to combat the adverse effects of global climate change has not yet occurred.

In 1992, during preparations for the United Nations Conference on Environment and Development (UNCED: 1992), the term “*Small Island Developing States*” (SIDS) was first coined to focus attention on the unique constraints and characteristics of small, ecologically fragile, and economically vulnerable island states.<sup>2</sup> These constraints include:

- Volatility and susceptibility to external global economic factors, including economic and natural shocks beyond domestic control
- Lack of economies of scale
- Excessive dependence on international trade
- Relatively high costs for transportation and energy services
- Limited human, institutional, and financial capacities to manage and use natural resources on a sustainable basis
- Increasing demographic (small but rapidly growing population) and economic pressures on fragile, vulnerable, endemic natural resources and ecosystems.

Since the 1992 adoption of the United Nations Framework Convention on Climate Change (UNFCCC) and the 1997 adoption of the Kyoto Protocol (KP: 1997), four assessment reports by the Intergovernmental Panel on Climate Change (IPCC) have provided ample evidence to confirm global climate change and its grave dangers for all SIDS. As recently as 2007, it was documented that “warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level.”<sup>3</sup>

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<sup>1</sup> UN, “Declaration of Barbados” at the Global Conference on the Sustainable Development of Small Island Developing States, Bridgetown, Barbados. (A/CONF/167/L.4/Rev.1, May 5, 1994: Part III, paragraphs 1-4, page 2.

<sup>2</sup> Chapter 17, section G of Agenda 21 recognizes SIDS as a special case for both environment and development.

<sup>3</sup> Excerpted from the IPCC Working Group I, *Climate Change 2007: The Physical Science Basis-Summary for Policy Makers*, Feb 2007, page 4. For additional information, the entire report can be obtained at <http://www.ipcc.ch/SPM2feb07.pdf> The conclusions and policy formulations of the 4<sup>th</sup> Assessment Report

How do these climate changes affect SIDS? According to the background paper, *Vulnerability and Adaptation to Climate Change in Small Island Developing States*, “The climate of small island states is influenced by large ocean-atmosphere interactions such as trade winds, El Niño, and the monsoons; tropical cyclones and hurricanes are also important components of the climate, as well as sea-level rise. These climate characteristics, combined with their particular socioeconomic situations, make SIDS, among which are 12 less developed countries (LDCs), some of the most vulnerable countries in the world to climate change.” This, added to the fact that SIDS produce extremely low levels of greenhouse gas emissions, means that they will suffer disproportionately from the damaging impacts of climate change.

## 1.2 Purpose of the Green Paper

This Green Paper has been prepared jointly by AOSIS and the United Nations Foundation (UNF) for inclusion in the Council of Party (COP) process. AOSIS is a coalition of small island and low-lying coastal countries that share similar development challenges and concerns about the environment, especially their vulnerability to the adverse effects of global climate change. It functions primarily as a negotiating voice for small island developing states within the United Nations system. At present, AOSIS is comprised of 44 members and observers.<sup>4</sup>

The Green Paper provides a framework for action that would enable all SIDS to scale up future efforts towards reducing vulnerabilities and adapting to climate change, with a particular focus on financing. The paper’s objectives are fourfold:

**‘Cost of inaction will far outweigh the cost of early action’**

“The accounts offered by leaders of the most vulnerable nations, especially SIDS, were particularly telling. They brought home loud and clear the message that economic and social development cannot be sustainable unless we deal decisively with this issue. Action is possible now and it makes economic sense. The cost of inaction will far outweigh the cost of early action.”

**UN Secretary**

which took six years to complete and have been put together by a panel of 2,500 reviewers from 130 countries, are relatively well-known: higher sea levels, rise in global mean temperatures, loss of valuable and irreplaceable biodiversity, including coastal and marine resources and ecosystems, and an increase in desertification.

<sup>4</sup> AOSIS is comprised of 43 members and observers including: American Samoa, Antigua and Barbuda, Bahamas, Barbados, Belize, Cape Verde, Comoros, Cook Islands, Cuba, Cyprus, Dominica, Dominican Republic, Federated States of Micronesia, Fiji, Grenada, Guam, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, Maldives, Marshall Islands, Mauritius, Nauru, Netherlands Antilles, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Seychelles, Singapore, Solomon Islands, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Tonga, Trinidad and Tobago, Tuvalu, US Virgin Islands, and Vanuatu.

- Highlight and make more visible the critical issues confronting SIDS.
- Identify and explore potential solutions.
- Identify potential funding streams.
- Provide a roadmap for the COP process, including the recent COP-13 meetings in Bali.

### 1.3 Strategy for Green Paper Preparation

Strategic principles considered throughout the report are provided below. These principles draw heavily from UN Secretary General Ban Ki-Moon's concluding remarks at a High Level Meeting on Climate Change held in September 2007.

- Though mitigation is important, there have been extensive resources, projects, and programs dedicated to this area over the last two decades. Thus, the paper focuses primarily on adaptation practices to address climate change in SIDS.
- Financing of adaptation in SIDS is a priority, though the paper will need to identify and suggest recommendations for addressing a range of other barriers such as capacity building, policy support, education and outreach, monitoring and evaluation, etc.
- Sustainable development and climate change should be jointly addressed and not viewed in isolation of each other. Sustainable development for SIDS is only possible if climate change adaptation is effectively integrated into broader national sustainable development plans, policies, projects, and programs. In particular, urgent and timely attention should be given to linkages with the MDGs, which are central to reducing poverty and enhancing economic and social development by 2015.
- Climate risk-management is a crucial element of climate change adaptation and should be addressed in a broad framework that allows for national, regional, and global synergies. Areas to consider include climate change, disaster reduction, and desertification.
- Immediate action to mitigate and adapt to the adverse effects of climate change makes sound fiscal and economic sense. The costs of inaction far outweigh the costs of early action.

Given the role of SIDS as "*front-line states*" in the struggle against global climate change, the explicit warnings set forth by the IPCC and others provide the global community with a unique opportunity to increase and accelerate measures to address climate change.

### 1.4 Methodology

This paper draws upon primary and secondary data sources focusing on climate change and SIDS. Primary sources include information provided directly by SIDS ambassadors and representatives, senior officials representing Friends of

Climate Change,<sup>5</sup> bilateral and multilateral organizations, the private sector, and the financial community, at roundtables held on financing climate change in SIDS. Organized by AOSIS, the United Nations Foundation, these roundtable meetings were held in September and November 2007 in New York City, with the last one planned for February 2008. More than 100 individuals from 40-plus countries attended the first two roundtables to discuss issues related to the financing of climate change mitigation and adaptation.

Secondary sources draw from a range of reports, articles, papers, and presentations that have been developed over the last 15 years by the UNFCCC, IPCC, and others. The publications highlight both the linkages between climate change and SIDS, and the roles of mitigation and adaptation practices.

## **1.5 Green Paper Organization**

The paper provides brief overviews of the adverse impacts of climate change, as well as the importance of adaptation in reducing climate change vulnerabilities in SIDS. It identifies barriers to effective adaptation practices and solutions for mitigating these obstacles. Finally, the paper explores issues related to the financing of climate change adaptation in SIDS, identifies existing and new funding options, and outlines roles for a range of key stakeholders and partners.

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<sup>5</sup> Friends of Climate Change is a group of about 25 developed and developing countries in the UN system. They share a common vision regarding the importance of addressing climate change through mitigation and adaptation practices.

## 2. GLOBAL CLIMATE CHANGE AND SIDS

### 2.1 Climate Change and SIDS: A Grave and Imminent Danger

Global climate change poses a grave, imminent danger to all aspects of development (socio-economic and environmental) in SIDS. What is especially troubling is that small island developing states contribute the least to the problem of global climate change (both in terms of per capita and aggregate greenhouse gas emissions), but are among the most vulnerable to its adverse effects.

All SIDS confront development and human life threats that could result in wide-scale habitat and eco-system destruction. Anthropogenic climate change is expected to<sup>6</sup>:

- *Negatively impact on agricultural productivity* throughout the tropics and sub-tropics.
- Seriously *compromise fresh water quantity and quality*, especially in Pacific and Caribbean SIDS.
- *Increase the incidence of malaria, dengue, and other vector-borne diseases* in the tropics and sub-tropics.
- *Harm ecological systems* and their biodiversity.

#### Tuvalu Erosion Threats



Coastal erosion is a major problem in Tuvalu, resulting in the loss of homes and agricultural lands for many families. Flooding and salinity intrusion destroy pulaka crops and decrease fruit tree yields of coconut, banana, and breadfruit—presenting a major concern to food security.

The increasing number of low rainfall days, prolonged droughts, and periods of extremely high temperatures and accelerated evaporation are major problems for the agriculture and water sector.

<sup>6</sup> Oxfam, *Adapting to climate change*, Oxfam Briefing Paper, May 2007. page 7.

- *Raise sea levels* due to increases in temperature, displacing tens of millions of people living in low-lying coastal zones, and rendering uninhabitable those SIDS that are at or below sea-level.
- *Shift tourism patterns*, a major industry for many SIDS, towards higher altitudes and latitudes. This is projected to result in a potential drop of 20-50% in the tourism sector.<sup>7</sup> For example, it is already clear that such SIDS as the Maldives in the Indian Ocean – an increasingly popular tourist destination – are particularly vulnerable to sea-level rise.<sup>8</sup>
- Yield *significant coastal damage*, including beach erosion, destruction of valuable coral reefs, loss of coastal areas, and damage to infrastructure (such as roads, bridges, utility lines, bridges).
- Make *inland areas susceptible to property and infrastructure damage* from flooding and soil erosion in areas where upland watersheds are in poor condition, particularly on larger islands.

Table 1 summarizes the 2007 findings of the IPCC Working Group regarding climate change impacts for SIDS.

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<sup>7</sup> Richard Morin, “The Surprising Impact of Global Warming on Tourism” Pew Research Center: August 18, 2006.

<sup>8</sup> WWF, “Tourism and Climate Change”, WWF: June 2001 page 1-2.

**Table 1. A Summary of Key Climate Change Impacts on SIDS**

In 2007, the prestigious IPCC Working Group II documented the following climate change impacts for SIDS:

- Small islands, whether located in the tropics or higher latitudes, have characteristics which make them *especially vulnerable to the effects of climate change, sea-level rise, and extreme events (very high confidence)*.
- Sea-level rise is expected to exacerbate inundation, storm surge, erosion and other *coastal hazards*, thus threatening vital infrastructure, settlements and facilities that support the livelihood of island communities *(very high confidence)*.
- There is strong evidence that under most climate change scenarios, *water resources* in small islands are likely to be seriously compromised *(very high confidence)*.
- Climate change is likely to heavily impact *coral reefs, fisheries, and other marine-based resources (high confidence)*.
- On some islands, especially those at higher latitudes, warming has already led to the *replacement of some local species (high confidence)*.
- It is very likely that *subsistence and commercial agriculture* on small islands will be adversely affected by climate change *(high confidence)*.
- New studies confirm previous findings that the effects of climate change on *tourism* are likely to be direct and indirect, and largely negative *(high confidence)*.
- There is growing concern that global climate change is likely to impact *human health*, mostly in adverse ways *(medium confidence)*.

<b>IPCC: Working Group II- Description of Confidence</b>	
<b>Terminology</b>	<b>Degree of confidence in being correct</b>
Very high confidence	At least 9 out of 10 chance of being correct
High confidence	About 8 out of 10 chance
Medium confidence	About 5 out of 10 chance
Low confidence	About 2 out of 10 chance
Very low confidence	Less than a 1 out of 10 chance

## 2.2 Assessing Environmental Vulnerability

In considering the impacts of climate change on SIDS, it is useful to understand how these countries fare with regard to the rest of the world. The Environmental Vulnerability Index (EVI) is one measurement tool used to provide insights into the processes that can negatively influence the sustainable development of countries.<sup>9</sup> EVI was developed by the South Pacific Applied Geosciences

<sup>9</sup> The stated reason for using the indices is to provide a rapid and standardized method for characterizing vulnerability in an overall sense, and identifying issues that may need to be addressed within each of the three pillars of sustainability, namely the environmental, economic, and social aspects of a country's

Commission (SOPAC), the United Nations Environment Programme (UNEP), and their partners in consultation with international experts, country experts, other agencies, and interest groups. The EVI utilizes 50 “smart indicators” to capture the key elements of environmental vulnerability.<sup>10</sup>

As Table 2 shows, 72% of the SIDS nations (34 of 47) are classified as either “extremely vulnerable” or “highly vulnerable.” In comparison to other nations, SIDS accounts for approximately 50% of all countries worldwide classified as “extremely vulnerable”— an alarming percentage.

Although the EVI data is not perfect (see textbox below), it does provide a general overview of the relation of SIDS to other nations in the areas of environmental vulnerability and resiliency. EVI data is one set of indices that could be used to demonstrate the importance of focusing global attention on these countries.<sup>11,12</sup> However, despite the EVI, the real economic impacts of climate change and globalization on key sectors (e.g., tourism, trade, banking, insurance, and the energy-intensive agricultural and mining sectors) have not been studied in depth.

### Questions on EVI

#### Key Questions Related to EVI and Other Potential Indices

- **Lack of Data:** Does the absence of data related to a particular set of indicators skew the estimate of a country’s EVI profile? If so, how can remedial action be applied?
- **Accurate Data:** Does the EVI (and/or other potential indices) access an accurate data set of climate change-sensitive indicators that are SIDS specific?
- **Relevance:** What is the relevance of the EVI (and/or other related indices) in estimating programmatic risks related to climate change, particularly for SIDS, where incomplete information and the lack of capacity to collect data influence future climate change-related assessments?

development. Here, the attendant idea is that, in order to promote sustainability, it important to be able to measure how vulnerable of the three pillars are to damage and then identify ways of building resilience.

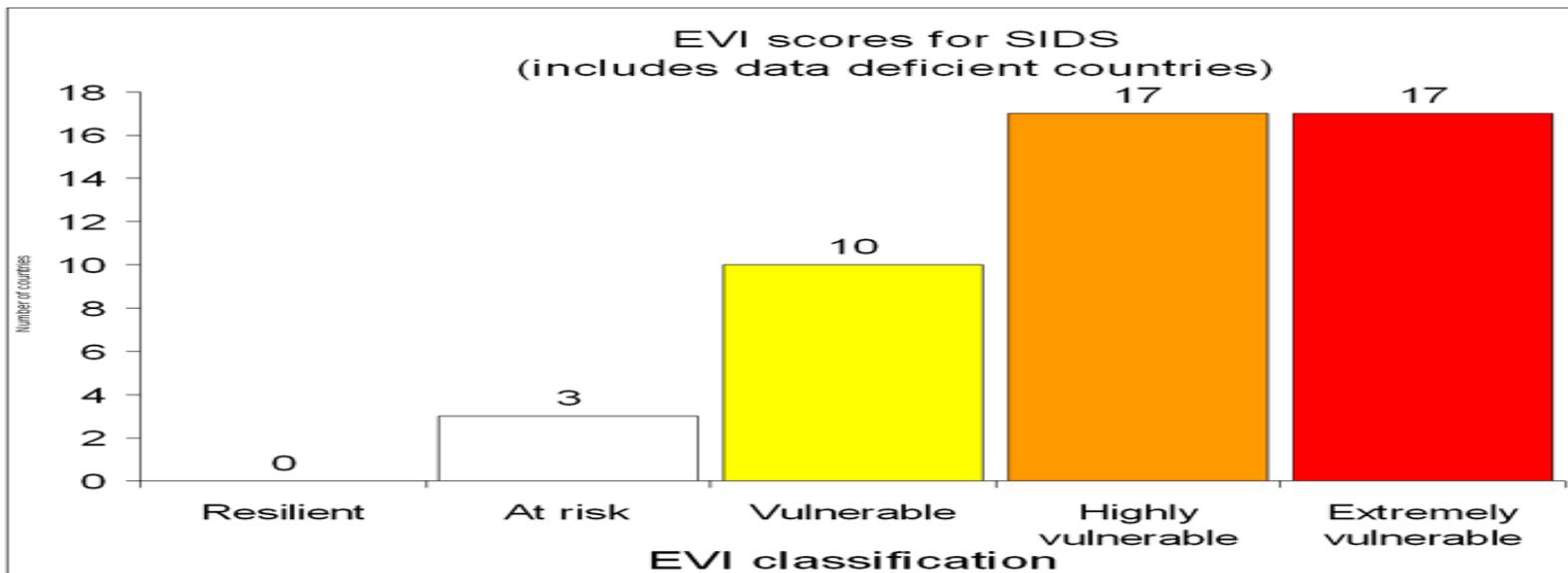
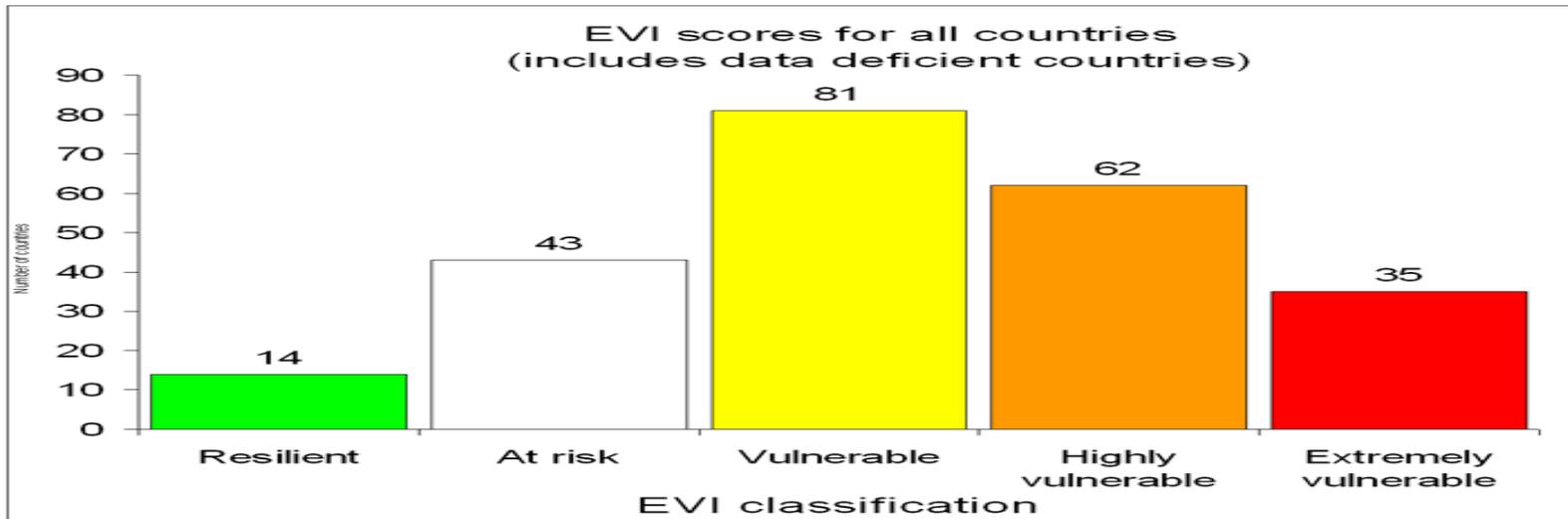
<sup>10</sup> The term “smart indicators” has been used to define EVI indicators, which aim to capture a large number of elements in a complex interactive system while simultaneously showing how the value obtained relates to some ideal condition.

<sup>11</sup> Additional information on the status of global EVI scores and data is available at the official EVI website at [http://www.vulnerabilityindex.net/EVI\\_Results.htm](http://www.vulnerabilityindex.net/EVI_Results.htm).

<sup>12</sup> The EVI country profiles posted on the EVI official website show *an* individual country’s EVI score, the percentage of data held for the 50 EVI Indicators, and how vulnerable or resilient a country may be.

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**Table 2. EVI Scores for All Countries in Comparison to EVI Scores for SIDS**



### 3. ADAPTATION AS A MEANS TO REDUCE VULNERABILITIES IN SIDS

#### 3.1 Responding to Climate Change in SIDS

In addressing climate change in SIDS, two key responses are being undertaken:

- *Mitigation*, to tackle the causes of global warming by reducing greenhouse gas emissions, primarily through renewable energy and energy efficiency.
- *Adaptation*, to cope with the effects of climate change.

Though this paper acknowledges the critical role of mitigation, and the need to focus on these two areas in tandem, the primary focus here is on adaptation since this area has not received the critical attention of the SIDS and the broader international community. Nonetheless, as the *Stern Review* indicates, “Without early and strong mitigation, the costs of adaptation will rise, and countries’ and individuals’ ability to adapt effectively will be constrained.”<sup>13</sup> Other key points raised in the *Stern Review* with regard to adaptation are highlighted in the textbox below.

#### **Linkages of Adaptation and Mitigation<sup>14</sup>**

- *“Adaptation is crucial to deal with the unavoidable impacts of climate change to which the world is already committed.*
- *“Adaptation can mute the impacts, but cannot by itself solve the problem of climate change.*
- *“There are limits to what adaptation can achieve.*
- *“Without strong and early mitigation, the physical limits to – and costs of – adaptation will grow rapidly.*
- *“Adaptation will in most cases provide local benefits, realized without long lag times, in contrast to mitigation.*
- *“But adaptation is complex and many constraints have to be overcome. Governments have a role to play in making adaptation happen, starting now, providing both policy guidelines and economic and institutional support to the private sector and civil society.”*

<sup>13</sup>Op cit., 2006: page 405.

<sup>14</sup> *Stern Review*, “The Economics of Climate Change: Part V – Policy Responses for Adaptation, 2006, page 404.

Adaptation practices refer to the “actual adjustments, or changes in decision environments, which might ultimately enhance resilience or reduce vulnerability to observed or expected changes in climate.” For example, from an IPCC perspective:

*“[I]nvestment in coastal protection infrastructure to reduce vulnerability to storm surges and anticipated sea-level rise is an example of actual adjustments. Meanwhile, the development of climate risk screening guidelines, which might make downstream development projects more resilient to climate risks (Burton and van Aalst, 2004; ADB, 2005), is an example of changes in the policy environment.”*

### 3.2 The Costs

Without effective adaptation measures in place, the effects of climate change on water, agriculture, and human health will be far reaching and catastrophic for SIDS. This is particularly true for those communities that are least able to withstand and respond to the threats of worsening water and food supplies, the loss of habitats and livelihoods, and the rise of vector-borne diseases.

The World Bank reports that in the absence of adaptation, the annual costs of climate change impacts in exposed developing countries are expected to range from several percent to tens of percent of gross domestic product (GDP) (World Bank 2006). Moreover, the World Bank projects that much of the costs of climate change impacts would not accumulate gradually and incrementally through the years, but rather, would occur in the form of severe economic shocks. Unfortunately, SIDS and LDCs are among those countries least able to withstand severe economic shocks given their poverty, fragile economies, and the lack of any buffers in their small, fragmented markets to absorb sudden, enormous expenses. Table 3 demonstrates GDP levels for several SIDS.



#### **Hurricane Ivan and Grenada**

In 2004, Hurricane Ivan struck the island with a vengeance. In its wake, the Hurricane ruined over 90% of the housing, destroyed the rain forest, and annihilated the nutmeg crop— one of the largest sources in the world and a major source of export earnings for the country. Three years later Grenada is still trying to recover from the economic, environmental, and social impacts of Ivan.

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**Table 3. GDP of Small Island Developing States (SIDS)**

Country	GDP (purchasing power parity)	Date of Information (2006 est.)	Rank
Dominican Republic	\$77,090,000,000		70
Cuba	\$46,220,000,000		86
Trinidad and Tobago	\$21,060,000,000		116
Bahrain	\$17,910,000,000		124
Mauritius	\$17,020,000,000		127
Papua New Guinea	\$15,410,000,000		130
Haiti	\$14,760,000,000		134
Jamaica	\$12,840,000,000		137
Bahamas, The	\$6,556,000,000		152
Fiji	\$5,594,000,000		156
Barbados	\$5,146,000,000		162
Guyana	\$3,757,000,000		170
Suriname	\$3,136,000,000		175
Cape Verde	\$3,129,000,000		176
Maldives	\$2,839,000,000		177
Belize	\$2,307,000,000		184
Comoros	\$1,275,000,000		190
Guinea-Bissau	\$1,249,000,000		191
Samoa	\$1,218,000,000		192
Saint Lucia	\$1,179,000,000		193
Antigua and Barbuda	\$1,145,000,000		194
Grenada	\$982,000,000		197
Saint Vincent/the Grenadines	\$864,000,000		201
Solomon Islands	\$800,000,000	**	204
Vanuatu	\$739,000,000		206
Saint Kitts and Nevis	\$726,000,000		207
Seychelles	\$626,000,000	**	208
Dominica	\$485,000,000		210
Timor-Leste	\$370,000,000	+	211
Sao Tome and Principe	\$278,000,000		212
Micronesia, Federated States	\$277,000,000	**	213
Kiribati	\$240,000,000		214
Tonga	\$178,500,000	+	217
Palau	\$124,500,000	+	218
Marshall Islands	\$115,000,000	*	219
Nauru	\$60,000,000	++	222
Tuvalu	\$14,940,000	**	227

SIDS (UN Members) as listed by UN DESA Divison for Sustainable Development

2006 est.	unless otherwise noted;
2001 est.	*
2002 est.	**
2004 est.	+
2005 est.	++ Source: <i>CIA World Factbook</i>

### 3.3 Adaptation Strategies to Reduce Vulnerabilities

Drawing on the contribution of Working Group II, it is possible to identify and differentiate some key features of adaptation practices.<sup>15</sup> As documented in Table 4, adaptation strategies can be approached from a number of vectors, including dimensional, sectoral, type of action, type of actor, climatic zone, level of income/development, and/or a combination of the above. This breakdown helps to highlight the entry point for various adaptation interventions.

**Table 4. Identifying and Differentiating Adaptation Practices**

<b>Dimensional</b>	<b>By Spatial Scale (Local, Regional, National)</b>
<b>Sectoral</b>	By sectors (water resources, agriculture, tourism, public health, etc)
<b>Action</b>	By type of action (physical, technological, investment, regulatory, market)
<b>Actor</b>	By scope of actor(s)/stakeholder(s) to include national or local government, international donors, private sector, NGOs, local communities and individuals, or a combination of all or some of these actors/stakeholders
<b>Climatic Zone</b>	By types of climatic zones (dry land, floodplains, mountains)
<b>Income and Development</b>	By baseline income/development level of the systems in which they are implemented (least-developed countries, middle-income countries, and developed countries)
<b>Combination of categories</b>	By some combination of the above

Additionally, it may be possible to categorize adaptation practices from a temporal perspective in that adaptation to climate risks can be viewed at three levels, including intertwined responses across the levels below:

- Current variability (which also reflects learning from past adaptations to historical climates);
- Observed medium- and long-term trends in climate; and,
- Anticipatory planning in response to model-based scenarios of long-term climate change.

<sup>15</sup> IPCC, Working Group II Contribution: 2007, Chapter 17, page 720.

### **3.4 Addressing Climate Change Through Adaptation**

The good news regarding adaptation is there are a number of activities that countries and the broader international community can and are undertaking to better adapt to the effects of climate change, including short-, medium-, and long term measures. Table 5 outlines some of the activities that countries are pursuing or planning.

**Table 5. Potential Adaptation Strategies to Climate Change by  
Thematic Area**

Thematic Area	Short-term Interventions	Long-term Interventions
<b>Agriculture and Food Security</b>	<ul style="list-style-type: none"> <li>• Insurance</li> <li>• Livelihood portfolio diversification</li> <li>• Adjusting timing of operations</li> <li>• Changing tillage practices</li> <li>• Using seasonal forecast information</li> <li>• Storage facilities</li> <li>• Set up/improve famine relief units Expand exploitation of other food sources</li> <li>• Soil and water conservation</li> </ul>	<ul style="list-style-type: none"> <li>• Changing crop/livestock</li> <li>• Adopt new crops/livestock suited to anticipated climatic conditions (e.g. drought tolerant)</li> <li>• Irrigation (water management)</li> <li>• More efficient water use</li> <li>• Land tenure reform</li> <li>• Pursuing alternative livelihoods</li> <li>• Rezoning of agriculture</li> <li>• Use of soil and water conservation measure</li> </ul>
<b>Water Resources and Quality</b>	<ul style="list-style-type: none"> <li>• Rainwater harvesting</li> <li>• Drought orders</li> <li>• Water rationing</li> <li>• Re-use of wastewater processes</li> <li>• Public awareness campaigns to reduce water use during periods of high water stress</li> <li>• Water quality warnings and advice to public water treatment during low-quality episodes</li> <li>• Use of seasonal and shorter term forecasts</li> <li>• Water Pricing</li> </ul>	<ul style="list-style-type: none"> <li>• Integrate rainwater harvesting systems in domestic and commercial buildings</li> <li>• Minimum standards for water use efficiency in new buildings</li> <li>• Investment in less water-intensive industries</li> <li>• Strategic import of water-intensive products</li> <li>• Conduct water-intensive activities in wet season</li> <li>• Upgrading of water treatment infrastructure</li> <li>• Improved water quality monitoring systems</li> <li>• Separate drainage/wastewater systems, improve runoff management</li> <li>• Upgrade water distribution systems</li> </ul>
<b>Disaster Risk Management</b>	<ul style="list-style-type: none"> <li>• Strengthen evidence on risk factors and risk levels to support risk management decisions</li> <li>• Track climate-related disaster losses</li> <li>• Analyze impacts of climate-related losses on development priorities</li> <li>• Identify cost-effective risk reduction options</li> <li>• Include measures to reduce risks to climate extremes in development/sector plans</li> <li>• Improve early warning systems</li> <li>• Plan for climate-related disasters &amp; response</li> <li>• Protect civil society thru weather index insurance &amp; affordable risk transfer options</li> <li>• Insure public sector from catastrophic losses</li> </ul>	<ul style="list-style-type: none"> <li>• Improve knowledge of potential climate change related impacts</li> <li>• Short-term: focus on designing climate-sensitive infrastructure (reservoirs, bridges, tunnels)</li> <li>• Long-term: Assess proximity of critical thresholds affecting climate-sensitive economic sectors in planning (viability of agricultural or water-resource management strategies)</li> <li>• Assess the interaction of climate and other trends and projections-demographic, economic and environmental-for long range planning</li> </ul>
<b>Coastal Zone Development</b>	<ul style="list-style-type: none"> <li>• Retrofit buildings for storm resistance</li> <li>• Beach nourishment to protect shoreline</li> <li>• Create flood corridors to dissipate storm water</li> <li>• Install early warning systems</li> <li>• Temporary relocation during/post disasters</li> <li>• Improve disaster response capabilities</li> <li>• Strengthen coastal defenses in key locations</li> <li>• Reduce anthropogenic drivers of coastal erosion (sand mining/mangrove/wetland loss)</li> <li>• Construct storm shelters</li> <li>• Introduce insurance mechanisms</li> </ul>	<ul style="list-style-type: none"> <li>• Develop strategy for managed realignment</li> <li>• Prohibit new development in high-risk areas</li> <li>• Promote new development in low risk areas</li> <li>• Provide incentives for preferential settlement and business development in low-risk areas</li> <li>• Establish consultation mechanisms to manage process of relocations/realignment</li> <li>• Establish compensation mechanisms to encourage voluntary relocation from high risk areas</li> <li>• Implement mechanisms for assisted migration of coastal ecosystems</li> <li>• Relocate transport infrastructure to low-risk areas</li> </ul>
<b>Natural Resources Management</b>	<ul style="list-style-type: none"> <li>• Limit exploitation of existing resources</li> <li>• Livelihood diversification to reduce dependence on threatened natural resources</li> <li>• Policies to slow/halt/reverse impact</li> <li>• Reduce drivers of ecosystem loss/damage</li> </ul>	<ul style="list-style-type: none"> <li>• Pilot new livelihood strategies based on anticipated new conditions</li> <li>• Assist ecological transformation</li> <li>• Assist relocation of populations</li> </ul>

## 4. ENABLING EFFECTIVE CLIMATE CHANGE RESPONSES IN SIDS

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### 4.1 The Need for Global Action

Cohesive global action is urgently needed to address global climate change, the greatest challenge to international cooperation that the world is facing.

Global efforts can help SIDS establish policy and market frameworks that exploit the synergies in managing climate change-related risks, energy security, and competitiveness in an interdependent world economy.

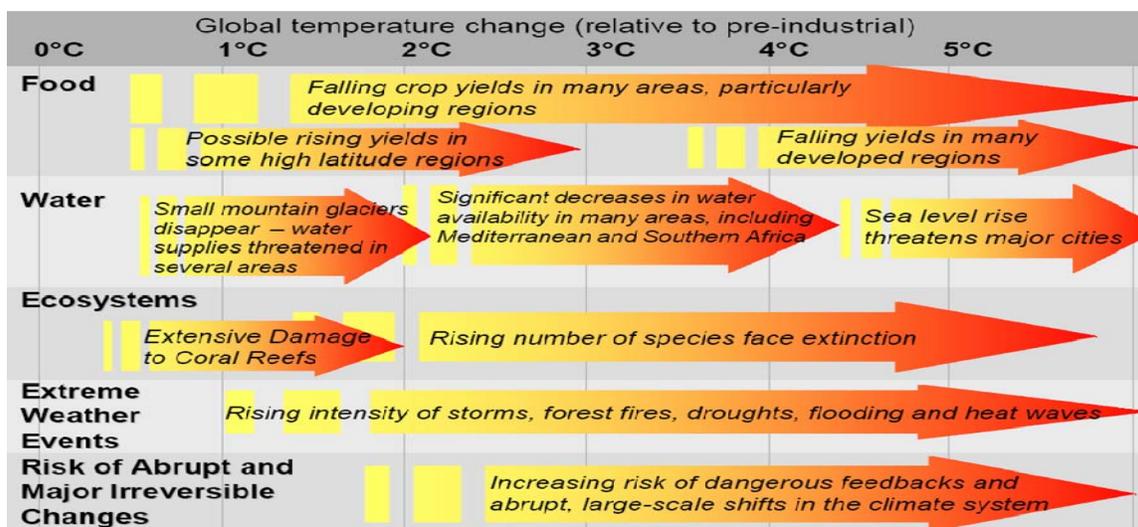
Of particular relevance to AOSIS are the recent recommendations made by the UN Committee on Development Policy<sup>16</sup> in its consideration of climate change and sustainable development. The CDP found that the response to the climate change threat has been inadequate and highlighted the urgent need for raising mitigation and adaptation efforts to an entirely different level. The CDP Report (2007) states that,

*“A partnership between developed and developing countries in confronting climate change must be viewed neither as a matter of just giving and receiving aid, nor as a matter of intergovernmental transactions. The scope of necessary action is so vast that many different dimensions and channels of action may be envisaged that involve a role for Governments, private companies, individual entrepreneurs, civic and non-governmental organizations, professional bodies, and others.”*

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<sup>16</sup> Of particular significance to AOSIS members that are also LDCs, the committee is also responsible for reviewing the status of LDCs and for monitoring their progress after graduation from the category.

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**Figure 1. Climate Change Impacts by Sector<sup>17</sup>**

An additional global challenge that can be identified as a pressing concern for SIDS is the need for improved work on the estimation of climate change-related risks,<sup>18</sup> particularly those risks associated with climate change-induced natural disasters. A World Bank study estimates that, “climate risks are discussed in project design documents for only about two percent of projects.” A six-country review of development assistance by the Organization for Economic Cooperation and Development (OECD) found that few plans, programs, or projects by donor agencies, development banks, or the national governments took account of climate risks (van Aalst and Agrawala 2005). The global community must be engaged in providing the requisite tools and assessments that enable the incorporation of climate change-related risks in overall national sustainable development program and policy design and implementation. For SIDS, the implications are very serious; planning efforts must address climate change-induced disaster management and risk assessment.

Despite global recognition of the central role of energy in poverty reduction, and the overall role of energy within the context of sustainable development, a focus on energy for sustainable development objectives (including increasing access to sustainable energy services and sustainable transport) has not been an integral part of the global climate change consensus. In view of the pressing 2015 MDG deadline, the terms and principles of any consensus on climate change must be linked to broader sustainable development and energy objectives.

<sup>17</sup> Ponzi, Daniele, “Presentation on Climate Change Adaptation in Africa: the Role of the African Development Bank”, 7<sup>th</sup> Annual Donors’ Meeting on Agriculture and Rural Development in West and Central Africa, October 30-31, 2007, Tunis, Tunisia.

<sup>18</sup> ECOSOC, “Committee on Development Policy: Report on the Ninth Session”, E/2007/33. March 2007: page 8

## Regional Challenges

Operating under the umbrella of AOSIS, SIDS negotiators have played and will continue to play an active role in the intergovernmental negotiation process for the UNFCCC and the Kyoto Protocol. The SIDS negotiators were the first to propose a draft text during the Kyoto Protocol negotiations, which called for cuts in carbon dioxide emissions of 20 per cent by 2005 from 1990 levels.

SIDS have also worked to link global climate change concerns into national planning processes through a variety of regional projects. For example, Caribbean SIDS have participated in such projects as the *Caribbean Planning for Adaptation to Climate Change Project (CPACC)* (covering the English speaking Caribbean), *Adapting to Climate Change in the Caribbean (ACCC)*, and the *Mainstreaming Adaptation to Climate Change in the Caribbean (MACC)*.<sup>19</sup> With support from MACC, a Caribbean Community Climate Change Centre (CCCCC) was created. This regional center of excellence provides capacity building, technical assistance, and other support to the CARICOM countries to address climate change adaptation and mitigation.

Regional programs have created monitoring and observation networks, but these efforts do not always operate at their maximum levels of efficiency.

Regional programs such as the South Pacific Sea Level, Climate Monitoring project (SPSLCM) and CPACC have created monitoring and observation networks, respectively, for the Pacific and Caribbean SIDS. However, these networks do not always operate at their maximum levels of efficiency. They require upgrading and maintenance of telecommunications facilities and technical equipment. A related challenge associated with regional

projects is that, due to technical and capacity constraints, climate data sets and assessments remain incomplete. These must be fully integrated into digitized and user-friendly formats that can be utilized by SIDS policy makers and relevant private and public stakeholders. For SIDS participation in the Global Climate

<sup>19</sup> CPACC successfully assisted in establishing mechanisms to address the adverse effects of climate change, particularly sea-level rise, in coastal and marine areas, through such tools as vulnerability assessment, adaptation planning, and capacity-building. These mechanisms were successfully introduced in 12 participating countries (Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, Saint Lucia, St. Kitts and Nevis, St. Vincent and the Grenadines, and Trinidad and Tobago). The Regional Project Implementation Unit, established in Barbados, emerged as the focal point for regional initiatives aimed at satisfying the region's obligations under the United Nations Framework Convention on Climate Change (UNFCCC). For more information, access <http://www.cpacc.org/>. The ACCC project, building on the CPACC experience, addresses priority areas identified by the participating countries. ACCC, funded by the Canadian International Development Agency (CIDA), has served, in part, as a bridge between CPACC and MACC.

Observing System,<sup>20</sup> Regional Action Plans have been created, although differences exist in terms of the progress made by the Pacific and Caribbean SIDS. The Pacific Islands Action Plan was implemented as a pilot so this region has progressed further than any other in implementing an Action Plan.<sup>21</sup>

Regional climate change risk-management practices have the potential to help SIDS. For example, the Caribbean Hazard Mitigation Capacity Building Program of CARICOM is helping Caribbean countries to create national hazard vulnerability reduction policies. The Catastrophe Risk Insurance Facility (CRIF) within the World Bank is piloting a scheme for small states to buy insurance coverage against natural disaster risk. These activities and others can help SIDS to overcome barriers such as size and lack of financial mechanisms that pose obstacles to insurance initiatives. The strengthening of regional capacity (related to finance and insurance industries) that can advance CRIF's work is urgently needed.

### *National Challenges*

The challenge of adaptation will be particularly *acute* in SIDS, most notably in the LDCs, where the scale of vulnerability and poverty will limit their responses.

Despite active participation by SIDS representatives in intergovernmental negotiations on climate change, SIDS policy makers and experts remain very constrained in responding effectively to global climate change. They confront limitations in human resources, financial resources, and institutional capacities. Given these constraints, SIDS policy makers and experts face tremendous difficulties in fulfilling national obligations and commitments related to multilateral environmental agreements such as the UNFCCC.

The challenge of adaptation will be particularly *acute* in SIDS, most notably in the LDCs, where the scale of vulnerability and poverty will limit their responses. The National Adaptation Programs of Action (NAPAs) are vehicles for enabling individual states to build capacity. NAPAs were launched in 2001 after the seventh session of the UNFCCC COP (COP-7: Marrakech). They are a

<sup>20</sup> The Global Climate Observing System was established in 1992 to ensure that the observations and information needed to address climate-related issues are obtained and made available to all potential users. It is co-sponsored by the WMO, the Intergovernmental Oceanographic Commission of UNESCO, UNEP, and the International Council for Science.

<sup>21</sup> UNFCCC, "Vulnerability and Adaptation to Climate Change in Small Island Developing States", Background Paper for the expert meeting on adaptation for SIDS. 2007: page 10. Available at: [http://unfccc.int/files/adaptation/adverse\\_effects\\_and\\_response\\_measures\\_art\\_48/application/pdf/200702\\_sids\\_adaptation\\_bg.pdf](http://unfccc.int/files/adaptation/adverse_effects_and_response_measures_art_48/application/pdf/200702_sids_adaptation_bg.pdf) .

participatory mechanism for LDCs to identify priority activities that respond to their urgent needs for adaptation to climate change. The rationale for NAPAs was based on the limited capabilities of LDCs. NAPAs support the development and future implementation of coping strategies at the grassroots level, and build on that to identify priority activities, rather than focusing on scenario-based modeling to assess future vulnerability and long-term policy at the state level. In the NAPA process, grassroots communities are the main stakeholders. The development of a NAPA includes short profiles of projects and/or activities intended to address urgent and immediate adaptation needs of LDC parties. Through the UNFCCC Web site, the NAPAs of the following AOSIS members are available: Comoros, Haiti, Kiribati, Samoa, and Tuvalu.<sup>22</sup> Since 12 of the LDCs are SIDS, long-term support of efforts to prepare and implement NAPAs is important.<sup>23</sup>

A difficult challenge facing individual SIDS governments is to ensure that climate change responses are based on high-quality, context-specific information. National governments will need access to forecasting mechanisms and tools for

climate change risk-management to ensure smooth functioning of national regulatory and market frameworks.

A difficult challenge facing individual SIDS governments is to ensure that climate change responses are based on high-quality, context-specific information.

#### 4.2 Role for International Collaboration

*Although the biggest impact on adaptation will result from the actions taken by national governments,* there are substantial benefits to be gained from international collaboration in this area. International collaboration refers to activities undertaken jointly by a variety of actors—including governments, international organizations, multilateral

financial institutions, the private sector, NGOs, research institutions, and civil society—in pursuit of shared objectives that form part of an agreed agenda.

International collaboration should enhance, not displace, independent national initiatives.<sup>24</sup> It could support national governments and industries to build market frameworks, strengthen local capacity, and enhance technical know-how through information exchange, networking and facilitation of relationships, and

<sup>22</sup> Additional information on the NAPAs may be obtained at the UNFCCC website at: [http://unfccc.int/national\\_reports/napa/items/2719.php](http://unfccc.int/national_reports/napa/items/2719.php).

<sup>23</sup> NAPAs focus on enhancing adaptive capacity to climate variability, which itself helps address the adverse effects of climate change and are prepared through a participatory stakeholder process, involving local communities.

<sup>24</sup> Expert Group Report on Increasing Global Renewable Energy Market Share, December 2005, UN Department of Economic and Social Affairs.

linking local players to international expertise. International collaboration is useful to exchange experiences, learn from each other, and discuss best practices in order to avoid time-consuming and costly mistakes and adopt “short-cuts” to success. By tying national efforts to the broader international community, a country can reap the benefits of adaptation practices, technology improvements, and cost reductions at home, while contributing to the collective scale-up of adaptation practices worldwide.

Possible benefits of international collaboration on adaptation could include:

- Enhanced knowledge of effective market strategies and mechanisms.
- Reduced trade and investment barriers.
- Increased South-South and North-South trade opportunities.
- Improved employment and income opportunities.
- Increased energy access to those in need.

International collaboration on adaptation can involve policy support; capacity building; joint research, development, and demonstration (RD&D); and monitoring and evaluation. Examples are provided in Table 6. Financing can also be a major area for international collaboration; this is addressed in the next section.

**Table 6. Potential Areas for International Cooperation on Adaptation**

Key Areas	Barriers In SIDs Countries	Potential Areas for International Collaboration
<b>Policy Development</b>	<ul style="list-style-type: none"> <li>• Political support for consistent adaptation policies</li> <li>• Unstable regulatory markets</li> <li>• Lack of enabling platforms</li> <li>• Lack of institutional framework</li> <li>• Conflicting trade policies</li> </ul>	<ul style="list-style-type: none"> <li>• Strategic planning and analysis</li> <li>• Enabling regulatory and market frameworks to respond effectively to climate change risks/opportunities (short, medium, long term)</li> <li>• Policy support for sustainable development objectives and links to MDGs</li> <li>• Support for national adaptation Programs of actions</li> <li>• Assistance in developing national emergency preparedness and disaster management plans/programs</li> <li>• Linkage of adaptation practices to cross sector issues (Ag, Health, Water, Transport, etc.)</li> <li>• Support in ensuring adequate protection for the poor</li> <li>• International agreements/market mechanisms</li> <li>• Integrated policy networks</li> <li>• Regional/global policy cooperation</li> </ul>
<b>Capacity Building</b>	<ul style="list-style-type: none"> <li>• Government investment in training and skills development</li> <li>• Institutional capacity building</li> <li>• Capacity building in assessment tools and performance standards</li> </ul>	<ul style="list-style-type: none"> <li>• Access to climate information and quality forecasting tools to estimate climate change risk</li> <li>• Needs assessment of vulnerabilities</li> <li>• Training on infrastructure, economic, transportation adaptation practices/experiences</li> <li>• Business management expertise</li> <li>• Collaborative educational programs</li> <li>• Regional/international research private sector/industry collaboration</li> <li>• Transfer of tools/models for technology/financial assessment</li> </ul>
<b>Joint R&amp;D</b>	<ul style="list-style-type: none"> <li>• Familiarity/access to adaptation technologies, services, and practices</li> </ul>	<ul style="list-style-type: none"> <li>• Support in technology innovation, transfer, and cooperation</li> <li>• R&amp;D funding, programs, and partnerships</li> <li>• Integrated R&amp;D and technology demonstrations</li> <li>• International collaboratives</li> </ul>
<b>Monitoring and Evaluation</b>	<ul style="list-style-type: none"> <li>• Tracking of adaptation outcomes, outputs, and impacts</li> </ul>	<ul style="list-style-type: none"> <li>• Strengthen monitoring networks</li> <li>• Routine observation of sea level, temperature, water resource changes</li> </ul>

## 5. FINANCING ADAPTATION IN SIDS

### 5.1 The Need

Financing adaptation in SIDS will be a costly endeavor to both reduce disaster risks and enhance the resilience of communities to extreme weather phenomena. To date, SIDS countries and the international community have expressed their support for these activities and several funding initiatives are already underway. However, these activities pale in comparison to the amount of funding potentially needed to scale up adaptation efforts. Thus, new and innovative funding sources will be required and additional players engaged to ensure that SIDS countries are well positioned to be both reactive and proactive in addressing climate change impacts.

Further, as noted by UN Secretary General Bak Ki-Moon at the High Level Climate Change meeting in September 2007, this funding must be “additional” to funding already being provided by donors and the investment community, fully “integrated” into broader sustainable development activities, and long-term. Moreover, fulfilling financing commitments to SIDS for adaptation activities will require new tools and financing mechanisms, such as the newly established Adaptation Fund. This section will review existing and planned financing mechanisms for adaptation. It will also outline additional initiatives that could be considered.

### 5.2 Barriers and Solutions for Financing Adaptation in SIDS

#### *Barriers*

A number of barriers exist to the financing of adaptation practices in SIDS, which need to be considered in the design of responsive and effective funding programs. These include:

- Infrastructure to address climate change impacts— short, medium, and long-term—may exceed billions of dollars over the next 10 years.
- Local resources are inadequate to meet these needs; international development organizations cannot fill capital shortfalls.

*“You expressed your solidarity with the most vulnerable among us, especially SIDS and LDCs... You pledged to support them in adapting to the inevitable consequences of climate change... Many called for increased funding to be made available through mechanisms such as the Adaptation Fund, which should become operational as quickly as possible. These resources need to be supplementary to those already committed to helping developing countries move out of poverty and achieve the MDGs... You also agreed that we need to reduce the risk of disasters and increase the resilience of communities to increasingly extreme weather phenomena through systematic planning and capacity building. This dimension should be integrated into all development planning that countries do and support should be provided to them by development agencies for doing so.”*

**UN Secretary  
General Bak Ki-  
Moon**

- Few global investors and investment firms are interested, given the small-scale nature, challenges, and potential returns from adaptation projects in SIDS.
- Domestic markets lack sufficient mechanisms, capital, and liquidity to meet adaptation financing requirements.
- The small economy size of most SIDS nations deters interest from foreign markets.
- There exists a lack of equity for project development in most SIDS.
- Microfinance has a potential role to play in some adaptation applications but there is limited experience or interest on the part of these institutions.
- In many SIDS, there is a lack of policy frameworks and enforceable regulations to safeguard investor interests.
- Political instability is endemic in some SIDS.
- Risks exist over the certainty of returns and long-term property ownership.
- Concerns over future sectoral returns due to climate change impacts ( e.g., agriculture, tourism, development, etc.)

### *Potential Options for Mitigating the Risks*

Several activities have been identified to help reduce these risks based on the experiences of other sectors. These include:

- Access to financing across the spectrum—pre-feasibility funding, feasibility study funding, investment, and insurance— and these must be linked.
- Creation of legal frameworks to improve capital markets, protect investor interests (ownership/title), and facilitate flow of capital.
- Creation of capital markets to enhance liquidity and attract domestic/foreign investors.
- Domestic awareness and understanding of opportunities through local finance, microfinance, other channels for accessing capital and addressing resulting obligations.
- Political certainty of regimes that foster capitalism and democracy.
- Competition with other alternatives vying for the attention of multilateral institutions, renewable energy companies, investors, etc.
- Reduced dependence on fossil fuels improves overall trade balances and hedges risk.
- Enhanced communication among SIDS to share “lessons learned” and inform decisions to ensure that efforts/capital are not squandered in “reinventing the wheel”.
- Risk-mitigation instruments to enhance financing — guarantees, partial guarantees, insurance, extended loan tenors, etc.
- Diversification of funding sources: loans, equity, venture capital, project finance, etc.

**Examples of Community-Based adaptation in SIDS that are taking place through individual, ad-hoc actions on a local scale<sup>25</sup>:**



- Placing concrete blocks on the top of zinc roofs to prevent the roofs from being blown away during hurricanes has become common practice in Jamaica since Hurricane Ivan.
- In Vanuatu, SPREP, with funding from the Canadian government, has moved 100 villagers living in the Lateu settlement to higher ground 600 m from the coast and 15 m above current sea level. Frequent flooding and erosion were making the original location of the settlement uninhabitable.
- On Timor Island, farmers have developed their own varieties of major staple crops to adapt to erratic rainfall and cyclones and to ensure food security.
- At Playa Rosaria, Havana Province, Cuba, the community has been relocated five kilometers inland because of coastal erosion.

### 5.3 Existing Financing Sources for Addressing Adaptation in SIDS

Provided below are adaptation funding options that have begun to address financing barriers in SIDS. The experiences of these mechanisms can help to inform and leverage additional funding sources.

#### *Global Environment Facility Specialized Adaptation Facilities*

The Global Environment Facility (GEF) is the primary source of dedicated funding for adaptation to climate change. The GEF adaptation program encompasses a pilot under the GEF Trust Fund, namely the **Strategic Priority on Adaptation (SPA)** and two dedicated funds—the **Least Developed Countries Fund (LDCF)** and the **Special Climate Change Fund (SCCF)**. These funds are managed separately from the GEF Trust Fund and have their own operational rules and procedures. The LDCF and SCCF operate through the core sectors that link adaptation and development, while the GEF Trust Fund pilot supports adaptation projects that increase the resilience of ecosystems where climate change threatens biodiversity and other global commons, or is the cause of land degradation. More detailed information is provided below.

<sup>25</sup> These examples of community based adaptation practices are drawn from a background paper prepared for an expert group meeting on adaptation in SIDS commissioned by the UNFCCC. “Vulnerability and Adaptation to Climate Change in Small Island Developing States” is available at [http://unfccc.int/files/adaptation/adverse\\_effects\\_and\\_response\\_measures\\_art\\_48/application/pdf/200702\\_sids\\_adaptation\\_bg.pdf](http://unfccc.int/files/adaptation/adverse_effects_and_response_measures_art_48/application/pdf/200702_sids_adaptation_bg.pdf) .

- **Strategic Priority on Adaptation.** SPA is an ecosystem/focal area focused fund. The goal is to ensure that climate change concerns are incorporated in the management of ecosystems through GEF focal area projects. It will pilot demonstration projects concerned with the management of ecosystems to show how climate change adaptation planning and assessment can be practically integrated into national policy and sustainable development planning. This fund became operational in July 2004. The SPA is a pilot program of US\$50 million, which will be evaluated by the GEF before additional funds are allocated.
- **The Least Developed Countries Fund.** The LDCF is development focused. It supports the poorest countries that are most vulnerable to climate change impacts. The fund provides support to LDCs as they prepare NAPAs to identify their most urgent adaptation needs. Following their completion, additional funds will be made available to assist LDCs to implement the NAPAs, probably through expedited medium-sized GEF projects up to US\$1.5 million. This fund, which has mobilized \$165 million, became operational in July 2001. To date, the GEF has financed the preparation of more than 45 National Adaptation Plans of Action and two global support projects.
- **Special Climate Change Fund.** SCCF is also a development-focused fund concerned primarily with activities, programs, and measures in the development sectors most affected by climate change. Areas of support include adaptation in agriculture, water resources management, health, disaster-risk management, and coastal zone management. This fund became operational in October 2005. To date, about \$65 million has been pledged.

**Neither** the concept of “**incremental costs**” **nor** the **Resource Allocation Framework** is applied to the **LDCF and the SCCF adaptation projects**.<sup>26</sup> Additionally, a simplified approach has been established to access resources, including the use of a proportional ratio as a sliding scale to determine co-financing for the LDCF and the SCCF.<sup>27</sup>

- **Adaptation Fund.** Recently launched in Bali, the Adaptation Fund will be financed with a share of proceeds from the Clean Development Mechanism (CDM) project activities. The fund’s share of proceeds amounts to 2% of Certified Emission Reductions (CERs) issued for a CDM project. Additionally, the fund can receive financing from other sources.

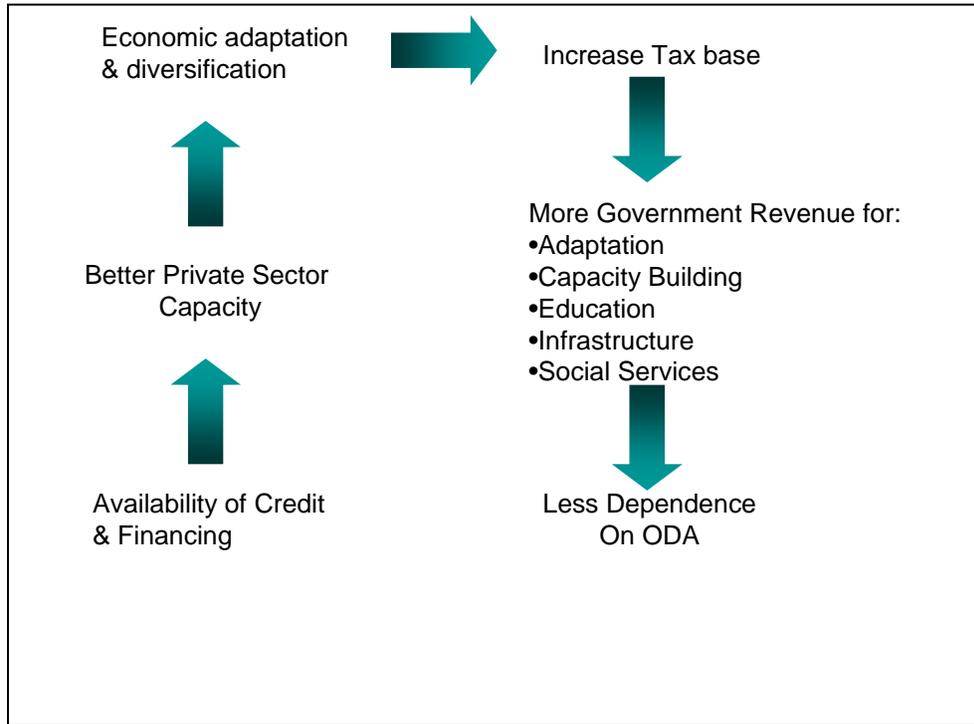
The share of the proceeds from certified project activities will be used to cover administrative expenses, and assist those developing country parties that are particularly vulnerable to the adverse effects of climate change in meeting the costs of adaptation. AOSIS has a seat on the Governing Board

<sup>26</sup> See FAQs at [http://www.gefweb.org/projects/Focal\\_Areas/climate/documents/adaptationFAQs.pdf](http://www.gefweb.org/projects/Focal_Areas/climate/documents/adaptationFAQs.pdf)

<sup>27</sup> Op.cit., GEF: 2006, page 2

of the Adaptation Fund. Figure 2 demonstrates the flows and potential impacts of the Adaptation Fund. The fund is not expected to generate significant resources until at least 2010.

**Figure 2: Adaptation Fund Flows and Impacts**



### *Catastrophe Risk Insurance Facility (CRIF)*

In September 2005, in the context of the Small States Forum, the World Bank prepared a concept note, “Small States Catastrophe Risk Insurance Facility.”<sup>28</sup> The rationale for launch of the proposed facility included:

- High level of exposure to adverse natural events.
- Limited resilience to disasters due to limitations in size and borrowing capacity.
- Dependence on extensive financing from international donors to finance post disaster needs.
- Limited access by governments to insurance facilities because of high transaction costs.

Based on these factors, it was determined that a CRIF would provide client governments with immediate liquidity if they were hit by an adverse natural event. The facility would essentially allow small states exposed to adverse natural events to pool their risks in order to lower the coverage’s cost. It was argued that the ultimate costs will depend on the extent of this risk spreading effect, economies of scale, and the amount of capital provided for program’s launch.

Key features of the proposed CRIF include:

- The facility would be capitalized initially with contributions from donor countries.
- The facility would have access to additional risk capital through (multi-year) reinsurance or issuance of its own financial coverage instruments (e.g., catastrophe bonds).
- Claims payments would depend on parametric triggers.
- The insured countries would pay an annual premium based on their own specific exposure.
- The facility would be managed by a captive manager with expertise in insurance.<sup>29</sup>

On February 26, 2007, ministers and representatives from 18 Caribbean countries met with the World Bank in Washington, D.C. for the Caribbean Catastrophe Risk Insurance Facility (CCRIF) Donors Pledging Conference. Donors committed US\$47 million to the CCRIF reserve fund, which was billed as

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<sup>28</sup> The Concept note was prepared for information of participants at the 2005 Small States Forum and is available at <http://siteresources.worldbank.org/PROJECTS/Resources/CatastropheRiskInsurance.pdf>

<sup>29</sup> For example, participating countries would buy coverage for risks related to a specific return period (e.g., 20, 30, 50 years or more). This risk will be calculated using probabilistic risk modeling techniques and is specific to each state’s location and size. This approach avoids cross subsidization from one country to the other while preserving the benefits of risk pooling and economies of scale.

the world's first-ever multi-country catastrophe insurance pool. CCRIF would provide participating governments with immediate access to liquidity after a hurricane or earthquake.

CCRIF terms and conditions include:

- Each government's premium is directly related to each country's specific risk profile. This means, for example, that the premium cost for a highly hurricane-prone country will be set at a higher level than the premium cost for a low hurricane-risk country.
- The insurance offered through the facility will provide immediate budget support to the affected government in order to overcome the liquidity gap during the first few months after a disaster. It is ***not intended*** to cover all reconstruction costs; countries will still depend on other sources of financing, including donor assistance.
- A defaulting state would lose the coverage. The premium for the other countries would then be recalculated. (A reduced number of states would result in more expensive coverage, but higher reserves can partially mitigate this.) It could also result in costly readjustments of the reinsurance cover provided. As a result, an entrance fee, equivalent to one year's premium, must be paid each time a country enters the facility.
- The facility will only provide partial coverage to governments in order to help authorities fund urgent expenses in the aftermath of a catastrophe. The scope of coverage should not be perceived as replacing private insurance. In fact, countries would have an interest in promoting the use of private insurance so as to reduce their secondary obligations in case of a disaster.<sup>30</sup>

CCRIF will serve as a pilot for possible extension or replication to other regions, such as the Pacific Basin, where small states run the same risk of being struck by natural disasters.

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<sup>30</sup>World Bank, FAQs about the CCRIF. 2007. Available at:  
<http://siteresources.worldbank.org/OECSEXTN/Resources/CCRIFrequentlyaskedquestionfinal.doc?resourceurlname=CCRIFrequentlyaskedquestionfinal.doc>.

## Why a CCRIF?

The Caribbean Community (CARICOM) heads of government requested World Bank assistance in establishing CCRIF, following the devastation of Hurricane Ivan. CCRIF represents an important shift from disaster response to *ex-ante* disaster management and mitigation. Individual governments can purchase catastrophe coverage akin to business interruption insurance that would provide them with an early cash payment after a major hurricane or earthquake.

Pooling risks was seen as saving the 18 participating countries approximately 40% in individual premium payments. This Caribbean-owned CCRIF is the world's first regional disaster insurance facility. Donor contributions to a reserve fund are crucial towards assisting the CCRIF to become operational.<sup>31</sup>

### *Other Adaptation Funding Sources*

In addition to the above facilities, several organizations are either supporting adaptation activities or exploring how they can engage more effectively in this area. These include:

- **United Nations Development Programme.** UNDP has a large pipeline of adaptation-related projects for both enabling activities and piloting adaptation, primarily with support of GEF adaptation funds. The portfolio of pilot projects at advanced stages is worth \$58 million in GEF funding for 20 projects in 41 countries. The pipeline of pilot project proposals in earlier preparation stages is currently worth \$150 million in GEF funding. UNDP also has an active National Communications Support Program and is working with more than 30 countries in the development and implementation of NAPAs.
- **World Bank.** The World Bank is among the leaders in addressing adaptation to climate risk through technical analysis of risk management and by pioneering insurance work in the Caribbean (CCRIF), Latin America, and South Asia. The Bank also seeks to replicate these lessons more widely, especially in Sub-Saharan Africa and South Asia. The International Finance Corporation, the Bank's private sector lending arm, is also exploring ways to more actively finance adaptation activities.
- **Organization of American States.** OAS is managing the Caribbean Planning for Adaptation to Global Climate Change project that is funded by the GEF, implemented by the World Bank, and executed by OAS. The project works at a regional level with a goal to support Caribbean countries in preparing to cope with the adverse effects of global climate change (GCC), particularly sea level rise, in coastal and marine areas through vulnerability assessment, adaptation planning, and evaluation of policy

<sup>31</sup> World Bank News Release, "First Ever Regional Catastrophe Risk Insurance Pool for the Caribbean Receives US\$47 Million From Donors." 2007/255/LAC.

options through a series of regional activities and pilot studies. These enabling activities are complemented by selective capacity-building activities, which are aimed at creating or strengthening endogenous conditions and capabilities necessary to prepare a long-term program for adaptation to GCC.

- **Regional Development Banks.** Several regional development banks are supporting climate change mitigation and adaptation activities. These include the Inter-American Development Bank (IDB), which recently launched its \$20 million Sustainable Energy and Climate Change Fund to address mitigation and adaptation issues due to climate change. The Asian Development Bank is supporting adaptation as a crucial means of reducing vulnerability to climate change, with activities on regional and sub-regional cooperation and information exchange, national policy and strategy development, and project-level mainstreaming. The African Development Bank has recently initiated a climate adaptation and climate risk-management program with interventions at the policy, capacity, and project levels. AfDB also adopts an integrated climate risk-management approach that links adaptation and disaster risk mitigation and recognizes climate change as an economic and social risk rather than a long-term environmental problem.
- **Bilateral Donors.** Several bilateral donors—including the UK, the Netherlands, and the US— support a range of climate change activities involving mitigation and adaptation.
- **International Finance Institutions.** A number of finance and insurance organizations are increasingly engaging in climate change investments and have an interest in adaptation. These include organizations such as Bear Stearns, AIG, Fortis Bank, Citigroup, Goldman Sachs, and Swiss RE. A concerted effort will be made to contact these organizations on adaptation financing for SIDS.

Annex 1 to this report provides a listing of regional organizations in SIDS that support broad-based climate change activities. These entities could participate in financing and broader capacity building, policy, and information exchange activities in the field of adaptation.

#### 5.4 Areas to Explore for Additional SIDS Adaptation Support

Though the above sources are critical, they are neither at the scale nor magnitude needed to address the climate change problem and can be challenging for SIDS to access in a timely and responsive manner. New financing players, partners, and programs are needed to support adaptation responses to climate change—and timing is of the essence.

This paper outlines a range of activities that can be taken to increase funding for adaptation, leverage existing financing sources, and improve the overall investment climate in this area. These include:

**Develop a Portfolio of Sector Specific Projects.** These would give preference to those projects that generate income and help transform economies (e.g., agriculture, tourism, off-shore services). Also, encourage SIDS to explore opportunities for increasing the value chain for local products—both domestically and for export— to increase revenues.

**Create an Inventory of Available Financing Sources.** This would include public and private capital that could support climate change projects and programs.

**Establish Partnerships with Funding Sources.** This would entail working with multilateral development banks (World Bank, Inter-American Development Bank, Asian Development Bank, and African Development Bank), bilateral agencies, and other funders, to support adaptation practices and apply “climate resistant” conditionalities to their lending operations. Also work with local financial institutions lending in SIDS nations to support adaptation activities (e.g., Caribbean Development Bank). And tap into existing funds in infrastructure and related sectors.

**Global Islands Green Finance Facility.** The facility would serve as a seed fund for economic transformation. It will help with project preparation to attract additional funding for key projects related to adaptation mainstreaming, economic transformation, private sector resilience and globalization, green and renewable energy, and sustainable development. Such a facility could also be used to help catalyze the development a global islands “Fair-Trade” branding for island agro-industries and other manufactures and services.

**Establish an electronic nexus.** The hub would provide global islands the following services:

- **Online seminars** – to utilize use interactive learning technologies to help users of this Web portal learn about efforts to mitigate and adapt to the impact of global climate change, including harnessing clean, renewable energy resources – projects and programs underway or planned
- **Experience sharing** – efforts by one island would be shared with others, accelerating replication of successful endeavors, minimizing the costs by not redoing research and experimentation that has proven to be successful. A database of projects underway or planned would also be built.
- **Networking** – utilize the rapidly emerging networking technologies (Facebook, MySpace) to help policymakers, regulators, financial experts, scientists, investors, and others connect. This tool could facilitate collaboration across sectors and serve as a catalyst in bringing climate issues to bear in projects relating to renewable energy, energy efficiency, urban infrastructure, waste management, pollution abatement, and resource management.

- **Online multi-party Diplomatic Negotiating Tool** – For projects requiring the participation of many islands, sectors, and funding sources, an online negotiating tool would be available to help the parties finalize the details of an agreement. Facilitators would be available to train users how to use the tool and to guide the process to completion.
- **Formal discussion forums for key sectors and topics** – a regular program featuring experts who could share the latest information on such topics as: the second generation of biofuels, small-scale use of nanotechnologies in clean, renewable fuel production; and, new funding opportunities.
- **Email and SMS Text message alerts** – when registering to use the site, participants would provide contact information and state their interests in receiving news bulletins most relevant to their interests.
- **Other** – events calendar, library of speeches and key documents.

**Create an AOSIS Global Climate Finance Community.** This involves creation of an informal network of financiers, project developers, finance ministers and diplomats with an annual calendar of optional activities to facilitate, networking, matchmaking, project development and relationship building. This could begin with a Green Finance Conference in one of the Island States. The Prime Minister of Grenada has expressed interest in hosting such a meeting in 2008.

**Pursue Creative Carbon Finance.** Carbon finance would build upon emissions trading opportunities. Emissions trading is becoming more entrenched as a key to tackling climate change. For example, EU member states placed trading at the centre of the integrated energy and climate package, signed in March 2007, which commits to a 20% reduction in greenhouse gas emissions by 2020, compared to 1990 levels. 2008 marks the start of the five-year Kyoto Protocol period, obligating industrialized countries to control their GHG emissions. Cap-and-trade schemes are advancing in the U.S. Congress and states themselves have pledged action on emissions.

Under the Clean Development Mechanism, local communities in developing countries that are not bound by the Kyoto Protocol can plan, develop, and implement projects to reduce greenhouse gas emissions. The emissions reductions can then be quantified and traded on international carbon markets; and sold to carbon buyers in industrialized countries that are bound by the Kyoto Protocol.

To achieve the scale that would prove attractive to investors, island states could collaborate and consolidate their efforts on projects to amass credits. Initiatives could include: a designated facility within the World Bank Carbon Finance Unit to address island state needs; creation of a trading forum(modeled on the trading systems of the Climex Alliance) that connect markets to ensure simultaneous access to buyers and sellers from the island states; and awareness of opportunities through multilateral carbon financing facilities that include the

Prototype Carbon Fund, BioCarbon Fund, Community Development Carbon Fund, Italian Carbon Fund, Netherlands CDM Facility, Danish and Spanish Carbon Funds, Umbrella Carbon Facility, etc. Partnership opportunities may be with existing structures, such as the Climex Alliance, and leading trading firms.

**Explore Catastrophic Risk Insurance.** This would include assessing existing and new financial risk management instruments for their application to climate change in general, and SIDS in particular— insurance, reinsurance, credit enhancement products, catastrophe bonds, etc. Help catalyze the establishment of new Catastrophic Risk Insurance products for island states.

**Establish AOSIS Living Laboratories for Renewable Energy.** On a voluntary basis, island states can serve as sites for the piloting and implementation of new technologies for renewable energy. Renewable sources and technologies could include geothermal, solar, tidal and ocean energy, hydrogen, biofuels, biomass, and others. In addition to centralized and distributed energy plants, this could include the implementation of energy networks and technologies that conserve energy, expanding consumer choice, and allowing mini-producers and households to feed into a national grid. The role of emerging technology options such as nanotechnology in photovoltaics, fuel efficiency, and electrical storage could also be piloted.

**Develop Global Islands Remittance Network.** Island states lack a means to quickly transfer funds, slowing down the pace of exchanges. This is a barrier that would affect the development of financing mechanisms to address climate change mitigation and adaptation. Using mobile telephony, this network would allow for remittances to be transferred through mobile phone networks and collected through a government endorsed service. This service also provides ATMs for cash disbursements and government payments. This system allows governments to harness the economic power of remittances and the informal economy. Government revenues from this network could be fed back into a Micro-Finance Facility for small-scale artisans and vendors.

**Set-Up Offshore Financial Services.** Island states have been adept at attracting international financial services seeking tax-efficient jurisdictions. A global islands initiative could seek synergies and promote information exchange among island states. This would involve exploring ways to attract more green and carbon financing to island states and developing key off-shore locations to become global centers of green investments and sustainable financing

**Establish a Global Islands Stock Exchange.** Creation of a Global Islands Stock Exchange could be based on the technology platform currently used by the East Caribbean Stock Exchange. This operates in a de-materialized electronic environment, with no trading floor. The stock exchange would pool private sector companies into a single exchange with access to a greater number of investors and a market with enhanced liquidity. This in turn would attract more venture capital to invest in the private sector. The concept could be developed in

association with the Singapore Stock Exchange and the AIM market of London Stock Exchange. This stock exchange could specialize in green, ethical, and fair-trade investment vehicles and funds.

**Access Sovereign Wealth Funds.** Island states have experience in developing sovereign wealth funds, which have been used to address long-term sustainability concerns and short-term financing constraints. The local finances of island states could be pooled into a multi-sovereign wealth fund. Such funds could be used for high-growth opportunities in SIDS and in other markets. The decision-making on how to invest these funds would be driven by financial and strategic imperatives rather than political considerations.

Islands states, too, should work together to seek investments from the large sovereign wealth funds. For example, a facility could be created that offers a means to redistribute a sizeable investment from a sovereign wealth fund into smaller finance amounts. Sovereign wealth funds' assets are set to reach \$12 trillion by 2015, almost 10 percent of all financial assets in the world.

Figure 3 graphically depicts the hierarchy of possible initiatives for accelerating financing for adaptation and mitigation measures in AOSIS member states.

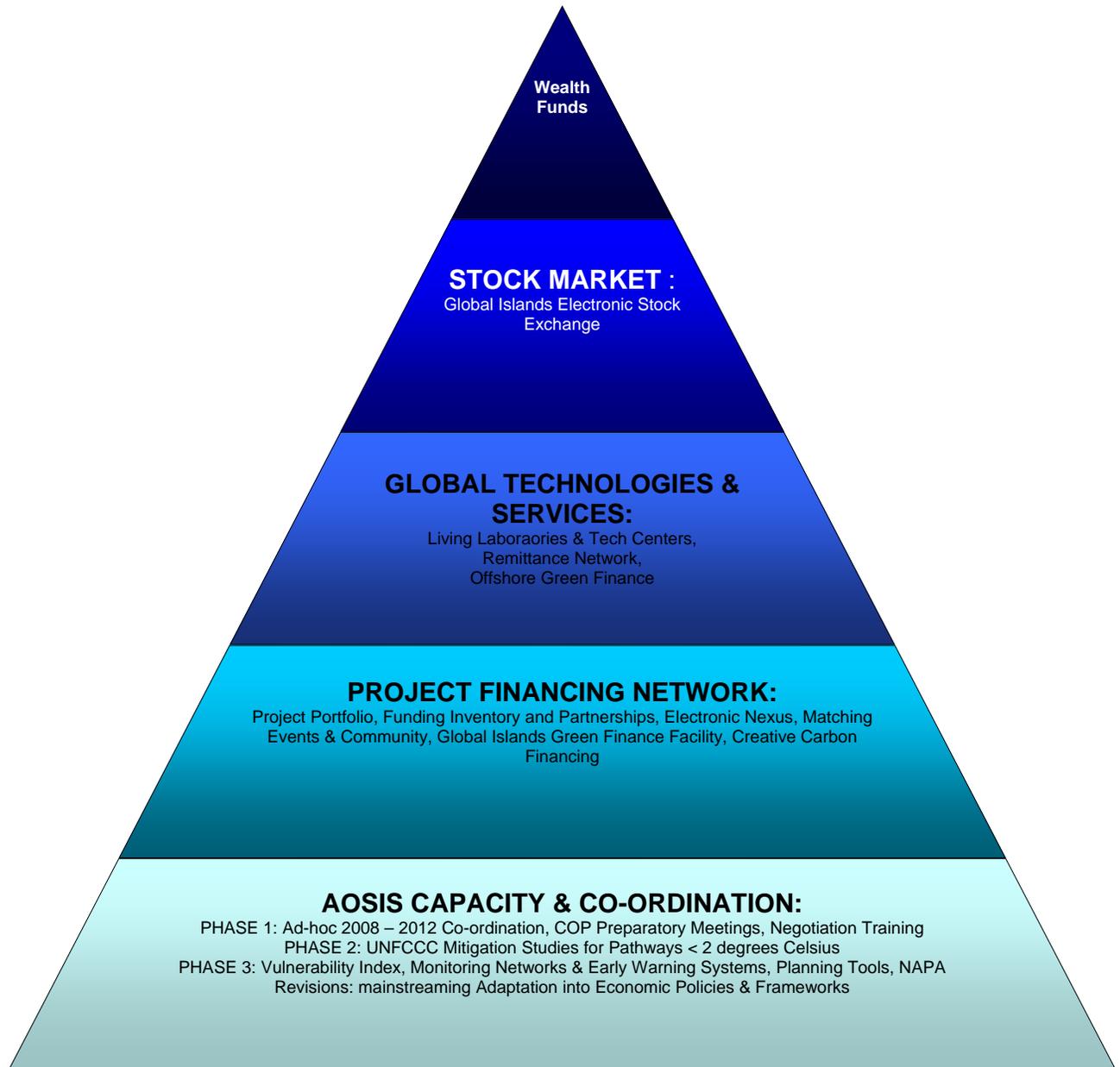
## What Are Sovereign Wealth Funds?

Sovereign wealth funds are:

- Vehicles to manage public sector financial assets, with or without specific policy objectives.
- Predominantly engaged in cross-border investments.
- Have an investment strategy that tends to aim for higher returns than short-term risk-free instruments.
- Are closely linked to and dependent on foreign exchange inflows, either through external current account surpluses or capital inflows.

Source: IFC, *Sovereign Wealth Funds in the Pacific Island Countries: Macro-Fiscal Linkages*. Available at: <http://www.imf.org/external/pubs/ft/wp/2007/wp07297.pdf>.

**Figure 3. Proposed Hierarchy of Financing Initiatives in AOSIS**



## 5.5 Partnering for Progress

Clearly, financing adaptation for climate change in SIDS is beyond the scope and capabilities of any one organization; it will involve partnerships among several entities to achieve scale-up. More creative leveraging of public and private sector resources will be needed to meet the financing adaptation requirements, including private resources, incremental official development assistance (ODA), GEF, carbon financing, etc. Potential partners and their roles could include:

- *SIDS governments* (national and sub-national) will need to commit to the importance of adaptation and link these practices into national development programs and strategies including the MDGs. More work needs to be done to ensure that island states and other vulnerable countries have developed National Adaptation Plans of Action that take account of both the country's environmental AND economic vulnerabilities. Adaptation Plans must be mainstreamed into national economic development plans that ensure the ongoing and improved global competitiveness of that country in the face of Climate Change and the realities of globalization. Governments will need to link adaptation into cross-sector projects and programs in the areas of agriculture, health, water, communications, and micro-enterprise development and coordinate these activities with key financing agencies. Governments will also be responsible for establishing policy and regulatory frameworks that will reduce market-entry barriers for the private sector and stimulate investment. Moreover, government agencies will have a key role in co-financing projects, providing in-kind support, and supporting education and outreach to civil societies about the need for adaptation planning and implementation.
- *Multilateral development organizations* –including the World Bank, regional development banks, and UN agencies–have a strong role to play in tying investments to adaptation strategies and principles, providing risk-mitigation facilities to help stimulate local financing sources, and offering technical assistance, training, capacity building, and policy support. These organizations can also help to document and disseminate best practices and lessons learned. Additionally, they could support monitoring and evaluation activities to measure the impacts of adaptation practices.

### Costs of Adaptation Measures in the Maldives<sup>32</sup>



In Maldives, the innovative *Safer Islands* project, has involved moving people to outer islands as a protection mechanism from the impacts of flooding and large waves. This relocation has cost over \$175 million. A system of protective barriers (called tetrapods) was built at a cost of US\$ 4,000 per meter. Although this was largely financed by the Japanese government, the project diverted much-needed development aid from other key socio-economic priorities. With projected changes in climate and sea level, maintaining and enhancing such protective structures will be difficult with only domestic financial resources.

- *Bilateral donors* will be instrumental in providing financial resources, technical assistance, and capacity building for adaptation practices in SIDS. They can also provide critical support for building international industrial capacity while promoting sustainable local market growth.
- *The private sector* can take a leadership position in working with governments and local partners on the design, development, and implementation of adaptation technologies, products, projects, and services. The private sector also provides needed investment support in building market-based solutions to adaptation issues. In so doing, they can build local entrepreneurial capacities and transfer beneficial technologies.
- *Civil society* will be a key player in the design and implementation of adaptation projects since they will be the key beneficiaries and have the most to lose or gain from actions taken. Thus, it will be important to engage them early and often in decision-making processes.
- *NGOs* will play an important role in technical assistance and training. They will help bridge the gap between governments and the private sector on adaptation practices, make critical linkages to cross-sector applications, and strengthen local organizations in project development and implementation.

Examples of potential partnerships may include:

- Partnerships that enable the *mainstreaming of climate change decision making into all business processes*. That is, the full incorporation of climate changes as a decision factor for business planning and strategies, portfolio management and investments, risk and insurance management, and at

<sup>32</sup> Op.cit. UNFCCC, 2005: 27.

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individual economic transactions (e.g., regional compacts between governments and the banking industry).

- Partnerships that can result in the *development of products and services for the new climate-sensitive and climate-resistant markets*. It is anticipated that there will be new opportunities for products and services (including investment and advisory services), which will come into being as SIDS and other countries increasingly implement adaptation practices (e.g., climate sensitive investment advisory services run for, and by SIDS specific actors).
- Partnerships between *private sector entities (banking, insurance, tourism and trade) and national civil society actors* to facilitate the effective implementation of innovative climate change adaptation and risk-management practices (e.g., climate-proofing tourism in SIDS and community-based climate change adaptation).
- Partnerships focused on *responding to “worst case” climate change scenarios and disasters*, including planning and risk assessment by banking, insurance, and infrastructure-related industries and public sector entities. (e.g., extending the Catastrophe Risk Insurance Facility through small and micro-enterprises).

**Figure 4. Partnering for Success in SIDS**



## 6. CONCLUSIONS

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AOSIS is calling for action among the international community on the importance of climate change and the need to address the adverse impacts at the global, national, and sub-national levels. This has been highlighted in the IPCC and other reports and in such international forums as the UNFCCC.

To respond to climate change, two key responses are in play: *mitigation* practices to tackle the causes of global warming and reduce GHG emissions, and *adaptation* activities to cope with its effects. This Green Paper recognizes the important role of each of these measures, yet places particular emphasis on adaptation since this is a priority for SIDS and there has been significantly less attention on this field by the international community.

SIDS nations, though least responsible for climate change, will be the hardest hit by its effects. Impacts are already being experienced in terms of increased desertification, more severe droughts, changing ecosystems, reduced crop yields and food security, increased flooding and storms, enhanced diseases, rising sea levels, increased water stress, and decreased fishery outputs. Given the low levels of income in many SIDS, these activities have a severe affect on local economies, poverty levels, and quality of life.

Adaptation provides an important means of increasing resilience and reducing vulnerability to observed or expected impacts of climate change. Yet, this will come with short- and long-term costs. The changes include: diversifying crops, changing tilling practices, and building storage facilities in the agricultural sector; promoting less intensive water industries and upgrading water treatment and distribution facilities in the water sector; creating early warning systems and managing risks to reduce disasters; and retrofitting coastal zones to resist storm damage, build sea walls; and relocate people to safer locations. The question is, “Who pays?”

This paper focused on the need to expand financing sources for adaptation, while addressing related issues in the areas of policy and regulatory support, capacity building, and education and outreach. A limited of number of financing options exist that are dedicated to adaptation; others are in development. Yet these sources are not at the scale or magnitude needed to address the problem. A range of players will need to engage in this process, including SIDS governments (national and sub national), multilateral and bilateral organizations, the private sector, the international investment community, local financial institutions, industry, and civil society. Partnerships will be key. Innovation is required and timeliness is of the essence.

This paper outlined a range of activities that can be taken to increase funding for adaptation, leverage existing financing sources, and improve the investment climate. These include: developing a portfolio of sector specific projects (e.g., agriculture, tourism); working with MDBs, bilaterals, and other funders to apply

climate resistant conditionalities to their lending operations and facilitate risk mitigation funding to spur local lending for adaptation; creating a global green finance facility and electronic hub; developing creative carbon finance streams and a remittance network; establishing offshore green finance services, an island stock exchange, and sovereign wealth funds; and setting up living laboratories for renewable energy in island nations.

SIDS is committed to moving forward on adaptation practices and welcomes the participation of others in these activities. These countries are already taking practical steps, including putting in place appropriate policy and regulatory measures; linking adaptation to broader national strategies, plans, and MDG goals and objectives; establishing stronger monitoring networks; and implementing risk management practices. Several countries and organizations have committed their support. Today's challenge is to turn commitments into action and promises into results.

This Green Paper provides the basis for discussions by AOSIS on climate change and SIDS and hopefully, will facilitate the creation of long-lasting partnerships to address adaptation issues and improve the position of SIDS in the global marketplace.

## ANNEX I: SIDS Specific Regional and Sub-regional Climate Change Related Institutions and Entities Working in the Area of Climate Change

### **Association of Caribbean States (ACS):**

The objectives of the Association of Caribbean States, formed in 1994, are to strengthen regional cooperation and the integration process in order to enhance economic capacity, preserve environmental integrity and promote sustainable development among its members. Of relevance to adaptation to climate change are the special committees on sustainable tourism and natural disasters. For additional information: [www.acs-aec.org](http://www.acs-aec.org)

### **Caribbean Community (CARICOM)**

In 1972, Commonwealth Caribbean leaders at the Seventh Heads of Government Conference decided to transform the Caribbean Free Trade Association (CARIFTA) into a Common Market and establish the Caribbean Community (CARICOM). CARICOM provides an important regional framework for climate change action because CARICOM has oversight over several regional institutions (see below) working in the areas of climate change and disaster management. For additional information: [www.caricom.org](http://www.caricom.org)

- **Caribbean Community Climate Change Centre (CCCCC):** The Caribbean Community Climate Change Centre coordinates the Caribbean region's response to climate change. Officially opened in August 2005, the Centre is the key node for information on climate change issues and on the region's response to managing and adapting to climate change in the Caribbean. It is the official repository and clearing house for regional climate change data, providing climate change-related policy advice and guidelines to the Caribbean Community (CARICOM) Member States through the CARICOM Secretariat. For additional information: <http://caribbeanclimate.bz/news.php>

- **Caribbean Disaster Emergency Response Agency (CDERA):**

CDERA coordinates regional disaster management activities. It was established in 1991 and is located in Barbados. Functions of the CDERA include: collecting and circulating to interested governmental and non-governmental organizations, comprehensive and reliable information on disasters affecting the region; eliminating as far as possible, the consequences of disasters affecting participating states establishing and maintaining on a sustainable basis, adequate disaster response capabilities among participating states; and mobilizing and coordinating disaster relief from governmental and non-governmental organizations for affected participating states. For additional information: <http://www.cderra.org/>

**Global Islands Network (GIN):**

The GIN aims to serve as a hub that connects and coordinates efforts to help ensure a healthy and productive future for islanders. GIN brings together islanders and partner organizations, borrowing as well as replicating best practices to tackle sustainable development problems, and problems such as sea-level rise, the cause of which is beyond the control of small island states. For additional information: [www.globalislands.net](http://www.globalislands.net)

**Organization of Eastern Caribbean States (OECS):**

The Natural Resources Management Unit of the Organization of Eastern Caribbean States was established in 1986 to coordinate environmental activities on behalf of the OECS Secretariat. The unit is now called the Environment and Sustainable Development Unit (ESDU). The ESDU is the entity within the OECS Secretariat that is responsible for the provision of natural resource and environmental management services to the member states of the OECS. The mandate of the OECS-ESDU is to assist member-states in all matters pertaining to the sustainable use of natural resources to ensure the sustainability of livelihoods of the peoples of the OECS. For additional information: <http://www.oecs.org/esdu/index.html>

**Pacific Islands Forum (PIF):** The Pacific Islands Forum, formerly the South Pacific Forum until a name change in October 2000, was founded in August 1971 and comprises 16 independent and self-governing states in the Pacific. The Forum is the region's premier political and economic policy organization. Forum Leaders meet annually to develop collective responses to regional issues. The Forum's agenda is based on reports from the PIF Secretariat and related regional organizations and committees, as well as other issues that members may wish to raise. Decisions by the Leaders are reached by consensus and are outlined in a Forum Communiqué, from which policies are developed and a work program is prepared. For additional information: [www.forumsec.org.fj](http://www.forumsec.org.fj).

**Secretariat of the Pacific Regional Environment Programme (SPREP)**

SPREP is a regional organization established by the governments and administrations of the Pacific region to look after its environment. SPREP's **mandate** is to promote cooperation in the Pacific islands region and to provide assistance in order to protect and improve the environment and to ensure sustainable development for present and future generations. SPREP has 21 Pacific island member countries and four countries with direct interests in the region. SPREP operates two programs: [Island Ecosystems](#) and [Pacific Futures](#). For additional information: <http://www.sprep.org/>

**Secretariat of the Pacific Community (SPC):**

The SPC works in partnership with its members, other organizations and donors to deliver priority work programmes to member countries and territories. The SPC's work programmes aim to develop technical assistance, professional, scientific and research support, planning and management capability building. The focus of SPC's work can and does change over time in response to evolving

regional needs and collaborative arrangements with other regional organisations. SPC is the only bilingual (English/French) regional organisation covering all 22 countries and territories of the Pacific. For additional information: [www.spc.org.nc](http://www.spc.org.nc)

**SIDSnet:**

SIDSnet is an information network that was created in 1998 as a way of facilitating communication among SIDS to assist them in the implementation of the sustainable development goals enshrined in the Barbados Programme of Action. SIDSnet aims to form partnerships through the internet and other information and communication technologies. For additional information: [www.sidsnet.org](http://www.sidsnet.org).

**Pacific Islands Applied Geoscience Commission (SOPAC):**

SOPAC is an inter-governmental, regional organisation dedicated to providing products and services in three technical programme areas: ***Ocean and Islands*** is an integrated programme focused on research, development and management of non-living resources in ocean and island systems addressing issues relating to seabed resources, energy, maritime boundary delimitation and monitoring of ocean processes; ***Community Lifelines*** is a diversified programme that strengthens national capacities in energy, water and sanitation, information and communications technologies; ***Community Risk*** is a comprehensive programme aimed at reduction of community vulnerability through improved hazard assessment and risk management. For additional information: <http://www.sopac.org/tiki/tiki-index>.

***Key University and Research Institutes working on SIDS and climate change issues:***

- Pacific Islands Development Program (East-West Centre), United States;
- International Global Change Institute at the University of Waikato, New Zealand;
- University of Malta - Islands and Small States Institute, Malta;
- The Universities Consortium of Small Island States, (UCSIS), multi-country;
- University of West Indies Centre for Environment and Development (UWICED), UWI Mona, Jamaica.
- Tyndall Centre for Climate Change Research, United Kingdom of Great Britain and Northern Ireland.

***Intergovernmental organizations also have specific programs/units focusing on SIDS and small states such as:***

- SIDS Unit of the UN Department of Economic and Social Affairs (UNDESA)
- Caribbean Environment Programme and Regional Programmes of UNEP
- Small States Forum (World Bank)
- Coastal Regions and Small Islands platform of UNESCO