



**UNEP's Assistance in the Implementation of the
Barbados Programme of Action
For the Sustainable Development of Small Island Developing States (SIDS)**



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Acronyms and Terms

AMCEN	African Ministerial Conference on the Environment
AOSIS	Alliance of Small Island States
BPSP	Biodiversity Planning Support Programme (BPSP)
CAR/RCU	Caribbean Regional Coordinating Unit (CAR/RCU)
CARICOM	Caribbean Community
CAST	Caribbean Action for Sustainable Tourism
CBD	Convention on Biological Diversity
CDI	Capacity Development Initiative
CEN	Caribbean Environmental Network
CEP	Caribbean Environmental Programme
CHA	Caribbean Hotel Association
CITES	Convention on International Trade in Endangered Species
CORAL	Coral Reef Alliance
CPAC	Centro de Pesquis Agropecuarua dos Cerrados
DEWA	Division of Early Warning and Assessment
DFID	Department for International Development (formally ODA)
DTIE	Division of Technology, Industry and Economics (UNEP)
EEZ	Exclusive Economic Zones
EO	Environment Outlook
EST	Environmentally Sound Technologies
FAO	Food and Agricultural Organisation
GA	General Assembly
GCRMN	Global Coral Reef Monitoring Network
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GEO	Global Environment Outlook
GESAMP	Group of Experts on the Scientific Aspects of Marine Environmental Protection
GIWA	Global International Water Assessment
GIWA	Global International Waters Assessment
GMA	Global Marine Assessment
GNP	Gross National Product
ICRAN	International Coral Reef Action Network
ICRI	International Coral reef Initiative
ICRIN	International Coral Reef Information Network
IMO	International Maritime Organization
IOC	Indian Ocean Commission
IPCC	Intergovernmental Panel on Climate Change
IPGRI	International Plant Genetic Resources Institute
IWM	Integrated Waste Management
LDC	Least Developed Countries
MDGs	Millennium Development Goals
MEAs	Multilateral Environmental Agreements

MPA	Marine Protected Area
NAPA	National Adaptation Programmes of Action
NBSAP	National Biodiversity Strategy and Action Plan
NGOs	Non-Government Organizations
NOU	National Ozone Unit
OCHA	Office for the Coordination of Humanitarian Affairs
OECS	Organisation of Eastern Caribbean States
PADH	Physical Alteration and Destruction of Habitats
POA	Programme of Action
POI	Plan of Implementation
POPs	Persistent Organic Pollutants
RCU	Regional Coordinating Unit
ROA	Regional Office for Africa
ROAP	Regional Office for Asia and the Pacific
ROLAC	Regional Office Latin America and the Caribbean
ROWA	Regional Office West Asia
SACEP	South Asia Cooperative Environment Programme
SAS	South Asian Seas
SIDS	Small Island Developing States
SOPAC	South Pacific Applied Geoscience Commission
SPAW	Specially Protected Areas and Wildlife
SPREP	South Pacific Regional Environment Programme
UNCED	United Nations Conference on Environment and Development
UNCLOS	United Nations Convention on the Law of the Sea
UNCTAD	United Nations Conference on Trade and Development
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational Scientific and Cultural Organization
UNF	United Nations Foundation (UNF),
UNFCCC	United Nations Framework Convention on Climate Change
UWICED	University of the West Indies Centre for Environment and Development
WCMC	World Conservation Monitoring Centre
WCR	Wider Caribbean Region
WHO	World Health Organization
WMO	World Meteorological Organization
WPS	World Population Society
WRI	World Resources Institute
WSSD	World Summit on Sustainable Development
WTO	World Tourism Organization
WTO ₁	World Trade Organization
WWF	World Wildlife Fund

EXECUTIVE SUMMARY

The report highlights UNEP's activities in assisting Small Island Developing States in implementing the Barbados Programme of Action (BPoA), 1994, for the Sustainable Development of SIDS. As a group, SIDS share several characteristics, which make them economically, environmentally, and socially more vulnerable to factors of which they exercise little or no control. Accordingly, the combination of these shared features places SIDS at a distinct disadvantage compared to larger countries. During the World Summit on Sustainable Development (WSSD), 2002, the special sustainable development needs of SIDS were reaffirmed and the WSSD Plan of Implementation requested for a full and comprehensive review of the implementation of the SIDS/Programme of Action (POA) and called for a Barbados + 10 International Meeting in 2004.

This report, among other issues, summarizes:

1. UNEP's contribution towards implementing the priority activities of the BPoA which include climate change and sea level rise, biodiversity, natural and environmental disasters management, management of wastes, freshwater resources, coastal and marine resources, and tourism resources;
2. The contribution of UNEP towards implementing the previously mentioned priority activities of the SIDS/POA;
3. The contribution of UNEP towards implementing cross cutting areas such as multilateral and non-binding agreements, environmental vulnerability index, and capacity building;
4. The general policy of UNEP in each BPoA priority area, identifying the substantive issues for SIDS and outlining the response of UNEP to these issues, and considering future challenges.

Finally the report provides an overview of future directions or challenges facing UNEP in advancing the implementation of the SIDS/POA. These include:

- **Climate change:** adaptation options needed to be evaluated in terms of benefits to cost ratio as the next logical step. This would have a high payoff to SIDS because financial constraints limit the portfolio of technically feasible options;
- **Biodiversity:** the WSSD agreed to achieve by 2010 a significant reduction in the current rate of loss of biological diversity. It was also noted that UNEP-WCMC has developed a proposal to produce a Regional Plan of Action for illegal, unreported and unregulated fishing in the WCR;
- **Coastal and marine resources:** it was observed that UNEP had developed a comparative advantage in this area and is expected to continue to engage with national, regional and global partners on all matters concerning coastal and marine interests of SIDS;
- **Disaster management:** an increased role was seen for the international community in terms of providing tangible assistance to SIDS to develop comprehensive and integrated land use and water management strategies capable of alleviating the impact of natural hazards, establish reliable forecasting, early warning and notification systems linking island states within the same region, increase understanding through education and raising awareness among communities on disaster prevention and preparedness strategies, and incorporate indigenous knowledge and traditional coping strategies in prevention, preparedness and response to enhance

community self-reliance in dealing with disasters among others;

- **Waste management:** it was noted that all SIDS had adopted policies and strategies for addressing the waste management problem, however these have not been fully implemented. UNEP can facilitate implementation through pilot projects in partnership with SIDS institutions and other agencies to test and demonstrate the applicability of the guidelines;
- **Water resources management:** it was emphasized that continued improvement is fundamental and requires a co-coordinated effort across many sectors such as watershed management; strategies aimed at reducing deforestation rates; raising public awareness of wise water use and management and improvements in waste disposal, especially sewage

As aforementioned, the issue of vulnerability was first raised in the context of the Global Summit on the Sustainable Development of SIDS held in Barbados in 1994, and it was perceived that these countries were at a disadvantage in relation to other countries because of their greater economic,

environmental and social vulnerability. Therefore, SIDS, with the support of the UN, expressed the desire, in paragraphs 113 and 114 of the SIDS/POA, of having a vulnerability index integrating ecological fragility and economic vulnerability developed to reflect the status of their countries. UNEP has concentrated on providing support to the development of Environmental Vulnerability Index (EVI) that is robust, operational and provides a relatively quick and inexpensive way of characterizing the vulnerability of natural systems. Despite the efforts in developing vulnerability indexes, at the present time there is no agreement on a simple, robust and widely accepted composite index that comprises the following:

1. An operational tool in helping SIDS to make the case differential treatment by the international development community and the WTO;
2. Basis for determining which countries are granted graduation from LDC status;
3. Assist in distinguishing vulnerability from poverty or economic backwardness.

CHAPTER 1

Why Should UNEP Focus on Small Island Developing States

Over the past decade sustainable development has occupied center stage in discussions pertaining to development strategies at the national, regional and global levels. The idea of sustainable development was endorsed at the *United Nations Conference on Environment and Development (UNCED) also referred as the Earth Summit* in Rio de Janeiro (1992), the *United Nations Global Conference on Sustainable Development of Small Island Developing States* in Barbados (1994) and the *World Summit on sustainable Development* convened in South Africa (2002).

The core of the sustainable development paradigm is the understanding and commitment by policymakers and practitioners that economic development is inextricably linked with environmental sustainability. This relationship is critical since the evidence suggests that in most countries environmental and natural resource indicators have worsened at the same time when traditional measures of economic development indicated progress. The important point to grasp is that economic development as a measure of human welfare is unsustainable in the presence of persistent deterioration in environmental and natural resource capital.

The international community, in numerous pronouncements, has emphasized the special sustainable development needs of Small Island Developing States (SIDS)¹. For most development practitioners the special considerations accorded to SIDS with respect to their sustainable development needs are quite obvious. However, to many, the justification might not be as obvious, thus requires some elaboration.

¹ See Table 1 (p.55) for UNDESA list of SIDS

As a group, SIDS share several characteristics, which makes them economically, environmentally, and socially more vulnerable to shocks over which they exercise little or no control. Accordingly, the combination of these shared features places SIDS at a distinct disadvantage compared to larger countries (Commonwealth Secretariat, 1997; UNEP 1999a; UNEP 1999b; UNEP 1999c; UNEP 1999d). Researchers have estimated vulnerability indices for a wide range of countries at different stages of development and concluded that SIDS are consistently more vulnerable relative to larger countries (Briguglio, 1997; Chander, 1996; Commonwealth Secretariat, 1997; Pantin, 1997; UWICED, 2002).

In terms of economic vulnerability, SIDS face the daunting challenge of sustaining development given their geographic dispersion, small domestic markets, low economic diversification, high dependence on traditional primary exports, and inability to capture scale economies in industry, education, health, public utilities, public administration, and other infrastructure. In particular, small size makes them highly uncompetitive, dependent on and vulnerable to the vagaries of external forces such as globalization and climate change.

The characteristics of SIDS explaining for their greater environmental vulnerability include: extremely fragile natural ecosystems (coral reefs, wetlands, fresh water, coastal and marine areas, forest and soil resources), topography, geographic isolation, high population densities combined with poverty, excessive dependence on environmental assets, exposure to frequent and extremely damaging natural disasters, and exposure to global climate change (SPREP 1992, Thistlethwaite and

Votaw 1992, UNEP 1999c, UNEP 1999d). The wide range of natural and anthropogenic forces operating on the environment of SIDS damages them at rates and intensities above those found on continents. The human and natural environments of SIDS exhibit limited capacity to absorb shocks and recover from them. Consequently, the impact of natural disasters is more pronounced than it would be on countries with larger landmasses. It is this greater susceptibility to environmental damage that sets SIDS apart from their larger counterparts. Greater environmental vulnerability in turn translates into greater impediments to sustainable development.

Social vulnerability reflects the extent to which societies or socio-economic groups are affected negatively by stresses and hazards brought about by external forces or intrinsic factors (internal and external) that impact the social cohesion of a state. While the social vulnerabilities caused by these stresses are no more endemic to SIDS than to other developing countries, the natural recurrence rate in SIDS is higher. Given SIDS's limited capacity to respond adequately, the social impact of such stresses could literally last indefinitely. Social vulnerability is increased by factors such as criminal activities (national or trans-national), growing rates of infectious diseases (e.g., HIV/AIDS), growing rates of children dropping out of school, declining age of prison population, declining public health, decaying public infrastructure and migration of skilled professionals.

Another factor, which justifies special considerations to the development needs of SIDS, is the interdependence between economic activities and ecology that is evident throughout SIDS. In one out of every four SIDS agriculture contributes more than 20 per cent of the gross domestic product (GDP), for example, Cape Verde, Comoros, Dominica, Dominican Republic, Tonga, and Samoa. In general, the scale of agriculture ranges from plantation (sugarcane and banana) to subsistence (roots, tubers). Similarly,

in these states agriculture is the principal source of employment and with few exceptions, the major source of income and export earnings. Further, the future of the main export crops (sugar and bananas) is extremely uncertain as trade preferences on which they rely are progressively eliminated as a consequence of rapid and indiscriminate trade liberalization. Subsistence agriculture, the mainstay of the peasantry, is also facing aggressive import competition brought about by forces of trade liberalization.

Tourism is by far the fastest growing economic sector in all SIDS regions. Earnings from tourism as a proportion of total exports exceeded 20 per cent in 19 SIDS, it exceeded 30 per cent in 13 cases, and 40 per cent in 8 cases. In the case of Antigua, Bahamas, Saint Lucia, Maldives, Barbados, and Saint Kitts the proportions are 86, 84, 75, 70, 59, and 52 per cent, respectively (Commonwealth Secretariat, 2001). Yet tourism also often spoils the very environment on which it depends, such as mangroves and wetlands destroyed for development, yachts and divers damaging coral reefs, and raw sewage discharge by hotels and cruise ships into the sea.

In principle, SIDS exercise control over extensive ocean areas in their exclusive economic zones (EEZ). Although SIDS harvest only a minuscule proportion of its fisheries resources, there is nonetheless evidence of over-fishing, hence the need for management and monitoring of fisheries/marine resources. The problem of managing the vast EEZs are especially acute, for instance, in an archipelago like Kiribati, the EEZ is 3.6 million square kilometers whereas the country's total land area is less than 1,000 square kilometers.

In those SIDS where agriculture is the dominant economic activity, their present and future productivity will be determined by the quality of soil and freshwater resources. Those where tourism and fisheries are the major industries are expected to utilize their marine and coastal environments intensively. It is therefore easy to

understand that further tourism, agricultural or fisheries development without the necessary environmental and social safeguards will be destabilising. Already, high population densities in many SIDS have increased the pressures on land resources and wildlife; intensified demand for facilities to deal with solid and liquid waste management (land and sea); contributed to the degradation of coastal areas adversely affecting beaches, mangroves and coral reefs; and unsustainable use of scarce freshwater resources.

It is clear that SIDS need assistance in managing their rich biodiversity, given their immense actual and potential value to present and future sustainable development. Specifically, the genetic diversity of SIDS has implications not only for individual SIDS and the respective SIDS regions, but the global population. The biodiversity resource endowment of SIDS are important components of the global pool in terms of production of goods (food, medicines, building materials, and human health) and services (air and water purification, waste detoxification and decomposition, climate stabilization, flood and drought moderation, seed dispersal and plant pollination, soil fertility renewal, and nutrient recycling) that the earth's ecosystems can provide and that make economic prosperity and human survival possible. In short, biodiversity is the very basis for sustainable development.

1.1 SIDS in the International Agenda

The special development needs of SIDS received an unprecedented boost at the *Earth Summit* (1992). This international conference was attended by representatives of 176 governments (UN, 1993), more than 100 heads of state compared to those who attended the 1972 Stockholm Conference (Haas, Levy and Parson, 1992), and an estimated 10,000 delegates, 1,400 non-governmental organizations and about 9,000 journalists (Demkine, 2000). In Chapter 17 of Agenda 21, the international community explicitly

recognized the special constraints to the sustainable development of SIDS. This recognition led to the Global Conference for the Sustainable Development of SIDS in Barbados (1994), where the Programme of Action (POA) for the Sustainable Development of SIDS (SIDS/POA) was adopted. The SIDS/POA translates Agenda 21 into specific policies, actions and measures to be taken at the international, regional and national levels to enable SIDS to address those constraints and achieve sustainable development.

BOX 1

The mission of UNEP is to provide leadership in setting environmental agendas, and promote the environmental dimensions of sustainable development within the UN system. Since UNEP became the leading voice for the environment within the UN system in 1972, it has developed global partnerships with specialized UN entities, private sector organizations, governments, NGOs, academic and research institutions. Through its regional and out-posted offices, UNEP has established effective geographical presence and closer links with regional ministerial fora. This network enables UNEP to deliver a wide range of environmental services such as accessible environmental information based on the best science; developing policy instruments and coordinating Multilateral Environmental Agreements (MEAs); working with governments and the private sector to promote best practices and clean technology transfer; communicating the environmental message and working with civil society to maintain the momentum for change; and collaborating with other UN entities.

UNEP has the global and cross-sectoral perspectives to efficiently address the sustainable development needs of SIDS. Unlike other parts of the UN system, UNEP has privileged links with all SIDS through its Regional Offices and the Regional Seas Programmes and can build an effective and productive work programme for SIDS.

The SIDS/POA identifies UNEP, UNDP, UNCTAD and UNESCO as the key UN organizations for implementing its activities. Another important outcome of the Barbados meeting was the establishment of a SIDS Unit by the United Nations Department of Economic and Social Affairs (DESA) within the Division for

Sustainable Development to oversee implementation of the SIDS/POA.

The role of UNEP is described in the SIDS/POA - Chapter V, Organs, programmes and organizations of the UN, paragraph 125 which states: "As set forth by Agenda 21, UNEP, taking into account development perspectives, should continue to provide policy guidance and co-ordination in the field of environment, including in the implementation of the SIDS/POA".

A significant number of multinational environmental agreements and protocols have also explicitly recognized the special sustainable development needs of SIDS. For example, the Convention on Biological Diversity (CBD) notes the special conditions of SIDS in its preamble and refers to them specifically in paragraph 6 of its Article 20 on financial resources, which states that "the Contracting Parties shall also take into consideration resulting from the dependence on, distribution and location of, biological diversity within developing country Parties, in particular small island states". The Biosafety Protocol and related processes also draws particular attention to the special needs of SIDS. For example, paragraph 1 (b) of Article 20 on the Biosafety Clearing House, paragraph 1 and 2 of Article 22 dealing with capacity building, and paragraph 3 of Article 28 again dealing with capacity building.

To help implement its global mandate on environmental stewardship, UNEP has taken the strategic decision of operating through six regional Offices, one each in Africa (ROA), Asia and the Pacific (ROAP), West Asia (ROWA), Latin America and the Caribbean (ROLAC), North America (RONA) and Europe (ROE). UNEP also services a number of regional ministerial forums dealing with the environment, in most cases the secretariats of these fora are housed within UNEP's regional offices. Strategically, the regional presence of UNEP ensures that regional priorities are represented in the UNEP work programme and that global

concerns are represented in the work at all levels in the regions. It also facilitates full programme coordination during implementation in the regions and policy coherence during planning and implementation.

The scientific authority of UNEP is enhanced by its policy decision to build and sustain a large network of research and monitoring centers with demonstrated competency in their areas of specialization. Examples include, WMO, IPCC, UNEP-WCMC, WTO, ICRAN, IMO, IPGRI, SACEP, SPREP, United Nations entities, NGOs, research institutions, and Universities. Through this network UNEP is able to target its environmental capacity building activities at all levels, from the regional to the national. Another strategy for effective capacity building is the establishment of national committees and focal points at the country level, traditionally located in departments of the environment but with broad representation.

1.2 Reviews of the SIDS/POA

Based on the 1999 review of the SIDS/POA, the General Assembly adopted the Declaration "State of Progress and Initiatives for the Future Implementation of the Programme of Action for the Sustainable Development of SIDS". The declaration called for urgent actions to address - climate change; natural and environmental disasters and climate variability; freshwater resources; coastal and marine resources; energy; and tourism. However the report reiterated that implementation of the SIDS/POA must not be limited to the sectoral approach, since successful implementation can be accelerated by progress in the cross-cutting and inter-linked areas such as capacity building, facilitating transfer of environmentally sound technology and strengthening institutional arrangements. The review further notes that SIDS will require the UN system to make more effective use of existing resources, explore possibilities for mobilizing new financial resources and improve coordination

mechanisms for the harmonized delivery of support for priorities relevant to SIDS.

1.3 World Summit on Sustainable Development (WSSD)

During the WSSD (2002), the special sustainable development needs of SIDS were reaffirmed. The Plan of Implementation (POI) encouraged the international community to assist SIDS in managing, in a sustainable manner, their coastal areas and EEZs, as well as relevant regional management initiatives within the context of UN Convention on the Law of the Sea and UNEP regional Seas programmes. Priority issues identified at WSSD included sustainable tourism, marine and coastal biodiversity, fisheries, freshwater, waste and pollution, natural disasters, trade, vulnerability indices, climate change, intellectual property, energy, and health care. The WSSD POI requested for a full and comprehensive review of the implementation of the SIDS/POA and called for a Barbados + 10

International Meeting in 2004. Table 2 below lists the main events regarding SIDS.

The remainder of this document is divided into three Chapters. Chapter 1 summarizes the contribution of UNEP towards implementing of the priority activities of the SIDS/POA. These include - climate change and sea level rise; biodiversity, natural and environmental disasters management; management of wastes; freshwater resources; coastal and marine resources; and tourism resources. The third Chapter summarizes the contribution of UNEP towards implementing cross cutting areas such as multilateral and non-binding agreements, environmental vulnerability index, and capacity building. In discussing the sectoral priorities and the cross-cutting issues, the framework adopted involves summarizing the general policy of UNEP in each area, identifying the substantive issues for SIDS and outlining the response of UNEP to these issues, and considering future challenges. The final Chapter (4) provides an overview of future directions or challenges facing UNEP in advancing the implementation of the SIDS/POA.

Table 1. Chronology of International Discussions and Meetings Concerning SIDS

Year	Meeting	Relevant output
1992	UN Conference on the Environment and Development (UNCED)	Agenda 21 features a programme area on Sustainable Development of Small Islands (Chapter 17G)
1994	Global Conference for Small Island Developing States, Barbados	Programme of Action for the Sustainable Development of SIDS adopted (SIDS/POA)
	United Nations Department of Economic and Social Affairs, Division for Sustainable Development	Created SIDS Unit to oversee implementation of the SIDS/POA
1996	Fourth Session of the Commission for Sustainable Development (CSD)	Progress in implementing some thematic areas of the SIDS/POA was reviewed
1997	Nineteenth special session of the General Assembly (23-27 June)	<ul style="list-style-type: none"> • In context of the further implementation of Agenda 21 in areas requiring urgent action, also reviewed SIDS' issues • Requested that the CSD at its sixth session in 1998 undertake a review of all the outstanding chapters and issues of the SIDS/POA
1998	UNDP/ADB sponsored SIDS meeting, Seychelles Mahe Declaration for African SIDS	Facilitate African SIDS integration into the global economy within the framework of the SIDS/POA emphasising improved land-use, pollution reduction and management, drought and flood monitoring, irrigation, groundwater evaluation and management
1998	Ministerial Meeting on the SIDS/POA (Indian Ocean, Mediterranean and Atlantic), Malta Valletta Declaration	Declared actions to be taken at the national, regional and international level; stressed the promotion of awareness and regional co-operation and highlighted the importance of climate change to SIDS
1999	Twenty Second Special session of the General Assembly held immediately preceding the fifty-fourth session of the Assembly	In-depth assessment and appraisal of the implementation of the SIDS/POA and CSD was requested to serve as a Prep-Comm for that special session
2000	Fifty fifth Session of the General Assembly	Adoption of resolution 22/202 on the further implementation of the outcome of the SIDS/POA
2002	Meeting of the Small States Forum, World Bank, Washington	Meeting of SIDS delegates of the Small States Task Force Report Agenda and Trade Issues
2002	World Summit on Sustainable Development	The POI called for the continued attention to the developmental needs of SIDS
2003	Regional Preparatory Meetings in Preparation for the International Meeting in Mauritius for the Comprehensive Review of the BPOA	<ul style="list-style-type: none"> • Pacific SIDS, Apia, Samoa 4-8 August • Caribbean SIDS, Port of Spain, Trinidad and Tobago 18 to 22 August • Atlantic, Indian Ocean, Mediterranean and South China Seas SIDS, Praia, Cape Verde 1 to 5 September
2004	Inter-Regional Preparatory meeting for the Preparation for the International Meeting in Mauritius, with ministerial participation, for all SIDS	<ul style="list-style-type: none"> • Nassau, Bahamas 26 to 30 January

Table 2. Relationship between the UNEP International Waters Projects and the Priority Areas of the SIDS/POA

PROJECTS	CARIBBEAN SIDS				AFRICAN SIDS			
	Integrating Watershed and Coastal Area Management in Small Island Developing States of the Caribbean.	Demonstrations of Innovative Approaches to the Rehabilitation of Heavily Contaminated Bays in the Wider Caribbean Region	Reduction of environmental impact from tropical shrimp trawling through the introduction of by-catch reduction technologies and change of management	A Participatory Approach to Managing the Environment: An input to the Inter-American Strategy for Participation (ISP)	Development and Protection of the Coastal and Marine Environment in Sub-Saharan Africa	Addressing land-based activities in the Western Indian Ocean (incl. TDA and SAP updates) (WIO-LaB)	Preparation of a Programme for the Protection of the Canary Current Large Marine Ecosystem (LME)	Combating Coastal Areas Degradation And Living Resources Depletion In The Guinea Current LME Through Regional Actions
Climate change and sea level rise	*				*			*
Natural and environmental disasters	*	*	*			*		*
Management of wastes	X	X			*	X	*	X
Management of coastal and marine resources	X	X	X	X	X	X	X	X
Freshwater resources	X	X		X	X	X	*	*
Land resources	X				X	X	*	X
Energy resources					*	*		
Tourism resources					*	*		
Transport					*	*	*	*
Biodiversity resources	X	*	X	X	X	X	X	X
National instit. and administrative capacity	X	X	X	X	X	X	X	X
Regional institutions and technical cooperation	X	X	X	X	X	X	X	X
Science and technology	X	X	X	X	*	X	X	X
Human res. devel.	X	X	X	X	X	X	X	X

CHAPTER 2

UNEP Response to the Programme of Action for Small Island Developing States

It needs to be emphasized at the outset, that although the sectors are discussed separately, there are substantial degrees of integration. This is made clear by referring to Table 3, which shows the integration of the UNEP international Waters Projects and the SIDS/POA priority areas. For instance, biodiversity is integrally related to programmes such as marine and coastal waters, freshwater resources, forest resources, waste management, environmental economics, global information databases, environmental assessment and monitoring, and environmental law.

2.1 Climate Change and Sea Level Rise

The climate change strategy of UNEP is underpinned by the reality that past and current emissions have already committed the earth to some degree of climate change in the 21st century. UNEP believes that reducing uncertainties about climate change, its impacts, and the costs of various response options is vital. Furthermore, it is absolutely necessary to balance concerns about risks and damages with concerns about economic development. Therefore, the prudent policy response of UNEP is to adopt a portfolio of actions aimed at controlling emissions, adapting to impacts, and encouraging scientific, technological, and socio-economic research.

2.1.1 Major Issues of Climate Change and Sea Level Rise in SIDS

The ecosystems of SIDS are much more fragile than those of countries with larger landmasses. Since the ecosystems of SIDS are already under stress, they are consequently more vulnerable to the negative impacts of climate change and sea level rise. The sensitivity and excessive fragility of the ecosystems

of SIDS are partly a function of the population's management practices and increasing demands for resources.

The coastal areas of SIDS contain some of the world's most diverse and productive ecosystems, including mangrove forests, coral reefs, and sea grasses. Low-lying deltas, coral atolls and reefs are particularly sensitive to changes in the frequency and intensity of rainfall and storms. Coral will generally grow fast enough to keep pace with sea-level rise but may be damaged by warmer sea temperatures.

The biological diversity of SIDS – the source of enormous environmental, economic, and cultural value – will be threatened by rapid climate change. SIDS in the Pacific Region are likely to see an overall temperature increase by between 0.6° and 3.5°C in this century due to the enhanced greenhouse effect. While much attention is focused on global warming causing gradual, long-term changes in average conditions, the most immediate and more significant impacts are likely to arise from changes in the nature of extreme events including extensive coastal erosion, droughts, coral bleaching, more widespread and frequent occurrence of mosquito-borne diseases, and higher sea levels making some soils too saline for cultivation of traditional crops. The composition and geographic distribution of ecosystems will change as individual species respond to new conditions created by climate change. At the same time, habitats may be degraded and become fragmented in response to human pressures. Species that cannot adapt quickly enough may become extinct – an irreversible loss.

Social and economic systems tend to be more vulnerable in SIDS because of their weaker economies and institutions. The most vulnerable residents of SIDS are in general the landless, poor,

and isolated. Declining terms of trade, weak infrastructure, lack of access to technology and information have made it more difficult for a vast proportion of SIDS residents to cope with the potential agricultural consequences of climate change, and therefore face the greatest risk. In addition, SIDS located in arid or semi-arid regions, low-lying coastal areas, and flood-prone zones are at particular risk. Greater population densities in most SIDS have made some sensitive areas more vulnerable to hazards such as storms, floods, and droughts.

Higher sea levels could also cause extreme events such as high tides, storm surges, and seismic sea waves (tsunami) to reap more destruction. Rising sea levels are already contaminating underground fresh water supplies in several SIDS scattered across the Pacific, Indian Ocean, and the Caribbean Sea. Sea-level rise could damage key economic sectors of SIDS. For example, substantial agricultural production is located in coastal areas, so that fisheries, aquaculture, and agriculture are particularly vulnerable. Other sectors most at risk are tourism, human settlements, and insurance (which has already suffered record losses recently due to extreme climate events). The expected sea-level rise would submerge much of the lowlands, damaging coastal cropland and displacing millions of people from coastal communities. The displacement of flooded communities, particularly those with limited resources, would increase the risk of various infectious, psychological, and other illnesses. Insects and other transmitters of disease could spread to new areas. The disruption of systems for sanitation, storm-water drainage, and sewage disposal would also have health implications.

2.1.2 UNEP Climate Change and Sea Level Rise Activities in SIDS

Possibly the most important contribution of UNEP in this area is through encouraging scientific, technological and socioeconomic research. For example, in 1988 UNEP and the World

Meteorological Organization (WMO) established the Intergovernmental Panel on Climate Change (IPCC). The mandate of the Panel is to assess the state of existing knowledge about climate system and climate change; the environmental, economic, and social consequences of climate change; and possible response strategies. The reports of the IPCC in general confirmed the scientific evidence for climate change. This had a powerful effect on both policy-making and the general public and provided the basis for negotiating the United Nations Framework Convention on Climate Change (UNFCCC).

The UNFCCC entered into force on 21 March 1994. This was 90 days after the receipt of the 50th instrument of ratification. Recognizing the interest and urgency of SIDS during the climate change negotiations, a UNEP strategy on adaptation to climate change impacts was developed to focus on activities to support capacity building for efficient adaptation to assessed regional changes in temperature and precipitation. The strategy also included synergistic projects that demonstrate linking carbon sinks, adaptation and sustainable development and public awareness and insurance programmes to reduce risks from extreme events, and to health, natural resources, and unique ecosystems.

On the request of the Least Developed Countries (LDC) Expert Group on Climate Change UNEP developed a technical support project "*Strengthening the Adaptive Capacity of Least Developed Countries in the context of climate change*". The project has developed decision-making tools for identifying priority activities for adaptation to climate change and its incorporation into national sustainable development planning. This project has led to the preparation of training material for use at regional workshops for SIDS to prepare National Adaptation Programmes of Action (NAPAs). In addition, UNEP has assisted Comoros, Haiti, and Niue to prepare national communications to the UNFCCC, which includes an assessment of impacts of climate change.

Key inputs of UNEP into the UNFCCC process include:

- Technical literature and assessment models;
- Technical comments on country sector reports;
- Drawing up the agenda for technical workshops; and
- Organizing technical workshops and training programmes on issues including inventories of greenhouse gasses, abatement analysis, vulnerability analysis and adaptation.

Other UNEP climate change assistance to SIDS include:

- Development of an index of comparative vulnerability to climate change and strategies for climate change adaptation for South Pacific, Western Indian Ocean and Caribbean SIDS;
- UNEP in collaboration with the Caribbean Community (CARICOM) organized workshops on the regional impacts of climate change. A policy document was generated on “Climate Change in the Caribbean and the challenge of Adaptation”;

- UNEP/WHO/WMO convened an international conference on “Climate and Health in Small Island States” from 24-25 July 2000, in Western Samoa. It was attended by delegates from Antigua and Barbuda, Bahamas, Barbados, Belize, Cape Verde, Comoros, Cook Island, Cuba, Dominica, Federal States of Micronesia, Fiji, Grenada, Guyana, Haiti, Jamaica, Kiribati, Malta, Maldives, Marshall Islands, Mauritius, Nauru, Niue, Palau, Papua and New Guinea, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Samoa, Sao Tome and Principe, Seychelles, Singapore, Solomon Islands, Suriname, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu;
- UNEP supported the conference “Climate Variability and Change and their Health Effects in the Caribbean” 21-25 May 2002 in Bridgetown, Barbados.

Table 3. Selected UNEP-GEF Planned Climate Change Activities

Project Title	Status	SIDS
A: ENABLING ACTIVITY		
Phase II Enabling Activity	Submitted	Haiti
Phase II Enabling Activity	Planned - FY 02	Comoros
Expedited financing of climate change enabling activities Part II: Expedited financing for (interim) measures for capacity building in priority areas		Mauritius
B: PDFs		
Sustainable Enterprise Network for Climate Change Exposure (SENCE) - PDF-A	Submitted	Small island states in the South Pacific/Southeast Asia and Caribbean
Reducing GHGs by Promoting Biomass Technology (PDF-B)	Planned - GEF FY02	Maldives
Promoting Wave Power (PDF-B)	Planned - GEF FY03	Small Island States
Stage II Adaptation to Climate Change	Planned - GEF FY03	Selected Sectors of South Asia

2.1.3 The Montreal Protocol: A Success Story in Capacity Building in SIDS

The Montreal Protocol has proven to be a successful model for future MEAs. It has cemented itself into history as a pioneering example of international cooperation to address global environmental issues. The remarkable success of the phase out of ozone depleting substances (ODS) in developing countries thus far can be attributed to the far-reaching policies and measures pursued by the Multilateral Fund of the Montreal Protocol that over the last 12 years has provided targeted financial and technical assistance to the developing countries.

The Multilateral Fund has explicitly recognised that successful implementation of MEAs requires transfer of technology, and investment projects, complemented by legislative and regulatory interventions to enhance the sustainability of the change under the MEA. This recognition has been the basis for providing the capacity building assistance for strengthening the National Ozone Units (NOUs) and other relevant governance structures in developing countries (including SIDS).

UNEP has been the implementing agency under the Multilateral Fund in assisting developing countries with capacity building initiatives, typically called non-investment activities, including but not limited to information, education and communication activities (IEC). By late 2002 UNEP through its OzonAction Programme was assisting nearly 130 developing countries, including 41 SIDS, with capacity building initiatives.

Since 1991, the UNEP/DTIE *OzonAction Programme* has strengthened the capacity of governments, particularly NOUs, the private sector, NGOs, academic and training institutions, customs agencies, refrigeration institutes, SMEs, and the informal sector in developing countries. This includes the 41 SIDS, which are members of the AOSIS.

The Programme has helped promote cost-effective ODS phase out activities at the national and regional levels. The main services provided by the Programme are an information clearinghouse, formulating and implementing Country Programmes, Institutional Strengthening, developing and implementing Refrigerant Management Plans (RMPs), training, regional networking, and preparing and implementing national and regional phase out plans.

The Information Clearinghouse: is global in scope and provides information tools and services to encourage and enable decision-makers to make informed decisions on policies and investments required to phase out ODS. UNEP has assisted all 43 SIDS that are members of AOSIS in providing capacity building material through its Clearinghouse services. For example, the publication on “How to Phase out ODS in the Hotel and Tourism Industries” helped SIDS that have most of their consumption in the tourism sector. Similarly, case studies in ODS phase out in the fishery sector geared up many SIDS in preparing their National RMPs.

Country Programmes and Institutional Strengthening: The equivalent of National Communication under UNFCCC and National Implementation Plans under the Rotterdam Convention on Prior Informed Consent (PIC), and Institutional Strengthening projects support the development and implementation of national ODS phase out strategies especially for low-volume ODS-consuming countries. UNEP is assisting 32 SIDS with their Country Programme preparation and implementation and 30 SIDS with the preparation and implementation of institutional strengthening projects.

Regional Networking: provides a regular forum for officers in NOUs to meet and exchange experiences, develop skills, and share knowledge and ideas with counterparts from both developing and developed countries. To date 22 SIDS have

benefited from participating in one of the Regional Networks established by UNEP.

Training and Refrigerant Management Plans (RMPs): provide countries with an integrated, cost-effective strategy for ODS phase out in the refrigeration and air conditioning sectors. RMPs have evolved to meet the specific need to assist developing countries (especially those that consume low volumes of ODS) through training and policy assistance in the critical refrigeration sector. UNEP/DTIE is currently providing specific expertise, information and guidance to support the development of RMPs in 21 SIDS (See Tables 1 and 2 in Appendix 5). UNEP has assisted 21 SIDS through the training of customs officers and other stakeholders (Table 1) and 20 SIDS through training in Good Practices in Refrigeration (Table 2).

National and Regional Phase Out Plans: facilitate the gradual phase out of ODS so that the SIDS are able to meet their phase out targets by 2010 without requesting additional funding support. The following eight countries are participating in the Regional Phase Out Plan for the Pacific Island Countries (PICs): Kiribati, Marshall Islands, Federal States of Micronesia, Palau, Solomon Islands, Tonga, Tuvalu, and Vanuatu. The goal of the PICs Regional Phase Out Plan is to phase out the consumption of chlorofluorocarbons (CFCs) in these 8 countries by 2005.

Facilitating Bilateral Co-operation: A key strength of UNEP's programme in the SIDS to date has been its joint activities with bilateral agencies. UNEP has enjoyed successful and on-going co-operation with Canada, France, Germany, Sweden, Australia and New Zealand to assist the SIDS. Canada has been a key partner in the development and implementation of RMPs in the Caribbean SIDS. France has been a key partner in assisting some African SIDS such as the Comoros. Sweden has collaborated in assisting some of the SIDS in the Asia-Pacific region through its support to the networking activities. Germany is collaborating

with UNEP to assist in the development and implementation of the NCAP in Papua New Guinea. Finally, Australia and New Zealand are key partners in the development and implementation of the Regional Phase Out Plan for the PICs.

Developing Local Capacity: UNEP has contributed to the capacity building of relevant local partners in the SIDS. Some examples include the Fiji Institute of Technology, The University of the South Pacific, Oceania Customs Organisation, Samoa Polytechnic Institute. Relevant institutes in more advanced neighboring countries within a region, such as Fiji and Samoa in the Pacific, are utilised to provide assistance to neighboring countries. Some specific examples of assistance include the delivery of customs and refrigeration training, provision of advice on the establishment of an industry association, establishing codes of good practice or regulatory framework.

Through its continuing project *Assessment of Impacts of and Adaptation to Climate Change (AIACC)* funded by GEF and others, UNEP provides support for three research activities in SIDS in addition to three training workshops involving several scientists from SIDS. The AIACC project is providing financial and technical support to enhance the scientific and technical capacities to assess the impacts of climate change, and to design cost-effective adaptation response measures, which are needed to formulate national policy options and prepare for national communications.

2.1.4 Future Directions

In the past UNEP supported activities aimed at developing and testing of methodologies for assessing vulnerability to climate change and choosing the most cost-effective adaptation options. Subjecting the various adaptation options to rigorous benefit cost analysis should consolidate this effort. The result of this consolidation is expected to yield high returns to SIDS. The strategies that could be evaluated and subjected to benefit cost analyses include:

- Preventative measures such as building barriers against sea-level rise or reforestation of degraded hillsides;
- The redesign of crop mixes to ensure a guaranteed minimum yield under even the worst scenario;
- Measures to mitigate the burden on those directly affected by climate change such as spreading or sharing losses through insurance or public disaster relief programs;
- Changing *a use or activity* that is no longer viable, or *change the location* of an activity. For example, relocating agricultural activities from steep hill slopes;
- Explore improved water storage management to help reduce vulnerabilities. New supplies could be developed or existing supplies used more efficiently;
- Long-term strategies for water supply and demand management such as regulations and technologies for directly controlling land and water use, incentives and taxes for changing behavior, construction of new reservoirs and pipelines to boost supplies, improvements in water-management operations and institutions, and the encouragement of local or traditional solutions;
- Other adaptation measures such as protecting watersheds, restoring river channels to their natural form, and reducing water pollution.

2.2 Biodiversity Resources

UNEP is aware that the accelerating loss of biological diversity is undermining opportunities for global sustainable development in general, and for SIDS in particular. Accordingly, the critical challenge is assisting SIDS to identify the real socio-economic causes and impacts of changes in biodiversity, and developing strategic measures to utilize the components of biological diversity in ways that do not lead to their long-term decline whilst contributing to the expansion of production frontiers and human progress.

UNEP's biodiversity activities for SIDS build on four main areas in which UNEP has historically been active:

- Strengthening the enabling environment so that countries can more effectively implement commitments made as Parties to the Convention on Biological Diversity,
- Managing environmental information, making environmental assessments, analyzing and researching environmental topics,
- Identifying and developing tools and methods for conserving and sustainably using biodiversity,
- Promoting conservation and sustainable use of biodiversity across national boundaries

The policy focus of UNEP is the continued application of science and technology for the integrated conservation and sustainable utilization of biological diversity to support the sustainable development of SIDS. This integration is guided by clear understanding of the critical linkages within major environmental sectors related to the sustainable use of all types of ecosystems, soils, wildlife, and protected areas management. The operational strategy is the integration of biodiversity with other programmes such as freshwater resources, environmental economics, global information databases, environmental assessment and monitoring, environmental law, marine and coastal areas.

The overall policy of UNEP is to make management of biodiversity fully integrated with social and economic activities to ensure that environmental protection and development objectives are mutually supportive. Its target is to support the objectives of sustainable development and transform them into policies and practice. The outputs of the biodiversity programme are expected to assist governments to incorporate biodiversity issues, and its related social, economic and cultural aspects, into their decision-making as well as in their policy setting processes mainly to establish co-operative bridges between scientific research and public policies.

The international forces driving and guiding the biodiversity programme, policy, and strategy

include: Agenda 21, particularly Chapter 10, 11, 13, 14, 15 and 16, and the Forests Principles; the CBD and its Biosafety Protocol, CITES, CMS, international and regional agreements on species conservation activities; the SIDS/POA and its reviews, the WSSD and the Millennium Development Goals (MDGs). In particular, the CBD and its program approved by the Conference of the Parties (COP) are directly relevant to all aspects of biodiversity in SIDS. The Biosafety Protocol and related processes also draw particular attention to SIDS².

The WSSD addressed thematic and cross-cutting issues within the CBD process, such as forest biodiversity; marine and coastal biodiversity; access to genetic resources and benefit-sharing; the protection of knowledge, innovations and practices of indigenous and local communities; enhancing synergies with relevant international environmental and trade agreements; the integration of the objectives of the Convention into global, regional and national programmes and policies; and the promotion of concrete international support and partnership for conservation and sustainable use of biological diversity. The WSSD introduced two new significant items into the international biodiversity agenda. In paragraph 44(o), it calls for negotiation “within the framework of the CBD an international regime to promote and safeguard the fair and equitable sharing of benefits arising from the utilization of genetic resources.” And, in paragraph 44(g) the Plan requires actions to “promote and support initiatives for hot spots and other areas essential for biodiversity and promote the development of national and ecological networks and corridors.”

2.2.1 Issues of Biodiversity in SIDS

The rich biological diversity and high degree of endemism of many species in SIDS is well known.

² Examples include the Biosafety Clearing House Mechanism (Paragraph 1(b), Article 20), Capacity Building (paragraph 1 and 2, Article 22 and paragraph 3 of Article 29)

According to the World Conservation Monitoring Centre (UNEP-WCMC) over 1,000 species of animals and 3,000 plants are endemic to SIDS. One consequence of the relative isolation of SIDS is the high incidence of unique biological adaptations (flightlessness in birds, gigantism and dwarfism in other groups, and many modifications of form, diet and behaviour). Restrictive habitats and small populations, both consequences of remoteness and size of SIDS, often generate unique features and adaptations to prevailing environmental and climatic conditions. But under such circumstances species often lack the ability to adapt to rapid changes and are therefore extremely fragile.

In the context of SIDS it is conceptually convenient to examine biodiversity by focusing on (a) deforestation and forest degradation, (b) subsistence farming systems, (c) *in situ* and *ex situ* conservation facilities, (d) coastal and marine ecosystems³, (e) freshwater biodiversity, and (f) aquaculture.

Deforestation and forest degradation in SIDS have led to extinction of many animal and plants species, or irreversible losses of genetic resources and ecosystems. Considering their limited land area and their relative fragility, strong winds (e.g., hurricanes, cyclones, typhoons) have caused serious and frequently recurring damage to natural and planted forests. The negative impact of human activities is usually even more severe. Deforestation and forest degradation have affected the dynamic interactions of ocean, coral reefs, land formations and vegetation.

Subsistence agriculture based on limited purchased inputs, is the dominant practice on over half of all small farms in SIDS. This has the advantage of being generally environmentally friendly but has the disadvantage of low productivity. Growing population and market driven pressures are continuously disrupting ecologically sound traditional farming systems. Thus, moderate to

³ Coral reefs are an important component of the marine ecosystem but, for clarity of presentation, is discussed separately in Section 2.4

intensive input systems are displacing traditional farming systems in SIDS. The resulting problem is that because of inadequate farm and production management, some purchased inputs (e.g., pesticides, fertilizers) are often not used effectively, leading to economic losses and environmental damage, including loss of biodiversity. Given the relatively high population densities and skewed distribution of wealth (land and capital), agriculture has continued to encroach on natural or quasi-natural ecosystems, plant and animal genetic resources are being lost, modern cultivars are replacing local ones and intensive livestock production systems are developing. As a consequence, diseases and pests are increasing in SIDS, particularly crop pests that are resistant to common pesticides.

Since plant and animal genetic resources are the basis for sustainable agriculture it is especially important for SIDS to have access to these resources from countries in the same agro-climatic zones to facilitate diversification of their main enterprises. The establishment of protected areas such as forest reserves, national parks and wildlife sanctuaries, supported by botanical gardens and herbaria is essential for conserving the biological diversity of SIDS. Such areas also have the potential to become the basis for eco-tourism. However, establishment of *in situ* and *ex situ* conservation systems require both financial and human capital, often not adequately available in SIDS. Therefore, international cooperation is desirable as a means of evaluating and conserving genetic resources and safeguarding them for future use.

Threatened Animals and Plants in SIDS

Country	Animals			Plants			No. PA's	Area Protected (HA)
	Threat	Extinct	Endem	Threat	Extinct	Endem		
American Samoa	21	1	34	9		4	10	5.126
Antigua and Barbuda	15		23	3		1	5	6.628
Aruba	15		19			0	1	70
Bahamas	46	2	87	31		23	38	145.838
Bahrain	9		25			0	6	6.000
Barbados	13	1	24	2		1	3	248
Cape Verde	32	1	60	1		0	5	1.415
Comoros	19		38	4		6	2	40.405
Cook Islands	15	15	38	12		11	2	160
Cuba	58	7	125	888	23	900	180	754.474
Cyprus	32		67	51		53	10	78.232
Dominica	17		32	57		24	10	20.659
Dominican Republic	37	9	80	136		65	61	2.043.674
Fiji	34	1	62	74		75	13	6.614
Grenada	18		38	8		3	2	728
Haiti	34	13	83	100		39	9	7.354
Jamaica	38	4	77	744		788	154	994.767
Kiribati	11		17			0	12	58.854
Maldives	15		32			0	25	
Malta	30		87	15	1	12		
Marshall Islands	13		24			0		
Mauritius	71	45	149	294	47	315	26	16.158
Micronesia (Federated States of)	28	2	96	4		3		
Nauru	3		5			0		
Netherlands Antilles	22		48	2		0	7	12.271
Niue	4		9	1		0	3	5.457
Palau	19	1	91			0	12	1.459
Papua New Guinea	141	1	428	92		65	39	1.078.939
Saint Kitts and Nevis	14		20	4		0	1	15
Saint Lucia	18	1	33	6		1	37	5.305
Saint Vincent and the Grenadines	16		41	9		1	28	8.284
Samoa	23		37			18	13	25.522
São Tomé and Príncipe	29		72	3		2		
Seychelles	42	3	75	78		83	21	45.228
Singapore	34		106	29	1	2	7	4.029
Solomon Islands	53	2	129	42		22	6	1.090
Tokelau	4		8			0		
Tonga	15	1	26	2		0	9	3.727
Trinidad and Tobago	23		115	21		11	21	32.220
Tuvalu	11		21			0		
Vanuatu	20		44	26		22	9	8.794
Virgin Islands (U.S.)	22	1	31	40		2	8	9.788

Source: UNEP-WCMC

Box 2 Selected Goods and Services of Biodiversity	
<ul style="list-style-type: none"> • Provision of food, fuel and fibre; • Provision of shelter and building materials; • Purification of air and water; • Control of pests and diseases; • Generation and renewal of soil fertility, including nutrient cycling; • Detoxification and decomposition of wastes; • Pollination of plants, including many crops; • Cultural and aesthetic benefits; 	<ul style="list-style-type: none"> • Moderation of floods, droughts, temperature extremes and the forces of wind; • Maintenance of genetic resources as key inputs to crop varieties and livestock breeds, medicines, and other products; • Stabilization and moderation of the Earth's climate; • Ability to adapt to change;

The biodiversity of marine ecosystems under SIDS jurisdiction is especially susceptible to degradation, including destruction of coral reefs by fishermen and tourists; pollution, sedimentation and land reclamation works; natural disasters; conversion of mangroves and wetlands culminating in loss of important nursery areas; use of large-scale pelagic driftnets which impact marine mammals, turtles, birds and non-targeted fish; and over-fishing in general. Coastal fisheries in SIDS, once abundant, have become scarce owing to over-fishing by both artisan and small-scale commercial interests. Inadequate monitoring makes it difficult to quantify the overall damage to marine life from such activities⁴.

Important freshwater biological diversity in some SIDS includes plants and animals that are rare, endemic, introduced species, and many that are threatened by habitat degradation. Unlike their marine counterparts, which may be dispersed over great distances by ocean currents, inland freshwater aquatic species have more restricted access to dispersion routes. Many native freshwater species are not currently utilized commercially and their status is not well documented. Although the aquaculture industry is becoming more important for some SIDS, the sector is faced with constraints and sustainability problems because of little previous experience in fish farming in many small islands⁵.

⁴ See Marine Ecosystems Section for an extended discussion

⁵ For an extended discussion see Freshwater Section

2.2.2 UNEP Biodiversity Activities in SIDS

Activities Undertaken by UNEP-WCMC

Programmes and projects carried out by UNEP-WCMC, in close collaboration with governments and international organizations continue to provide support for the implementation of biodiversity-related conventions and programmes in SIDS. Examples of activities include:

- Coordinated pilot project in the Seychelles to analyse current procedures in national reporting to the CBD. This project highlighted potential ways of facilitating the management of national biodiversity data and information in SIDS to implement their international commitments more effectively, thereby reducing the burden placed on their limited resources;
- The continuation to provide support for existing and new agreements on the protection and conservation of marine turtles. SIDS are the main partners in this work, as a high proportion of nesting grounds for marine turtles are located in their territory;
- The contribution of UNEP to the implementation of the Jakarta Mandate of the CBD is directly relevant to coral reefs, and coral bleaching is addressed through the UNFCCC. The CITES controls the trade in corals and marine aquarium specimens, where SIDS play an active and critical role.

Technical Publications and Training⁶

- The World Atlas of Biodiversity published by UNEP-WCMC (2002) provides an assessment of trends, with respect to the state of global biodiversity. SIDS are featured throughout this publication with respect to changes, threats and impacts on biodiversity resources.
- UNEP-WCMC approached the CBD Secretariat concerning preparation of a new edition of the Global Biodiversity Outlook, which will address, inter alia, the actions taken by SIDS in addressing their obligations under the Convention, and their need for international support in the assessment, management and sustainable use of their biodiversity resources.
- UNEP-WCMC worked with the SPREP and the IUCN World Commission on Protected Areas to produce a volume describing each of the protected areas in the Pacific. Although this volume requires updating, it remains the only source of systematic information on the region's protected areas. Similar work was initiated in the Caribbean, in partnership with UNEP Regional Coordinating Unit (RCU) based in Jamaica.
- Biodiversity Reviews - UNEP-WCMC contributed to the Barbados Conference (1994) by providing more than 40 documents to participants, describing the biodiversity of SIDS. UNEP also contributed to the Review of the Barbados +5 by preparing a discussion paper on biodiversity and SIDS for CSD 7 in 1998.

Table 4. Training of Customs Officers and other stakeholders coordinated by UNEP in SIDS According to Regions

Africa	West Asia	Asia and Pacific	Latin America and Caribbean
<ul style="list-style-type: none"> • Comoros 	<ul style="list-style-type: none"> • Bahrain 	<ul style="list-style-type: none"> • Fiji • Federal States of Micronesia • Kiribati • Maldives • Marshall Islands • Palau • Samoa • Tonga • Tuvalu • Vanuatu 	<ul style="list-style-type: none"> • Antigua & Barbuda • Barbados • Dominica • Dominican Republic • Haiti • Saint Kitts and Nevis • Saint Lucia • Saint Vincent and the Grenadines • Trinidad and Tobago

⁶ Other biodiversity activities are described under multilateral environmental agreements

**Table 5. Training in Good Practices in Refrigeration coordinated by UNEP in SIDS
According to Regions**

Africa	West Asia	Asia and Pacific	Latin America and Caribbean
<ul style="list-style-type: none"> • Comoros 	<ul style="list-style-type: none"> • Bahrain 	<ul style="list-style-type: none"> • Fiji • Federal States of Micronesia • Kiribati • Maldives • Marshall Islands • Palau • Samoa • Tonga • Tuvalu • Vanuatu 	<ul style="list-style-type: none"> • Antigua & Barbuda • Bahamas • Dominica • Dominican Republic • Haiti • Saint Kitts and Nevis • Saint Vincent and the Grenadines • Trinidad and Tobago

Institutional and Infrastructure Support

- **Caribbean Fisheries Restricted Areas Database:** Through extensive consultations with fisheries managers and experts in the wider Caribbean region it was found that little information on Caribbean restricted fishing zones is accessible to the public. In collaboration with the IUCN World Commission on Protected Areas, UNEP-WCMC is developing a web-accessible database and interactive maps of fisheries restricted areas in the region. The resulting database and maps will serve as a management tool for authorities seeking ways to achieve the conservation of fish stocks and the integrity of coral reef ecosystems in the region.
- **Oil Spill Response:** In collaboration with the oil industry through the International Petroleum Industry Environmental Conservation Association, UNEP-WCMC has developed an interactive mapping service in the Caribbean. Future developments of the system are already envisaged for other SIDS, e.g. South Pacific and South East Asia. The interactive map service provides access to information about key biodiversity issues in a format readily accessible to decision-makers. Its key focus

is the support of the oil spill response industry in mitigating the effects of oil spills on the environment through the provision of timely, accurate information via the Internet.

2.2.3 Future Directions in Biodiversity

Several areas of future activities for UNEP in SIDS are emerging: First, the issue of isolation was raised, in the context of SIDS at the 55th Session of the UN General Assembly in 2000. It stressed the *“Importance of information technology for networking between SIDS and reducing the effects of remote location and isolation (UNGA Resolution A/55/582/add.4)*. This concern could be addressed with the production of a SIDS atlas that focuses attention on issues of particular relevance to SIDS. These include geographical isolation, levels of threatened and non threatened endemic species, protected area coverage, international agreements and programmes - purpose and relevance, marine resources and their sustainable use, invasive alien species, influence of climate change (threats, and adaptive strategies), and tourism - opportunities and concerns.

Second, WSSD agreed to achieve by 2010 a significant reduction in the current rate of loss of

biological diversity. SIDS might provide a suitable, if not ideal, framework and examples for defining baseline(s) against which the rate of national biodiversity loss could be measured in the years leading up to 2010.

Third, capacity building initiatives in SIDS were identified as a priority at WSSD. UNEP-WCMC has developed a proposal to produce a Regional Plan of Action for illegal, unreported and unregulated fishing in the WCR. The proposal has been fully supported by the CARICOM Fisheries Unit. This initiative promotes projects that seek to better coordinate and integrate watershed and marine ecosystem management. The site for the pilot program will be the WCR. Outputs will include:

- a review of the level and type of illegal unreported and unregulated fishing experienced by CARICOM countries⁷ in their EEZs, the monitoring, control and surveillance capability of each country and the actions taken to combat it;
- a regional workshop to facilitate peer-to-peer exchange, validate the results of the review and draft a regional plan of action;
- formal presentation of the regional plan of action to stakeholders (national agencies, fishers groups, and more) at a 3-day conference;

It is proposed that this project could be initiated in other SIDS. Potential partners for these initiatives include: AOSIS network, UNEP regional offices, UNEP Regional Seas programmes (e.g. SPREP and Wider Caribbean), International Centre for Island Studies, ICRAN, DFID, SPC/SPREP, CPAC, Intergovernmental partnerships (e.g. United States and the United Kingdom).

⁷ The membership of CARICOM comprises Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, Montserrat, Saint Lucia, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Suriname, and Trinidad and Tobago

Fourth, implementation of the CBD Clearing-House Mechanism in SIDS - The primary purpose of the CBD Clearing-House Mechanism is the promotion of scientific and technical cooperation through the use of tools and procedures, which share information and experience. Resources for starting this process are available through GEF, yet the programme is not developing in a coherent planned manner because capacities, needs and understanding vary widely. Collaboration between UNEP-WCMC and the CBD Secretariat, working closely with key regional and thematic organizations could provide a significant focus for CHM development in SIDS, leading to improved implementation of the CBD and potentially also other agreements and programmes.

2.3 Coastal and Marine Resources

The work of UNEP on protecting the marine environment reflects a multi-sector and integrated approach through the Regional Seas Conventions and Action plans and the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA). Other important UNEP activities emphasizing the marine environment are the International Coral Reef Action Network (ICRAN), the Global Marine Assessment (GMA), the Global International Waters Assessment (GIWA), the Global Environment Outlook process (GEO), the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) and the Convention on Biological Diversity (CBD) specifically through the Jakarta Mandate.

2.3.1 UNEP and SIDS Protecting Coastal and Marine Environment

The marine and coastal environments of SIDS represent a vital resource for socio-economic development. Marine and coastal areas encompass diverse ecosystems and habitats, which perform a number of functions and services. Marine species provide many ingredients for food, industrial products (e.g. cosmetics, chemicals and dyes) and

medicinal applications. Coastal ecosystems such as coral reefs, mangroves, sea grass beds, estuaries, coastal lagoons and wetlands are essential to SIDS because of their many roles (e.g. nursery grounds to commercial fish species; protection to shorelines from storms; buffer from land-based activities such as nutrients and sediments and much more). Because of island characteristics and their resource limitations, the adverse effects of coastal degradation will have more immediate repercussions relative to countries with larger landmasses. The vulnerability of many island states to natural disasters and the close links between resource-use and the livelihoods of coastal communities are examples pointing to the need for commitment in minimizing destruction of coastal and marine ecosystems which form the backbone for growth and long-term economic sustainability of SIDS.

The SIDS/POA explicitly identifies coastal and marine resources as an area requiring urgent action and asks for the “establishment and or strengthening of programmes within the framework of the GPA and the Regional Seas Programmes, to assess the impact of planning and development on the coastal environment, including coastal communities, wetlands, coral reefs habitats and the areas under the national jurisdiction of SIDS and to implement the POA” (chapter II D 15b). The SIDS/POA also urges to “.....use the ongoing work of UNEP Regional Seas Programmes to assist SIDS with the development and implementation of integrated coastal zone management plans, to improve international coordination in that field and to develop strategies to prevent further marine and coastal degradation” (Chapter IV). The United Nations Convention on the Law of the Sea (UNCLOS) and UNEP Regional Seas Programme are key actors for implementing SIDS activities related to the marine environment in the POI of the WSSD (2002; Chapter VII paragraph 52-55).

The Regional Seas programmes serve as platforms through which most of the work of UNEP in the field of marine and coastal environment is channeled. This is a comprehensive, integrated programme that promotes international co-operation in managing coastal-marine and associated freshwater drainage basins, including land-based sources.

2.3.2 UNEP Coastal and Marine Activities in SIDS

UNEP’s **Regional Seas programme** was established to manage marine and coastal resources, control marine pollution and develop action plans through regional components and provide regional mechanisms for cooperation between governments and commitment to shared goals.

Priorities Addressed by UNEP Regional Seas programmes

- Ecosystems and biodiversity;
- Living resources;
- Land and sea-based sources of pollution;
- Coastal development;
- Vulnerability of small islands; and
- Marine mammals

The Regional Seas Programme provides an important globally coordinated, region-wide mechanism to implement all relevant global environmental conventions and agreements, including UNCLOS, the International Convention for the prevention of pollution from ships (MARPOL Convention), the London Convention on the prevention of marine pollution by dumping of wastes and other matter and other International Maritime Organization (IMO) regulations, the GPA, biodiversity related Conventions and related multilateral environmental instruments. All SIDS are part of a Regional Seas Programme. The two regions dominated by SIDS and territories are the Wider Caribbean and the South Pacific. UNEP has encouraged regional cooperation especially through SPREP and the Caribbean Environment Programme (CEP).

The GPA Coordination Office harmonizes the SIDS activities of UNEP. A major activity carried out by the GPA Coordination Office together with the Global Forum on Oceans, Coasts and Islands is the undertaking of several policy analyses (e.g., examination of how Type II initiatives adopted at the WSSD correspond with the SIDS targets and timetable agreed to in the Johannesburg POI) to identify possible gaps, financial needs, priorities, actors involved, and the identification and review of worldwide initiatives and instruments that can assist SIDS in addressing their environmental concerns. In this context, international and regional multilateral environmental agreements are also under review.

The GPA Coordination Office also addresses land-based activities at the national level through National Programmes of Action and within the context of the Regional Seas programmes. In the Caribbean, Jamaica and Saint Lucia have started to develop NPAs with the support of CAR/RCU. Four SIDS in the South Pacific will soon also be engaged in this process. A regional project addressing land-based activities in the Western Indian Ocean has been developed which includes several SIDS and the project "Development and protection of the coastal and marine environment in sub-Saharan Africa" is ongoing with the direct involvement of Mauritius and Seychelles.

GPA organized and conducted 3 regional meetings in South Asia, East Africa and the Caribbean to develop Physical Alteration and Destruction of Habitats (PADH) checklists for sediment mobilization, mining, tourism and aquaculture and initiate concrete action by these sectors (2002). Following the regional meetings various studies were completed. These include:

- A comparative review of coastal legislation in South Asia;
- A review of national legislation related to coastal and marine resources management in various Caribbean countries and;
- A review of national legislation in Eastern Africa.

Global Marine Assessments

UNEP Division of Early Warning and Assessment (DEWA) has been assigned the responsibility for implementing decision GC 21/13 on the Global Marine Assessment (GMA) process in collaboration with the Division of Environmental Conventions, and other appropriate UNEP divisions. At the WSSD, under paragraph 34, b of the Johannesburg Plan of Implementation (POI) governments called for the "establishment by 2004 and under United Nations of a regular process for global reporting and assessment of the state of marine environment, including socio-economic aspects, both current and foreseeable, building on existing regional assessments." As part of UNEP's effort to implement the decision, UNEP-WCMC completed a report on a Survey of Global and Regional Marine Environmental Assessments and Related Scientific Activities in January 2003.

The IMO/FAO/UNESCO/IOC/WMO/WHO/IAEA/UN/UNEP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) established a Working Group on Marine Environmental Assessments, and designated UNEP as the lead agency. GESAMP has completed two reports: (a) an assessment of the state of the marine environment (2000) and (b) an assessment of land-based activities (2002).

Caribbean Region

Caribbean SIDS are contracting parties to the Cartagena Convention, which is a framework agreement setting out the legal foundations for actions to be developed. UNEP is the designated administrator of the Cartagena Convention and its Protocols.

The Caribbean Environment Programme (CEP) is responsible for coordinating regional action related to the Cartagena Convention and its Protocols. In carrying out this function, CEP is facilitated by the Caribbean Regional Coordinating Unit (CAR/RCU). This contributes to GA Resolution

55/203 "Promoting an integrated management approach to the Caribbean Sea area in the context of sustainable development".

Priorities of the Cartagena Convention

- Pollution from ships;
- Waste-dumping at sea;
- Land-based sources;
- Seabed activities;
- Airborne pollution;
- Protecting fragile marine habitats.

The Convention is supplemented by three protocols, namely:

- Cooperation in combating oil spills (1983);
- Specially Protected Areas and Wildlife (SPAW, 1990);
- Pollution from Land-Based Sources and Activities (1999).

IMO activities that support the Protocol on Combating Oil Spills are also being implemented through the CAR/RCU. This includes (a) Course for On-Scene Commanders (Ft. Lauderdale, 1999), (b) Level II course that provides information and training for the On-Scene Commanders in the event of an oil spill in marine waters and (c) Workshop on Marine Pollution Prevention and Environmental Management in Ports in the Wider Caribbean Region (Jamaica, 2002).

In support of the SPAW Protocol, UNEP, through the Regional Activity Center for SPAW, located in Guadeloupe, assists Caribbean SIDS with marine species (e.g. sea turtles) recovery plans and guidelines, coral reef assessment, monitoring, management education and awareness and provision of funds for technical assistance. The SPAW Programme supports activities for the protection and management of sensitive and highly valuable natural marine resources.

East African Region

The Nairobi Convention and its Action Plan is central to the work of UNEP Regional Seas

Program in the region. The Convention is broadly aimed at maintaining essential ecological processes and life support systems, preserving genetic diversity and ensuring sustainable utilization of harvested natural resources. The region has been contributing to a number of initiatives including the Arusha Resolution (April 1993) on Integrated Coastal Management, the African Process on Protection, Management and Development of the Marine and Coastal Environment, the Pan African Conference on Sustainable Integrated Coastal Management convened in Maputo (July 1998), and the Cape Town Conference, (December 1998). The main activities identified were:

- Promotion and monitoring of long-term regional impacts caused by climate change and adaptation planning to the effects of sea-level rise in the coastal areas;
- Inventory of potential hotspots in the region (coastal erosion, land-based and marine sources of pollution, coral reefs and associated ecosystems); and
- Establishing and strengthening regional measures of forecasting and early warning capabilities to deal with natural disasters.

The Eastern Africa Regional Coordinating Unit, located in the Seychelles, coordinates all activities of the Action Plan. UNEP is the secretariat of the Convention, while the African Ministerial Conference on the Environment (AMCEN) provides guidance, as well as political support, to the Nairobi Convention and its work programme. Participating SIDS include Comoros, Seychelles, Madagascar, and Mauritius.

The majority of UNEP's regional activities have been implemented under two main projects:

- Protection and Management of marine and coastal areas in the Eastern African Region; and
- Eastern African Coastal and Marine Environment resources Database and Atlas Project.

South Asian Region

The South Asian Seas (SAS) Action Plan includes the Maldives and the non-SIDS (Bangladesh, India, Pakistan and Sri Lanka). The South Asia Cooperative Environment Programme (SACEP) serves as the Action Plan Secretariat. The Action plan emphasizes:

- Integrated coastal zone management;
- Oil-spill contingency planning;
- Human resource development; and
- Environmental effects of land-based activities.

SAS has conducted seminars and training courses to help member countries better able to implement the Regional Oil Contingency Plan; develop their own national plans; and work with countries to develop their port reception facilities under the MARPOL Convention; and to set up a Regional Activity Centre to oversee this work. SAS also works with member countries on National Action Plans and pilot programmes to implement the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA).

South Pacific Region

SPREP, based in Apia, Samoa, is the primary regional organization concerned with environmental management in the Pacific, and serves as Secretariat for three Conventions: (a) Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (1986) and the associated Action Plan has four broad priorities: nature conservation, pollution prevention, climate change and variability, and economic development; (b) the Apia Convention - on the Conservation of Nature in the South Pacific (1976), which deals with protected areas, representative samples of natural ecosystems, geological formations, and sites of aesthetic, historic cultural and scientific value; and (c) the Waigani Convention (2001) to Control the Trans-boundary

Movement and Management of Hazardous Wastes within the South Pacific Region.

Mediterranean Region

Cyprus and Malta are contracting Parties to (a) the Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (1976) and its Emergency Protocol (on Co-operation in Combating Pollution of the Mediterranean Sea by Oil and Other Harmful Substances); and (b) the International Convention for the Prevention of Pollution from Ships (1973) as modified by the Protocol of 1978 (MARPOL 73/78). UNEP supports and assists the countries in implementing the Conventions and protocols through the UNEP Regional Marine Pollution Emergency Response Center for the Mediterranean Sea (REMPEC).

2.3.3 Future Directions in Coastal and Marine Resources

Major challenges in reducing marine pollution in SIDS regions revolve around promoting adoption of measures to reduce the destruction of coastal habitats and the discharge of waste water and around developing national programmes of action. The World Summit on Sustainable Development (WSSD) called for action to protect the marine environment from land-based activities and to reduce marine pollution and its health-related effects on SIDS. UNEP will coordinate activities among partners to:

- Increase recognition of the link between freshwater and marine environments;
- Assist SIDS in finding funds to finance projects that address such problems as river, coastal and marine pollution;
- Assist SIDS to develop partnerships that include the private sector and civil society to further implement the plan of action.

The WSSD also called for advancing the implementation of the GPA in the period 2002 to

2006, with goal of achieving substantial progress by 2006. The Johannesburg Plan of Implementation advocates reducing, preventing and controlling waste and pollution and their health-related effects in SIDS by 2004 by implementing the GPA.

The Regional Seas Programme: In the wake of the 2002 World Summit on Sustainable Development the Regional Seas Programme is undergoing a major strategic shift. The new direction aims to use the Regional Seas programmes as a vehicle for cooperation in the field of sustainable development and to use them as an existing, effective platform for improved and coordinated regional implementation of international agreements, programmes and initiatives related to oceans, seas, coasts and the catchments affecting them. Enhancing the RS programmes contribution to sustainable development in SIDS requires collaboration with other programmes and partners in regions towards common well-defined goals. The limited geographic focus of the Regional Seas Action Plans and Conventions enables them to channel the energies of a wide range of interest groups towards a global purpose: preserving the world's ocean and coastal ecosystems and the human livelihoods they secure, which certainly will benefit SIDS.

In order to effectively address evolving challenges and to contribute in reaching the relevant targets of Agenda 21, the Programme of Action for the Sustainable Development of Small Island Developing States, the WSSD Plan of Implementation and the Millennium Development Goals, the Regional Seas Programme must be strategically adaptive and proactive. The following Strategic Guidelines for the Regional Seas Programme which integrates actions within SIDS are:

- Increase Regional Seas contribution to Sustainable Development, through national and regional partnerships with relevant social, economic and environmental actors.

- Enhance the sustainability of RS through increasing country ownership, translating Regional Seas Conventions into national legislation and regulations, involving civil society and private sector, and ensuring financial sustainability.
- Increase Regional Seas visibility and impact in global and regional policy setting, reflecting and sharing a common vision.
- Enhance the use of Regional Seas as a platform for the coordinated implementation of global Conventions, initiatives and programmes.
- Promote appropriate monitoring and assessment systems on the national and regional levels.
- Promote the eco-system based management of the marine and coastal environment.

2.4 Coral Reef Protection and Management

The SIDS/POA states that “action is needed to sustain healthy reefs and such action would benefit by building on the International Coral Reef Initiative (ICRI) and global reef assessments to ensure food security and fish stock replenishment, and provide focus for implementation of the Jakarta Mandate on the Conservation and Sustainable use of Marine and Coastal resources”. UNEP activities on coral reefs related to SIDS are based on and support the various actions and activities agreed to in international frameworks, such as the “ICRI Call to Action” and “Framework for Action”; the measures adopted under multilateral environmental agreements and conventions; the UNEP Governing Council decisions; and the POI of the WSSD.

The International Coral Reef Initiative (ICRI) – since its inception in 1995, support and participation has dramatically increased with the inclusion of additional governments, UN organizations, regional environmental organizations, multilateral development banks, environmental and developmental NGOs, and the private sector as partners. The Parties to the CBD, the Ramsar

Convention on Wetlands of International Importance, the CSD, UNEP, the Intergovernmental Oceanographic Commission (IOC), and the scientific community have endorsed ICRI.

The UNEP Regional Seas Programme has assisted ICRI to convene regional Workshops in the tropical Americas; the Pacific; the East Asian Seas; South Asia; Eastern Africa and the Western Indian Ocean. These workshops served to facilitate the development of national committees or initiatives and action plans to set priorities for coral reef conservation at the country and regional level.

ICRI has recognized three operational networks to assist in achieving the actions as set out in the Framework for Action:

- **The *Global Coral Reef Monitoring Network (GCRMN)*** promotes coral reef biological and socio-economic monitoring and assessment world wide, and produces the Status of Coral Reefs of the World reports;
- **The *International Coral Reef Information Network (ICRIN)*** serves as a worldwide communication hub for those working in coral reef education, public awareness, and conservation;
- **The *International Coral Reef Action Network (ICRAN)*** supported by the United Nations Foundation (UNF), is an innovative partnership designed to facilitate the implementation of ICRI Framework for Action through on the ground action to proliferate good practices for coral reef management and conservation. ICRAN is a partnership of many of the world's leading coral reef science and conservation organizations - the UNEP and the UNEP Regional Seas Programme, South Pacific Regional Environment Programme (SPREP), WorldFish Center, World Resources Institute (WRI), UNEP-WCMC, Global Coral Reef Monitoring Network (GCRMN), International Coral Reef

Initiative (ICRI) Secretariat, Coral Reef Alliance (CORAL), World Wildlife Fund (WWF), Reef Check, The Nature Conservancy and the Marine Aquarium Council.

2.4.1 Coral Reef Issues in SIDS

Coral reefs are one of the most important and extensive ecosystems in SIDS. When considered in conjunction with associated mangrove, sea grass and beach systems, their importance to the well being of SIDS and their unique island environments cannot be overstated. Without reefs, many atoll countries and most beaches in the tropics would not exist. Coral reefs constitute the primary coastal protection mechanism for tropical islands and are the source of sand for atoll islets and beaches. This is in addition to their important functions as subsistence food resources, reservoirs of high biodiversity, and indicators of environmental health. The social, cultural and economic prosperity of many tropical SIDS has been, and will continue to be, directly and indirectly dependent upon the health of coral reefs and associated ecosystems. In many instances coral reefs are the life support system for the existence of SIDS and their coastal dwelling communities.

2.4.2 UNEP Coral Reef Activities in SIDS

In addition to the national level activities, UNEP also undertakes global and regional activities on coral reefs that benefit SIDS. For example, the World Atlas on Coral Reefs produced by UNEP-WCMC includes maps of all SIDS reef areas. The Global Coral Reef Monitoring Network (GCRMN), of which UNEP is a co-sponsor and Management Board member, promotes monitoring and assessments of coral reefs and reports on the status of coral reef ecosystems on a national level.

The Global Programme of Action for the Protection of the Marine Environment from Land-based Activities bears directly on reducing a major source of threat to reefs. UNEP also promotes sustainable

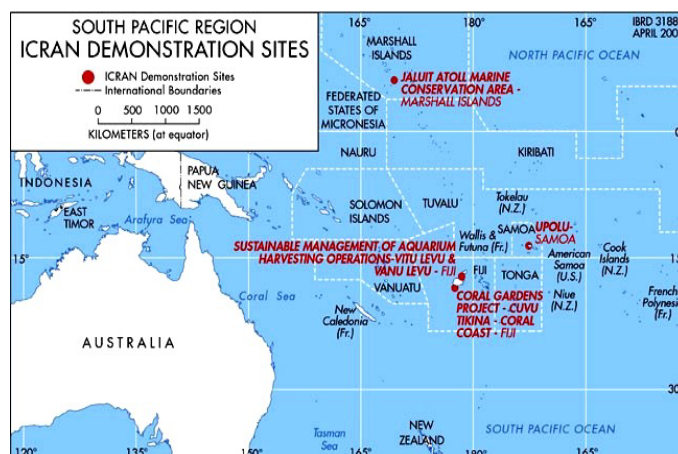
tourism, relevant to SIDS. The UNEP communication tool kit on coral reef conservation for the tourism industry - 'It's my choice', is a set of five communication tools to be used by tourism industry as part of their communication strategy.

UNEP's contribution to conventions is especially significant. The implementation of the Jakarta Mandate of the CBD is directly relevant to coral reefs, and coral bleaching is addressed through the UNFCCC. The Convention on International Trade in Endangered Species (CITES) controls the trade in corals and marine aquarium specimens, where SIDS have an active and critical role.

UNEP-WCMC is currently hosting a number of international offices such as the Co-coordinating Unit of ICRAN, which deal, inter alia, with environmental matters related to SIDS. Hosting the UNEP Coral Reef Unit further strengthens this role.

The Pacific Region

The Pacific region has more coral reefs than any other region of the world. About 40 per cent of the world's mapped reefs are found here. Most of the reefs support an exceptional diversity of fish, marine invertebrates and corals (UNEP, 1999a). Coral reefs in many uninhabited areas remain in good condition; however, others have been affected by long-term impacts of historical nuclear testing and other military activities and by poaching of rare species. Fifty nine percent of the reefs in the Pacific have been assessed as being low at risk from human development. Approximately 31 per cent are considered as being at medium risk and 10 per cent as being at high risk (Bryan et al, 1998).



The Wider Caribbean

The Caribbean region contains about 20,000 km², or about 10 per cent, of the world's coral reefs. Probably ten times that area is shallow water



systems such as sand banks, sea grass beds and sponge beds at depths less than 100 meters. A combination of near-shore pollution and offshore over-harvesting places the whole of this vast ecosystem at risk of collapsing (UNEP, 1999b). Sedimentation from deforestation, poor agricultural practices, coastal development, pollution, and over fishing are major threats to many reefs in the Caribbean region. Almost 66 per cent of the Caribbean coral reefs are estimated to be at risk, 29 per cent at high risk and 37 per cent at medium risk (Bryan et al, 1998).

UNEP-CEP developed a Regional Training Programme under the framework of ICRAN. To date there have been three regional training courses, resulting in 36 MPA managers receiving training who in turn have trained over 300 additional park staff and/or other stakeholders within their respective MPAs, approximately half from SIDS. The training manual⁸ contains eight modules, covering the range of issues most pertinent to MPA management in the Wider Caribbean Region (WCR). Sustainability was a key factor in the design, and communication and training skills are included to facilitate further training by managers.

Eastern Africa



Coral reefs and reef fish biodiversity of the Eastern African region are increasingly threatened by mining, construction, pollution, destructive fishing practices, and siltation from increased erosion (UNEP, 1999c). This region contains around 15 per cent of the world's coral reefs, however, over 50 per cent of the reefs in the Indian Ocean are at risk (Bryan et al, 1998). The reefs near major towns and cities are particularly threatened due to sewage, over-exploitation and erosion (UNEP, 1999c).

⁸ The manual is available via the UNEP-CEP website (www.cep.unep.org) in both English and Spanish

Jaluit Atoll Marine Conservation Area, Marshall Islands

Managing authority: Republic of Marshall Islands Environmental Protection Agency, and the Conservation Area Coordinating Committee.

Jaluit Atoll has a resident population of about 2500 people, primarily inhabiting 6 of the atoll's 91 islets. Jabor Islet is the most populated with 800 people. Jaluit's economy is based primarily on subsistence activities. The main source of income for most families is selling coral, pearl-shell oysters and trochus snail shells. More recently a small-scale community-managed ecotourism project has been implemented under the South Pacific Biodiversity Conservation Programme. Major threats to this ecosystem include unsustainable harvesting of marine resources such as giant clams, many finfish species, oysters and turtles.

The purpose of the project is to protect the rare and endangered marine species and habitats and to prescribe management interventions for the sustainable use of the range of species that are of economic value to the community. To achieve this, ICRAN is supporting development and implementation of a resource management plan, and strengthening the capacity of the Jaluit community to implement the resource management plan to encourage, facilitate and support the development of viable income-generating alternatives. Efforts to incorporate traditional management systems are strongly supported by the local community. ICRAN also supports the implementation of an ecotourism strategy, including completion of an ecotourism infrastructure.

An expert has been helping local counterparts to install mooring buoys on Jaluit Atoll to mark out the no-take zone and sanctuaries in the marine conservation area. Mangrove forests on Jaluit have been surveyed, inventoried and mapped. Young men from different communities attended a workshop to raise awareness of these ecosystems and the Jaluit Conservation Officer visited the Kosrae Resort Ecosystem project to learn project management skills. The Jaluit Women's Handicraft Club has completed the handicraft shop, established outlets, and continues to conduct community beautification and clean-up activities.

2.4.3 Future Directions

UNEP will continue to engage with national, regional and global partners on all matters concerning coastal and marine interests of SIDS. In particular, UNEP intends to lead in addressing POI adopted at WSSD. However, more attention to the special funding needs of SIDS may be instrumental in strengthening UNEP's contribution. Increased financial resources would further strengthen UNEP's ability to provide leadership and guarantee long-term sustainable development in SIDS.

2.5 Natural and Environmental Disasters Management

In developing its disaster management policy and strategy, UNEP takes its cue from the priorities established by SIDS. The SIDS/POA elaborates on specific actions and policies related to natural and environmental disasters to be undertaken at

UNEP Natural and Environmental Disaster Management Policy and Strategy Is Based on Five Pillars:

- Prevention and Preparedness;
- Assessment and Early Warning;
- Mitigation and Response;
- Communications and Publicity;
- Resource Mobilization.

national, regional and international levels, with co-operation from the international community. Furthermore, the WSSD brought greater focus to disaster reduction and the multi-hazard approach to risk and vulnerability management, within the context of sustainable development. This is evidenced by (a) the political statement adopted by Heads of States, which identifies more frequent and more devastating natural disasters as leading contributors of the growing vulnerability of SIDS, and a priority constraint to sustainable development; and (b) the POI in several chapters includes commitments related to disaster and vulnerability reduction and development of improved early warning capacities. Of Particular relevance is the

chapter on sustainable development which includes "extending assistance to SIDS in support of local communities and appropriate national and regional organizations of SIDS for comprehensive hazard and risk management, disaster prevention, mitigation and preparedness, to help relieve the consequences of disasters, extreme weather events and other emergencies".

UNEP's policy on disaster management is rooted in the "Agenda for Action and Strategic Framework on Emergency Prevention, Preparedness, Assessment, Mitigation and Response". The main axes of this action agenda are:

Prevention and Preparedness: Entails pivotal strategies for lessening the exposure to risk as well as reducing losses to the social and economic infrastructure and environmental capital. Prevention is pursued through programmes in environmental law and cleaner production technologies that contribute to long-term prevention and reduction. Preparedness measures are aimed at increasing public preparation through the promotion of awareness of risks associated with emergencies. UNEP pursues this goal by promoting the implementation of the *awareness and preparation for emergencies at the local level* (APELL) programme through the cooperation of national and local partners.

Assessment and Early Warning: Aims at evaluating the vulnerability of human society to environmental changes. The information generated is used to support decision-making processes in disaster management such as: (a) development of disaster preparedness strategies and contingency planning processes; (b) elaboration of supporting disaster management policies; and (c) improvement of sub-regional cooperation for preparedness and response.

Mitigation and Response: Designed to strengthen cooperation with the Office for the Coordination of Humanitarian Affairs (OCHA) and other organizations in carrying out emergency response

activities through the joint UNEP/OCHA Environment Unit and facilitate timely mobilization of international assistance to minimize the impacts of environmental emergencies.

Communications and Publicity: Achieved through the dissemination of information and raising of awareness with governments and relevant organizations on the environmental dimensions of the disaster management cycle and to include disaster management in overall action plans for natural disaster mitigation.

Resource Mobilization: Aims at prioritizing activities, tapping into existing resources and simultaneously mobilize additional resources to deliver UNEP's Programme of Work on environmental emergencies.

2.5.1 Disaster Management Issues in SIDS

Many SIDS register relatively high gross national product (GNP), however, their economies are extremely susceptible to external policy shocks, economic fluctuations and environmental shocks. SIDS possess limited resources (human, capital, land, water, forest, etc) and are challenged by the advancing forces of development on an essentially declining resource base. Although the population in some SIDS is low, its density in some islands is extremely high resulting in a much lower quantity and quality of natural resources *per capita* in comparison to countries with larger landmasses. Scarcity of natural resources forces development activities (e.g., tourism, agriculture, human settlements) to spill over into marginal or sensitive environments. This results in exposure of populations to increased risks associated with flooding, hurricanes, river siltation, deforestation, and soil erosion. There is clear evidence of an increase in the frequency and intensity of natural disasters throughout the world, particularly in SIDS.

2.5.2 UNEP Disaster Management Activities in SIDS

The strategic framework for emergency prevention, preparedness, assessment, mitigation and response underpins UNEP's general policy for SIDS in disaster management. The objective is to facilitate SIDS to proactively manage threats from environmental emergencies or disasters through the development of measures for the assessment, forecasting, prevention, and mitigation of disasters through programmes of technical assistance, technology transfer, demonstration projects, and education and training tailored to specific disasters, locations and regions. The ultimate goal of this policy is to protect human population and preserve the biophysical, high diversity and invaluable ecological and socio-economic resources through an integrated approach to prepare for and respond to environmental emergencies and strengthen the island states with the appropriate human resources capabilities, tools and products to manage such events.

Two projects have been developed for potential donor funding, with the emphasis on strengthening capacities at the national and local levels to undertake preparations for and respond to natural disasters that adversely impact the environment. The projects focused on: (a) a management programme of preparedness and response to environmental emergencies caused by rapid onset of natural events in the South Pacific SIDS region; and (b) implementation of APELL programmes in the Galapagos Island.

It is estimated that 12 per cent of the major petroleum spills in the marine environment occur from tanker accidents (US Academy of Science). In most areas covered by the Regional Seas Programme of UNEP, a technical protocol has been adopted, which provides the legal basis for mutual assistance among neighboring countries to combat pollution from maritime related spills. By pooling resources and expertise, these types of agreements provide a cost-effective mechanism for immediate

response to emergencies that cannot be dealt with efficiently by the independent actions of one country. Furthermore, these protocols provide a legal framework that facilitates:

- Early notification of a pollution emergency;
- Continuous exchange of information at the preparedness and response phases;
- Mutual assistance between neighboring countries.

2.5.3 Future Directions

The international community must face the challenge of providing tangible assistance for SIDS to:

- Develop comprehensive and integrated land use and water management strategies capable of alleviating the impact of natural hazards;
- Bring the ecological dimensions and best management practices for natural resources (land, coastal, water) more concretely into the disaster management framework;
- Establish reliable forecasting, early warning and notification systems linking island states within the same region;
- Introduce effective national mechanisms to receive, analyse and react to early warning notifications of environmental emergencies;
- Develop and implement national contingency plans and environmental emergency mitigation measures;
- Build capacity of national and local authorities for cross-sector planning to prepare and respond to environmental emergencies;
- Increase understanding through education and raising awareness among communities on disaster prevention and preparedness strategies;
- Incorporate indigenous knowledge and traditional coping strategies in prevention, preparedness and response to enhance community self-reliance in dealing with disasters.

2.6 Management of Wastes

Waste management in its broadest sense encapsulates both prevention and disposal. The strategy of UNEP is to concentrate on the prevention side, with strong initiatives on cleaner production technologies and sustainable consumption to avoid wastes and unnecessary “end-of-life” products from being generated in the first instance. UNEP has forged strong links with leading waste management institutions. This approach allows UNEP to make accessible to industry and government, advice on the entire life-cycle management of the waste stream. UNEP association with waste management entities has also facilitated the production of guidance documents and trainers manuals that are pivotal to capacity building.

UNEP has devoted substantial efforts to hazardous, toxic and municipal wastes. The increasing use of chemicals in all sectors of society (including the household) has resulted in many residues that have hazardous properties. In this regard, UNEP has improved the information available to governments and private sector specialists in this field. Training manuals and guidance documents on hazardous waste management (incorporating cleaner production technology) have been produced.⁹

2.6.1 Waste Management Issues in SIDS

Compared to other developing countries, waste management presents special difficulties for SIDS. These are derived in part from their small land area, high dependence on imports and high population densities. Waste management in SIDS is not limited to the disposal of litter. Sewage, hazardous and toxic wastes also form part of the waste problem. The large amounts of wastes produced by tourists, for example, is a difficult problem for SIDS particularly since it is typically generated over a

⁹ These documents can be found on the following websites:
http://www.uneptie.org/pc//cp/understanding_cp/related_concepts.htm
<http://www.uneptie.org/pc//pc/tools/est.htm>
<http://www.uneptie.org/pc//sustain/about-us/about-us.htm>

short period, thereby often overloading existing disposal and treatment facilities. These characteristics make it essential that special attention be given to SIDS in waste management.

According to UNEP's Environment Outlook publication for various groups of SIDS (1999), waste management is a major environmental issue. The high population growth in most urban areas, which can be as high as 7 per cent per annum, results in the generation of large volumes of both liquid and solid wastes. The solid waste management problem has been compounded by the

inorganic, a result of industrialization. These pollutants are major causes of the degradation of water quality in small island states.

2.6.2 UNEP Waste Management Activities in SIDS

UNEP embarked on an initiative to assist SIDS manage waste using the integrated waste management (IWM) concept, which provides a perspective and framework for the development of sustainable waste management systems. IWM in SIDS is founded on the principle that small islands

Integrated Waste Management

In 1999, UNEP embarked on a project to promote waste management in SIDS. It drafted two documents and published them in English and French:

- *Directory of Environmentally Sound Technologies for the Integrated Management of Solid, Liquid, and Hazardous Waste for Small Island Developing States (SIDS)*
- *Strategic Guidelines for Integrated Waste Management in Small Island Developing States*

Working with UNEP and the project implementing agency, the Indian Ocean Commission, were a number of other regional organizations:

- Caribbean Environmental Health Institute

- Commonwealth Secretariat
- Organization of the Eastern Caribbean States
- Island and Small States Institute in Malta
- South Pacific Applied Geoscience Commission
- South Pacific Region Environment Programme

Experts from these regional SIDS institutions who reviewed the documents found the technologies appropriate for SIDS. They recommended that each region adapt the technologies that suited it. The Indian, Mediterranean and Atlantic Ocean SIDS and the Pacific SIDS have now done this and the Caribbean is in the process of doing so. The Indian, Mediterranean and Atlantic Ocean region has also developed a waste-management strategy that emphasizes minimizing wastes and recovering resources.

changing quality and composition over the past two decades. The quality has changed from the dense and almost completely organic wastes associated with agricultural economies to less biodegradable wastes produced in industrialized countries. In some countries the organic waste decreased by about 50 per cent over 14 years while plastic wastes increased five fold. There is, in addition, a growing percentage of toxic and hazardous wastes material in the waste stream.

Liquid wastes, sewage in particular, are a big environmental hazard. Similar to the solid wastes, the composition is changing from organic to

are made up of integrated ecological, social and economic systems. Thus, waste management systems must deal with the interaction between the waste system and other relevant systems such as drainage, sanitation, industry, agriculture, water supply, private and public sector agencies and civil society. Furthermore, the scope is enlarged from the traditional collection to include waste prevention and resource recovery. Fundamental to IWM, is the 'zero concept' where the various phases of the waste cycle are managed such that the residual waste requiring disposal is progressively reduced to 'zero'.

In this connection, UNEP has joined forces with the Commonwealth Secretariat and regional SIDS institutions (IOC, Island and Small States Institute of the University of Malta, SPREP, OECS, and

SOPAC). The outputs of this collaboration include guidelines, waste management strategies, technology transfer, human resource development and implementation of conventions.

As part of the GPA Clearing-House Mechanism, regional nodes have been developed both in the Caribbean and in the South Pacific regions¹⁰. Activities undertaken to implement the GPA Strategic Action Plan on Sewage (UNEP Governing Council Decision 20/19B.1d) in cooperation with the WHO, HABITAT and the Water Supply and Sanitation Collaborative Council, include:

- (a) Preparation of a set of case studies illustrating the environmental, social and economic benefits of addressing wastewater in coastal areas of East Asia, South Asia, Eastern Africa and the South-East Pacific;
- (b) Secured funding to conduct regional partnership meetings in the wider Caribbean, Eastern Africa and wider East Asia;
- (c) Organized multi-stakeholder regional meetings jointly by the Regional Seas Secretariats and UNEP regional offices, to further implement the Strategic Action Plan on Municipal Wastewater.

UNEP has been instrumental in the production of the document "*Strategic Guidelines for Integrated Waste Management in SIDS*". Experts from the Caribbean, Indian Ocean, Mediterranean, and Pacific SIDS, the Commonwealth Secretariat, other UN Agencies, and the private sector, reviewed the original document. UNEP also supported SPREP to develop the *Guidelines for Municipal Waste Planning in the Pacific Region*.

¹⁰ The central node of the clearinghouse mechanism was launched at the special Session of the UN General Assembly for the review of the SIDS/BPOA in 1999.

UNEP, assisted the IMA-SIDS to develop the "*Waste Management Strategy with Special Emphasis on Minimization and Resource Recovery*" strategy as a follow-up to the Valetta Declaration (1998), and the UNEP Meeting on Integrated Waste Management for the Indian and Atlantic Ocean SIDS organized by the IOC in December 1997. The waste management strategy adopted at the UNEP/IOC meeting identified the need to adopt a regional approach to waste minimization as one of the priority issues. The components of the strategy were identified during the IMA-SIDS Meeting of Technical Experts on IWM and Waste minimization in SIDS held in Mauritius from 22 - 25 November 1999. The strategy was prepared by the IOC, reviewed and endorsed by the IMA - SIDS High Level Meeting on IWM and Waste Minimization in SIDS from 14 - 15 December 1999 in Mauritius.

Technology Transfer

UNEP, in partnership with the IOC, Commonwealth Secretariat, SOPAC, SPREP, OECS, University of Malta, Islands and Small States Institute of the Foundation for International Studies and Opus International Consultants embarked on a programme to improve the access of SIDS to appropriate technology. A draft directory containing technologies considered to be appropriate for SIDS from practical experience as well as literature review was compiled. Experts representing regional SIDS institutions from the Pacific, Caribbean, Indian, Mediterranean and Atlantic Ocean (IMA), and the Commonwealth Secretariat subjected this draft to peer review. The review was made at the *UNEP Meeting of Experts on Waste Management in Small Island Developing States*, held in London from 2 - 5 November 1999. The experts concluded that, in general, the technologies appear to be appropriate for SIDS, but recommended that each SIDS region further review and adapt the technologies according to their specific conditions.

Experts from the IMA/SIDS reviewed and adapted the technologies to suit their conditions in December 1999 in Mauritius. This review

culminated in the publication of the document “*A Directory of Environmentally Sound Technologies for the Integrated Management of Solid, Liquid, and Hazardous Waste for Small Island Developing States (SIDS) in the Indian, Mediterranean and Atlantic Region*”.

Experts from the Pacific Region reviewed and adapted the technologies to suit their conditions in Majuro, Marshall Islands in October 2001. This led to the production of the document: “*A Directory of Environmentally Sound Technologies for the Integrated Management of Solid, Liquid, and Hazardous Waste for Small Island Developing States (SIDS) in Pacific Region*”.

UNEP in collaboration with SPREP and Environment Australia convened a Workshop on “*Waste Management in Small Island Developing States*” for South Pacific SIDS in May 1997. Participants include Samoa, Vanuatu, Solomon Islands, Papua and New Guinea, Niue, Nauru, Kiribati, Fiji, Federated States of Micronesia and Cook Island. A similar workshop was held for the Indian and Atlantic Ocean SIDS in Mauritius December 1997. Participating countries included Cape Verde, Sao Tome and Principe, Seychelles, Mauritius, Maldives, Madagascar and Comoros.

Implementing Waste Related Conventions

UNEP serves as the Secretariat for the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal Adopted by the Conference of the Plenipotentiaries* (Basel Convention), entry into force in May 1992, to which most SIDS are party. The Secretariat has assisted SIDS in various aspects of implementing the treaty, through its Regional Centres. In the South Pacific region, the Secretariat of the Basel Convention (UNEP) is working with the SPREP and the Secretariat of the Waigani Convention to increase the ratification of both Conventions and to establish Joint Pacific Regional Centres for their joint implementation as requested by the countries. The Basel Convention and

Waigani Convention also undertake joint training courses.

In the Caribbean, the regional centres for the Basel Convention are located in Trinidad and Tobago and El Salvador. These centers support the efforts of SIDS to implement the Basel Convention. Prominent among the activities undertaken in the Caribbean is the development of appropriate legal frameworks to support transboundary movement and ensure environmentally sound recycling of wastes. Another prominent activity is the recognition and promotion of *best practices* for packaging, transporting, recycling, manufacturing and distribution of new and used lead-acid batteries. African SIDS are served by the Basel Convention Regional Center in South Africa and the Basel Convention Regional Center in Senegal.

2.6.3 Future Directions in Waste Management

All SIDS, through their regional organizations, have adopted some policies and strategies for addressing the waste management problem. However, these have not been fully implemented. UNEP can facilitate implementation in the following areas:

- Evaluate the extent to which existing guidelines and technologies are used;
- Conduct pilot projects in partnership with SIDS institutions and other agencies to test and demonstrate the applicability of the guidelines. In particular, the guidelines relating to management of plastic and other non biodegradable wastes needs to be adapted to the conditions of SIDS;
- Assess the best practices for transboundary waste management practices in the Caribbean and promote its use in other SIDS regions.

Table 6. Selected Environmental Conventions and Related Agreements of Global Significance

Agreement	Year Adopted	Secretariat
Atmosphere Conventions:		
United Nations Framework Convention on Climate Change (UNFCCC)	1992	UNEP
Kyoto Protocol to the United Nations Framework Convention on Climate Change	1997	UNEP
Vienna Convention for the Protection of the Ozone Layer	1985	UNEP
Montreal Protocol on Substances that Deplete the Ozone Layer	1987	UNEP
Biodiversity-related Conventions:		
Convention on Biological Diversity (CBD)	1992	UNEP
Cartagena Protocol on Biosafety	2001	UNEP
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	1973	UNEP
Bonn Convention on Migratory Species of Wild Animals (CMS)	1979	UNEP
Agreement on the Conservation of the Black Seas, Mediterranean and Contiguous Atlantic Area		
Agreement on the Conservation of Bats in Europe	1991	UNEP
Convention on Wetlands of International Importance, Especially on Waterfowl Habitat	1971	IUCN
International Coral Reef Initiative (ICRI)	1995	ICRI Sec
Chemicals and Hazardous Wastes Conventions:		
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal	1989	UNEP
Rotterdam Convention on the Prior Informed Consent Principle for Certain Hazardous Chemicals and Pesticides in International Trade	1998	UNEP/ FAO
Stockholm Convention on Persistent Organic Pollutants	2001	UNEP

Table 6. Continued: Selected Environmental Conventions and Related Agreements of Global Significance

Agreement	Year Adopted	Secretariat
Land Conventions:		
United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa	1992	UNCED
Regional seas conventions and related agreements		
Global Programme of Action for the Protection of the Marine Environment from Land-based Activities	1995	UNEP
Convention for the Protection of the Mediterranean Sea against Pollution (Barcelona)	1976	UNEP
Kuwait Regional Convention for Cooperation on the Protection of the Marine Environment from Pollution	1978	ROPME ²
Convention for Cooperation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region (Abidjan)	1981	UNEP
Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena)	1983	UNEP
Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (Nairobi)	1985	UNEP
Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (Noumea)	1986	SPREP
The East Asian Seas Action Plan	1981	UNEP
The Northwest Pacific Action Plan (NOWPAP)	1994	UNEP
South Asian Seas Action Plan	1995	SACEP

2.7 Fresh Water Resources Management

The supply of freshwater remains one of the most critical issues of the 21st Century. Statistics indicate that 1.2 billion people lack access to safe water and 2.5 billion do not have access to basic sanitation. Water is pivotal in the fight against poverty and fundamental to the protection and management of natural resources.

The WPS of UNEP also provides a framework for responding to the challenges highlighted in the WSSD (2002) POI and the United Nations Millennium Development Goals (MDGs). In

Through its work on Water Policy and Strategy (WPS), UNEP addresses:

- Inadequate quantity;
- Declining quality;
- Insufficient access; and
- Simultaneously promoting a better understanding of the linkages between freshwater, coastal areas and marine environment.

particular, the international community pledged in the MDGs (2000) and at the WSSD (Johannesburg, 2002) to halve the proportion of people without access to safe drinking water and basic sanitation by 2015. To achieve these targets, an additional 1.5 billion people will require improved access to water supply by 2015. This means providing services for another 100 million people each year (274,000/day) from 2000 to 2015.

2.7.1 Freshwater Issues in SIDS

Freshwater resources rank very high on the priority list of SIDS. This is understandable, given the special circumstances of these islands. First, the impacts of the surrounding sea on their freshwater resources are typically more pronounced than for large islands and mainlands. Second, SIDS are extremely sensitive to natural disasters (typhoons,

hurricanes, cyclones, sea level rise, etc.) which contribute to the vulnerability of their freshwater resources. Third, despite the relatively heavy rainfall received by many SIDS, a considerable number experience water shortages as they have limited capacity to store water for use during dry seasons. SIDS are therefore heavily dependent on ground water resources which often exist as freshwater “aquifers” and any withdrawal rate exceeding the sustainable water yield can result in temporary or permanent damage. Fourth, for these and other reasons, the issue of freshwater resources for SIDS must be addressed in a comprehensive multi-sectoral and integrated manner, in order to adequately address the sustainable management and use of freshwater resources over the long term.

2.7.2 UNEP Freshwater Activities in SIDS

Technology Transfer - UNEP recognizes that SIDS have special development needs and so it is not always feasible or advisable to transfer technology developed for countries with larger landmasses compared to small islands. Accordingly, UNEP in 1998 compiled a “Source Book on Alternative Technologies for Augmenting Freshwater Resources in SIDS”¹¹. This was accomplished in partnership with SOPAC and input from the various SIDS regions.

In 1997 UNEP, in partnership with the Gozo Centre of the University of Malta and the Islands and Small States Institute of the Foundation for International Studies, conducted a workshop on “*Integrated Management of Freshwater, Coastal Areas and Marine Resources in SIDS*”. This workshop was attended by participants from Antigua and Barbuda; Bahamas; Cape Verde; Cuba; Maldives; Malta; Sao Tome and Principe; Seychelles; Vanuatu.

¹¹ The document can be downloaded from the maestro directory of Environmentally Sound Technologies (EST) at <http://www.unep.or.jp/maestro2> developed and managed by the UNEP International Environment Exchange Center (IETC).

Representatives of three regional SIDS organizations also attended (SACEP, SOPAC, OECS).

UNEP, in partnership with SOPAC and the Tonga Community Development Trust (TCDT), is implementing a Swedish funded 'Pilot Project to Empower Women in Rainwater Harvesting in Tonga'. This project is a product of "the Source Book", which identified rainwater harvesting, as one of the technologies suitable for SIDS.

2.7.3 Future Directions in Freshwater Management

Several guidelines have been developed by UNEP and other agencies pertaining to managing freshwater resources in SIDS. UNEP can assist SIDS in managing freshwater resources by promoting integrated water resources management (IWM). This can be accomplished in the three areas:

- Assessment through GEO and GEMS/Water capacity building programme;
- Developing water policy and strategies using the PAEDELIA project approach;
- Policy implementation through pilot projects to promote technology transfer and development of practical guidelines.

Empowering Women in Rainwater Harvesting in Tonga

Fresh water is often a scarce and precious commodity on an island with plenty of water around it—but all of it seawater. One good source, readily at hand on tiny islands in the Pacific, is rainwater. Take Tonga for example. It is a small Polynesian kingdom located in the southwest Pacific, comprising over 150 small coral islands but with only 36 of them inhabited. Its average annual rainfall varies from 1800 mm in the south to 2500 in the north.

To demonstrate the effectiveness of rainwater harvesting and to boost women's role in water management, UNEP is working with the South Pacific Applied Geosciences Commission and the Tonga Community Development Trust in a project funded by the Swedish government. Project goals are to increase the quantity and quality of water in the communities where the project is functioning and at the same time to increase women's participation in rainwater harvesting schemes.

The two sites identified to participate in the project are 'Utungake, a village without a groundwater supply where 30 homes need water tanks, and Nuapapu, a remote island with two villages, where 15 homes need water tanks. In these three villages, 45 Ferro-cement water tanks with a capacity of 3000 gallons (11,340 litres) each will be constructed in 2004.

The project plans to train women in how to plan, develop and maintain a rainwater harvesting system. It will develop guidelines and produce a manual that will include aspects on design, water management, water quality and health, and community participation.

UNEP's activities in freshwater have focused on policy implementation, in particular technology transfer and stakeholder participation. However providing technology alone is inadequate. The next step is to promote the use of the technologies within the different regions and disseminate the results widely. Continued improvement in water resources management is fundamental and requires a co-ordinated effort across many sectors such as water-shed management; strategies aimed at reducing deforestation rates; raising public awareness of wise water use and management and improvements in waste disposal, especially sewage.

2.8 Tourism Resources

Taking into account environmental, social and economic aspects is key to guaranteeing the long-term survival of the tourism sector as well as the conservation of the host environment. Furthermore, sustainable tourism represents a major tool for income generation and protection of the environment, especially in areas important for their biological diversity and natural beauty.

The UNEP Division of Technology, Industry and Economics (DTIE) has developed a programme to

support the integration of environmental considerations in the public and private sectors. The programme is supported by the 1999 UNEP Governing Council recommendations calling for the (a) production and dissemination of consensual guiding principles for sustainable tourism, (b) support for voluntary industry initiatives and codes of conduct, and (c) support of the Commission on Sustainable Development (CSD) for governments to integrate sustainable tourism into national development strategies.

2.8.1 Sustainable Tourism Issues in SIDS

SIDS have long recognized the importance of sustainable tourism for their environments and peoples, and included recommendations on it in the SIDS/POA. SIDS face pressing environmental constraints, including limited land resources and uncontrolled tourism development in the past, which may have damaged their rich coastal resources, limited freshwater and scarce energy resources, and increased solid and liquid wastes. If these threats are not dealt with, they could seriously damage both tourism and other economic sectors, such as fisheries. Many SIDS have established initiatives for sustainable tourism, and are strengthening their policy frameworks for sustainable development with assistance from the international community.

2.8.2 UNEP Sustainable Tourism Activities in SIDS

UNEP and the World Tourism Organization (WTO) sponsored a conference on Sustainable Tourism in Small Island Developing States and Other Islands in 1998, with the cooperation of the Alliance of Small Island States (AOSIS). This conference, held at Lanzarote, in the Canary Islands, outlined how careful planning and control over tourism, particularly at the destination level, is critical for SIDS to derive real benefits – and minimize negative effects – for their socio-economic development, livelihood improvement, and environmental protection. Managing coastal zones

and protecting sensitive ecosystems are important, as are comprehensive environmental impact assessments, for all tourism development projects.

Box 3 **Selected UNEP/DTIE Publications on Tourism**

- Guidelines: Development of National Parks and Protected Areas for Tourism, jointly with WTO, 1992
- Environmental Action Pack for Hotels, jointly with the International Hotel Association and the International Hotel Environment Initiative, 1995
- Environmental Good Practice in Hotels: Case Studies, jointly with the International Hotels and Restaurants Association, 1997
- How the Hotel and Tourism Sector Can Protect the Ozone Layer, with the support of the Montreal Ozone Multilateral Fund, 1998
- Sowing the Seed of Change: an Environmental Teaching Pack for the Hospitality Industry, 2001
- Sustainable Tourism in National Parks and Protected Areas: Guidelines for Development and Management, in cooperation with IUCN and WTO/OMT, 2002
- The World Ecotourism Summit, Final Report, in cooperation with WTO/OMT, 2002
- Switched on: Renewable Energy Opportunities in the Tourism Industry, 2003
- Tourism and Local Agenda 21 - The Role of Local Authorities in Sustainable Tourism, 2003
- Visitors' Management Manual for Asian World Heritage Sites, in cooperation with UNESCO, 2003
- Tour Operator's supplement to the Global Reporting Initiative 2002 Sustainability Reporting Guidelines, TOI, 2002
- A Practical Guide to Good Practice: Managing Environmental and Social Issues in the Accommodations Sector, TOI in collaboration with CELB, 2003
- Tourism Focus (regular bulletin in the Industry & Environment Review) – also available on-line (www.unepie.org/tourism)

The conference highlighted the importance of creating opportunities for communities to participate in tourism in SIDS. In some cases legal changes have been introduced to give local communities greater control over tourism development in their localities. This approach is already paying dividend, helping local communities

to create jobs, and protecting their cultures and environments.

A preparatory conference for the International Year of Eco-tourism was held in December 2001 in the Seychelles. Co-sponsored by UNEP, it targeted sustainable development and management of eco-tourism in SIDS. For the International Year of Eco-tourism (2002), WTO organized a conference in Fiji in April concerning the sustainable development of eco-tourism in the South Pacific Islands.

Other UNEP activities to promote sustainable tourism have focused on the private sector and public authorities at the national and local levels.

Activities Targeting the Public Sector

To support national and local authorities' sustainable tourism policy efforts, UNEP/DTIE has produced the *Principles for the Implementation of Sustainable Tourism*. The key areas addressed by the principles are integration of tourism into overall policy for sustainable development, development of sustainable tourism, management of tourism and conditions for success.

Further support is provided to local authorities for the development of Local Agenda 21, which has proven to be a successful approach for ensuring multi stakeholder participation for developing local policies to address sustainability issues. A manual, *Local Agenda 21 - The Role of Local Authorities in Sustainable Tourism*, has been released in 2003, providing examples from 5 European local communities on how the process has been set up and results achieved.

UNEP, in collaboration with UNESCO, WTO/OMT and IUCN has recently released two manuals that provide guidance on how to manage tourism in protected areas, with the objective of protecting biodiversity and at the same time enhancing the benefits of tourism for conservation and local communities.

Activities Targeting the Private Sector

The private sector, and in particular accommodations interests, has a great challenge to meet. They are based in the visited destinations; hence they are the ones that have the most to gain from improving their sustainability. Since the accommodation segment is comprised mainly of small and medium enterprises, technical capacity is often low. Accordingly, the cumulative impacts of hotels, if built in sensitive ecosystems such as coastal areas, could be quite strong. Fresh water consumption, water pollution, solid waste, energy consumption are some of the key areas in which hoteliers are called to take action. UNEP/DTIE has produced a series of technical reports, often in collaboration with the International Hotels and

Restaurants Association, to support hotels in improving their performance in these areas. These reports have been disseminated widely through hotel associations as well as UNEP regional offices. Another key sector in the tourism industry is the tour operators. Tour operators in fact not only have an influence on their service suppliers (such as hoteliers, excursion providers, ground transport operators), but also can influence customers' behavior at destinations. UNEP/DTIE has therefore launched in 2000, in cooperation with UNESCO and the World Tourism Organization, the *Tour Operators' Initiative for Sustainable Tourism Development* (TOI). The TOI is a network of more than 25 tour operators, of different specialties and countries of origin, moving more than 30 million tourists each year, and is committed to integrate environmental, social and cultural considerations into their activities and operations; adopting best practices in managing sustainable tourism; and creating awareness among their customers and partners of what they can do. The TOI also takes common action to promote greater collaboration between tour operators and destinations' stakeholders, and to develop and adapt sustainable management tools such as sustainability reporting guidelines specific for the sector.

Activities Targeting the Consumers

Consumers have substantial influence on the environment and social structures of the visited destinations. Preference for 'sustainable products' and responsible behavior are two key aspects of consumers' responsibility in sustainable tourism. To promote responsible holiday making in coral reef destinations, UNEP/DTIE, with the support of the French Ministry of Ecology and Sustainable Development (MEDD) has developed a communication tool kit, that includes five communication tools, ready for printing, and made available free of charge to any organization and company wishing to promote responsible travel. The 'tips for travellers' are also available through UNEP/DTIE web site.

UNEP/DTIE also promotes the use of certification and awards to advance sound environmental management and to support sustainable consumption. Following a technical report on *Ecolabels in the Tourism Industry*, which offers guidelines on how to structure a credible and effective ecolabel programme, UNEP/DTIE, in cooperation with the Blue Flag International and WTO/OMT, has supported the development of the Blue Flag Award scheme in the Caribbean region.

The CEP is charged with the responsibility for the implementation of the Caribbean Environmental Network (CEN) Project. This new, but integral component of the Specially Protected Areas and Wildlife Project is a joint venture with the United States Agency for International Development (USAID) in Jamaica. The project was designed to focus on tourism, given the importance and scope of the industry in the Caribbean Region and the close linkages with various marine and coastal habitats. CEN is concerned with the rational use and conservation of coastal zones and resources with an emphasis on the tourism industry.

As part of the baseline information needed to guide the implementation of the project's activities, UNEP commissioned a report titled *Coastal*

Tourism in the Wider Caribbean Region: Impacts and Best Management Practices (1997). The report includes an overview of tourism and coastal resources degradation and detrimental practices of the tourism industry in the Wider Caribbean; costs and benefits of coastal resources; and best management practices in coastal tourism and initiatives for mitigation of coastal resources degradation. The project consists of the following main components:

- Training related to tourism in the marine environment;
- Public awareness, information and networking;
- Demonstration pilot projects to minimize the impacts of tourism in coastal areas including the Improvement of Quality of Near-Shore Waters on the West Coast of Saint Lucia: sewage treatment plant operations in tourism facilities.

The Caribbean Action for Sustainable Tourism (CAST) has been set up to implement the Caribbean Hotel Association's (CHA) environmental programme and activities, including producing guidance, an Environmental Management Tool Kit, and a news bulletin in cooperation with UNEP's Regional Office (ROLAC). CAST's homepage (<http://www.cha-cast.com/>) was developed with the support of the CAR/RCU as part of the CEN project. Member hotels are required to commit themselves to a work plan to implement cleaner production and eco-efficient solutions - CAST provides them with full technical support. The CHA gives an award for environmental performance. One winner, The Half Moon Hotel at Montego Bay, Jamaica, employs a full-time environmental officer, treats its own sewage, and runs a recycling programme.

2.8.3 Future Directions in Tourism

Tourism is one of the world's leading industries and its impacts on resource consumption, waste, and social systems are of special concern in SIDS. A

more concrete commitment by governments, donors and other stakeholders is needed to implement the goals of sustainable tourism development. UNEP is working with stakeholder groups and industry sectors to expand and support voluntary initiatives, and to determine how to reproduce the experiences of the Tour Operators Initiative and other initiatives. UNEP is also examining how to support local authorities and destination managers to incorporate sustainable guidelines into tourism development and management plans at the local level. Some other strategies aiming to overcome the implementation gap include:

- Strengthening Pacific countries' responses to international commitments which have a bearing on tourism, including WTO, through improved information flows and training;
- Establishing or strengthening national and regional mechanisms for information exchange and promotion on development of a safe and sustainable tourism sector;
- Promoting recognition of the value of tourism in SIDS, as well as the fragility of resources upon which it depends, including the need for international commitment to accomplish this;
- Increasing the benefits that accrue from the cruise ships industry within the Caribbean region, particularly through continued, enhanced cooperation among Caribbean cruise ship destinations; and
- Developing a monitoring system with achievable, measurable and timely indicators to denote incremental achievements.

CHAPTER 3

Cross-Cutting Activities in Environmental Management

3.1 Multilateral Environmental and Non-binding Agreements

The period from 1972 to the present has witnessed an accelerated increase in the conclusion of agreements. Over 300 agreements have been negotiated, nearly 70 per cent of them regional in scope (UNEP/IGM/1/INF/3, 6 April 2001). Of greatest impact has been the emergence of 17 multi-sectoral regional seas conventions and action plans embracing 46 conventions, protocols and related agreements (See Table 4).

The largest cluster of agreements is related to the marine environment, accounted for over 40 per cent of the total, the most notable being the United Nations Convention on the Law of the Sea (UNCLOS), new IMO pollution conventions and protocols, the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (1995), regional seas conventions and action plans and regional fisheries conventions and protocols. Biodiversity-related conventions form the second-largest cluster, including some key global conventions: the World Heritage Convention (1972), CITES (1973), CMS (1979) and CBD (1992). Two important new clusters have emerged: the chemicals-related conventions, primarily of a global nature, including the International Labour Organization (ILO) conventions that address occupational hazards in the workplace, the Rotterdam Convention (1998) and the new convention on Persistent Organic Pollutants (POPS) adopted in Stockholm in May 2001; and the atmosphere/energy-related conventions, including the Vienna Convention for the Protection of the Ozone Layer (1985) and its Montreal Protocol (1987) and UNFCCC (1992). Of the 40 conventions or agreements listed in Table 4, UNEP is the secretariat for 19 or nearly fifty per cent.

3.1.1 UNEP Approach to Environmental Law

One of the UNEP achievements over the past 30 years has been helping to broker new global and regional environmental treaties. Today UNEP is also working to ensure that the policies pursued under existing conventions remain as mutually supportive as possible and to strengthen the capacity of governments to implement the conventions to which they are party.

UNEP undertakes most of its activities in the field of environmental law in cooperation with governments, UN bodies and specialized agencies, other intergovernmental organizations, civil society and NGOs.

3.1.2 SIDS and Multilateral Environmental Agreements

SIDS, like other developing countries, encounter difficulties implementing MEAs. This is caused by: (a) a lack of awareness by countries that have signed MEAs regarding obligations undertaken and implementation steps needed; and (b) an insufficient legal capacity to advise governments on MEA ratification and compliance requirements.

A way must be found for SIDS, to participate effectively in the work of MEAs. Adoption does not necessarily mean the agreements are implemented. The special needs of SIDS, in particular the least developed among them should be taken into account for example through an allowance of phased introduction or measures and extended time frames for compliance. In this regard, key needs of SIDS include:

- Sufficient resources: to enable them to manage and meet their responsibilities under the conventions and protocols to which they are signatories;
- Effective regional support mechanisms: which reflect the regional interest in promoting in-country capacity development and at the same time is able to represent regional interests in the global context.

3.1.3 UNEP Assistance to SIDS in MEAs

UNEP is supporting SIDS by:

- Complementing their efforts to coordinate, develop synergies, and harmonizing approaches between MEAs as mandated in various articles of various agreements and supported by the decisions of their Conference of Parties (COP);
- Strengthening national capacity to implement agreements, recognizing the need for international co-operation and co-ordination to establish a level playing field. Experts from developing and developed countries formulate Guidelines for National Enforcement, and International Co-operation in Combating Violations;
- Assisting to harmonize reporting to different but related agreements in order to reduce the burden of reporting to the agreements separately.

International Environmental Law: UNEP has been the leading agency for the development of most of the MEAs and is constantly engaged in providing support for updating them and for developing associated protocols. UNEP also hosts the secretariats of several global and regional conventions. UNEP is very active in providing technical assistance to SIDS for developing regional legal instruments. An important example is the conventions and other legal instruments developed in the context of the Regional Seas programme for

the protection of the marine and coastal environment.

National Environmental Law: UNEP provides technical assistance to SIDS for strengthening the regulatory and institutional capacity, develop and implement environmental laws, to harmonize existing environmental laws, and implement existing MEAs. Technical assistance is provided upon request, both to single countries and to groups of countries, and in some cases at the sub-regional level.

Several SIDS have benefited from UNEP's technical assistance in this field, such as: Papua New Guinea, Vanuatu, Kiribati, Sao Tome & Principe, Trinidad and Tobago, and Seychelles. UNEP also assisted several groups of countries with development of constitutional and institutional regimes and other matters. These include for example the African Ministerial Conference on Environment, the Central American Commission on Environment and Development and many others.

Environmental Law for the Judiciary and other Legal Stakeholders

UNEP recognises the central role of the judiciary in the development, interpretation, implementation and enforcement of environmental law. UNEP started focusing on the judiciary in 1996, when the first Regional Judges Symposium was organised in Kenya. This was followed by several other judicial symposia where SIDS were represented. Examples include: Castries, Saint Lucia, April 2001 – where Sao Tome & Principe, Cuba, Jamaica and other English Speaking Caribbean countries were in attendance; Brisbane, Australia, February 2002 – attended by the Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Palau, Samoa, Solomon Islands, Tonga and Vanuatu and others; and Kuwait, 26-28 October 2002 – attended by Bahrain and others.

Based on the outcome of these Symposia, UNEP convened the Global Judges Symposium on

Sustainable Development and the Role of Law in Johannesburg, South Africa, on 18-20 August 2002, as a parallel event to the WSSD. This event gathered more than 120 Chief Justices and Senior Judges from about 60 countries and several Judges from International Courts and Tribunals. Chief Justices and Senior Judges representing Cuba, Guyana, Marshall Islands, Mauritius, Saint Lucia, Samoa and Seychelles attended. The Global Judges Symposium was followed by a meeting¹² of a smaller group of judges, which laid a strong foundation for a long-term, sustained programme of capacity building for the judiciary and other legal stakeholders in the field of environmental law to be implemented mainly at the national level.

UNEP organises training programs, workshops, conferences, seminars and symposia at international, regional and national levels also in cooperation with other partners. One of the most important initiatives is the Global Training Programme in Environmental Law and Policy, organised by UNEP every two years for government officials working in the field of environmental management and legislation. In the five editions held so far, more than 180 government officials, mainly from developing countries and countries with economies in transition, have been trained. SIDS benefiting from this capacity building exercise include: Belize, Mauritius, Seychelles, Fiji, Kiribati, Maldives, Papua New Guinea, Samoa, Singapore, Tonga, and Vanuatu, Bahrain, Antigua & Barbuda, Barbados, Cuba, Dominican Republic, Jamaica, Saint Lucia, Saint Kitts and Nevis, Trinidad and Tobago.

UNEP also provides technical assistance to promote environmental law education and to develop academic structures and curricula in environmental law at the University level. Among other countries, Singapore benefited from this activity. UNEP

provided Support to the ESCAP/IUCN/University of Singapore project for the development of a Regional Centre of Environmental Law at the University of Singapore. In 1996 APCEL (Asia Pacific Centre for Environmental Law) was established at the Law Faculty of that University.

Environmental Law Information

Environmental law information is a major component of capacity building. In order to enhance information on environmental law UNEP has a programme to produce and disseminate such information through, *inter alia*, publications and electronic media. The activities carried out by UNEP in this field normally address all countries. For example UNEP/IUCN/FAO Joint Environmental Law Information Project (ECOLEX), an electronic database containing national environmental legislation and international environmental instruments, is freely accessible on the Internet (www.ecolex.org) and constitutes an information resource for all countries with Internet access.

3.1.4 Future Directions

UNEP is presently designing a project on environmental law specifically for SIDS. This project is expected to strengthen the capacity of SIDS to enforce national environmental laws and international environmental agreements using the Guidelines for National Enforcement, and International Co-operation in Combating Violations, strengthen the capacity of SIDS to coordinate and harmonize the implementation and reporting of MEAs, and implement measures that build national capacity to comply or make it less costly to comply with the treaty's obligations.

¹² Judges Ad Hoc Meeting for the Development of a Plan of Work as a follow-up to the Global Judges Symposium Relating to Capacity Building of Judges, Prosecutors, and Other Legal Stakeholders. Nairobi, 30-31 January 2003.

3.2 Environmental Vulnerability Index

The environmental vulnerability index (EVI) is a research project of the South Pacific Applied Geoscience Commission (SOPAC) looking specifically, and for the first time, at the risk of damage to the natural environment, which underpins all human activities.

The EVI needs to be a robust, flexible tool aimed at providing a simple, short cut measure of the vulnerability of the environment of countries. The index should be intuitive and easily understood to facilitate wide usage in international processes (such as determination of LDC status) in addition to being a useful device for identifying vulnerability issues.

The main strength of an EVI should be that it can provide not only simplified summary information, but also detailed data required to highlight specific areas of concern for environmental managers and scientists. Vigorous testing of the EVI will ensure that it is, as much as possible, an impartial measure which will differentiate among countries and will allow comparisons and determination of which countries are more vulnerable than others on the world scale.

The EVI can also be used to monitor the vulnerability of the environment through time, as levels of risk and resilience related to human choices change. The EVI thus provides an opportunity for targeting of development and environmental management efforts.

The EVI is reported simultaneously as a single dimensionless index and as a breakdown profile showing the results for each indicator so that in addition to an overall signal of vulnerability, it can be used to identify specific problems. It has been designed to reflect the status of a country's 'environmental vulnerability', where 'vulnerability' refers to the extent to which the natural environment is prone to damage and degradation. It does not

address the vulnerability of the social, cultural or economic environment.

The EVI is a composite index that measures the vulnerability of ecosystem integrity through a set of "smart" indicators that: (a) capture the various levels of risk to hazards that act upon the environment or risk exposure sub-index (REI), (b) the inherent resilience of the environment to risks or an intrinsic resilience sub-index (IRI) and (c) actual level of degradation of the environment or environmental degradation sub-index (EDI). Each indicator is mapped on a vulnerability scale where a high vulnerability value of 7 indicates high risk or vulnerability to ecological damage, while a score of 1 indicates that for this measure the risk or vulnerability is low. Indicators are accumulated into sub-indices and into an overall EVI.

The SOPAC Global Environmental Vulnerability Index (EVI) at a Glance

Purpose:	A globally-applicable vulnerability index for the environment capable of highlighting sources and magnitude of vulnerability for each country
Funding:	New Zealand, Ireland, Italy, Norway, UNEP
Collaborators:	UNEP, WMO, Australia, Bangladesh, Barbados, Botswana, Cook Islands, Costa Rica, Federated States of Micronesia, Fiji, French Polynesia, Greece, Guam, Jamaica, Kenya, Kiribati, Kyrgyzstan, New Zealand, Nauru, Nepal, New Caledonia, Niue, Malta, Maldives, Marshall Islands, Mauritius, Palau, Papua New Guinea, Philippines, Samoa, Singapore, Solomon Islands, St Lucia, Thailand, Tonga, Trinidad & Tobago, Tuvalu, Vanuatu
Responders:	The natural environment, including ecosystems, species, natural resources, biodiversity, ecosystem services (e.g. pollution attenuation, soil formation) as the basis for all human development
Hazards:	Natural disasters, country characteristics, anthropogenic factors
Approach:	54 Indicators of vulnerability on a scale 1-7 (score of 7 indicating most vulnerable) in an unweighted averaging model tested for redundancy, sensitivity and validated
Outputs:	(1) Overall EVI score for a country; (2) three sub-indices, showing risk (REI), intrinsic resilience (IRI) and extrinsic resilience (EDI); and (3) profiles identifying factors contributing to the vulnerability of a country
Information:	www.sopac.org/Projects/Evi/index.html

3.2.1 UNEP Support for Continued Development of the EVI

SOPAC developed the EVI with the support of UNEP, New Zealand, Ireland, Norway, and Italy. The EVI was developed in the Pacific in 1998 and was extensively peer reviewed and critically discussed at an Expert Group Meeting held in Fiji in September 1999. The next step was to globalise the EVI since it was developed in the Pacific. In furtherance of this objective UNEP;

- Supported the participation of experts from outside the Pacific region to attend the Think Tank Meeting is published as “*The Report on the Environmental Vulnerability Index (EVI) Think Tank*”, 7 – 10 September 1999, Pacific Harbour, Fiji (SOPAC Technical Report 299);
- In partnership with SOPAC and the island and Small States Institute of the University of Malta UNEP convened a meeting of experts in Malta to review the EVI. Experts attended the meeting from the Indian, Mediterranean, Atlantic and Pacific regions. The outcome of this meeting was documented in a *Report of the Meeting of Experts on the Environmental Vulnerability Index, Valletta, Malta, 29 November - 3 December 1999*;
- UNEP and SOPAC convened a meeting in Geneva to extend the EVI globally. The outcomes of this meeting were presented in *Globalising the Environmental Vulnerability Index (EVI): Proceedings of the EVI Globalisation Meeting, 27 – 29 August 2001, Geneva, Switzerland (SOPAC Technical Report 345)*.

3.3 Capacity Building for Sustainable Development

The mandate for UNEP capacity building is elaborated in numerous policy documents. For example, Chapter 37 of Agenda 21, *National Mechanisms and Institutional Cooperation for*

Capacity Building”, which notes that: “The ability of a country to follow sustainable development path is determined by the capacity of its people and its institutions as well as by its ecological and geographical conditions. Specifically, capacity building encompasses the country’s human, scientific, technological, organizational, and institutional capabilities. The fundamental goal of capacity building is to enhance the ability to evaluate and address the crucial questions related to policy choices and modes of implementation among development options, based on an understanding of environmental potentials and limits and of needs as perceived by people of the country concerned. As a result, the need to strengthen national capacities is shared by all countries. The overall objectives of endogenous capacity building in this programme area are to develop and improve national and related sub-regional and regional capacities and capabilities for sustainable development ...”.

The importance of environmental capacity building is also featured strongly in Agenda 21 Chapters 34, 38, 39, and 40. Additionally, it’s featured throughout the POI of the WSSD, which builds upon and reaffirms the priorities set out in Agenda 21. In particular, WSSD declaration on sustainable development calls for the continued special assistance to the developmental needs of SIDS. Further the POI explicitly includes planned actions to strengthen the partnerships between the international financial institutions, bilateral agencies and other relevant stakeholders to enable SIDS to develop their national, regional and sub-regional capacities for integrated management of issues.

3.3.1 UNEP Capacity Building Activities in SIDS

The UNEP capacity building activities in SIDS broadly encompass:

- Facilitating and supporting environmental institution building and legislation by governments at regional, sub-regional, national and local levels;

- Developing and testing environmental management instruments in collaboration with selected partners, including other United Nations organizations, intergovernmental organizations, NGOs, local authorities and other major groups;
- Promoting public participation in environmental management and access to information on environmental matters;
- Assisting in the formulation, ratification and implementation of environmental conventions and agreements (e.g., UNFCCC, CBD);
- Promoting synergies between environmental conventions and multilateral agreements;
- Building capacity to assess environmental conditions and changes (e.g., the GEO process);
- Building capacity to respond to and or mitigate environmental changes (e.g., natural disaster mitigation, biodiversity conservation);
- Evaluating and facilitating the transfer of appropriate technology (e.g., energy, waste, clean production technology);
- Compiling and disseminating best practices;
- Providing technical assistance upon request from member states.

3.3.2 UNEP and the Global Environmental Facility in SIDS

UNEP is one of the implementing agencies for GEF. GEF provides new and additional grant and concessional funding to developing countries (including SIDS) in six focal areas - *biodiversity, climate change, international waters, ozone layer depletion, land degradation, and persistent organic pollutants*. GEF has been the financial mechanism to the CBD, and UNFCCC since 1994 and 1995, respectively, and has been the principal entity operating the financial mechanism of the Stockholm Convention on Persistent Organic Pollutants (POPs) since 2001.

The Enabling activities of GEF support countries to build their capacities, to meet obligations of being Party to the CBD, UNFCCC, the Stockholm Convention and the Cartagena Protocol on Biosafety. It supports countries to fulfill their national communication requirement to the various conventions, the assembly of basic information upon which to formulate policy and guide strategic decisions, and the planning processes for identifying national priorities. Tables 5 through 10 provide details of capacity building activities in POPs, CBD and biosafety, climate change and multiple focal areas, respectively.

Table 6. Selected Multiple Focal Areas Projects – Capacity Building

Project Titles	Status	SIDS
National Capacity Needs Self-Assessment for Global Environmental Management (EA)	Approved in GEF FY03	Antigua & Barbuda, Bahamas, Vanuatu, Saint Lucia
National Capacity Needs Self-Assessment for Global Environmental Management (EA)	Approved in GEF FY02	Mauritius, Trinidad & Tobago
Global Environmental Citizenship in Latin America (Full-size project)	Approved prior to GEF FY02	Cuba
A Participatory Approach to Managing the Environment: An input to the Inter-American Strategy for Participation (ISP) MSP	Completed	Antigua & Barbuda, Barbados, Bahamas, Dominica, Grenada, Jamaica, Saint Vincent, Saint Lucia, Saint Kitts & Nevis, Trinidad & Tobago, Dominican Republic

Additionally, through its Capacity Development Initiative (CDI), GEF supports cross-thematic National Capacity Self-Assessments to identify country level priorities and needs for capacity building to address global environmental issues (in particular biodiversity, climate change, and land degradation) aimed at catalyzing domestic or externally assisted actions to meet those needs in a coordinated and planned manner. Yet another category of GEF enabling activities commenced in 2003, to support LDCs prepare National Adaptation Programmes of Action (NAPAs) with respect to climate change.

The biodiversity-enabling portfolio has been developed in five interrelated stages since the establishment of the Pilot Stage of GEF in 1992:

Biodiversity Country Studies: In this set of projects, UNEP assisted SIDS (e.g., Barbados, Bahamas, Cuba, Solomon Islands, Vanuatu, Seychelles and Mauritius) to prepare Biodiversity Country Studies.

National Biodiversity Strategy and Action Plans (NBSAPs): Following entry into force of the CBD, UNEP-GEF provided assistance to the Bahamas, Barbados, Cuba, Mauritius, Seychelles, Solomon Island, Saint Lucia and Vanuatu to prepare NBSAPs, including support for the establishment of a Clearing House Mechanism (CHM) and for preparing First National Reports on the CBD.

Biodiversity Enabling Activity Supplements: In recognition of the increasing obligations under the CBD, funds were made available from GEF

Biodiversity Enabling Activities in February 2000. This facility extended the time period for countries to utilise the funding window, and increase the maximum available to allow countries to undertake additional needs assessments, maintain the CHM activities, and prepare Second National Reports to the CBD. At a more general level, UNEP has, in collaboration with UNDP, implemented the Biodiversity Planning Support Programme

(BPSP)¹³, a project designed to raise capacity for biodiversity planning through thematic studies, national case studies and regional workshops¹⁴.

Capacity Development Initiative (CDI): Since September 2001, UNEP-GEF actively participated in the CDI - National Capacity Needs Self-Assessment (NCSAs) to assist countries to make broad assessments of capacity building needs, particularly in the areas of biodiversity, climate change and land degradation. SIDS directly benefiting include Antigua and Barbuda, Bahamas, Vanuatu, and Saint Lucia, Mauritius, and Trinidad and Tobago.

The International Waters Portfolio: or the integrated land and water management directly reflects issues concerning SIDS. UNEP-GEF is supporting environmental actions in SIDS through projects that address regional and global issues related to biodiversity, climate change and projects with multiple focal area objectives. According to Table 1, of the eight UNEP-GEF international waters projects seven have a direct bearing on biodiversity.

The CEP Sub-programme on Assessment and Management of Environmental Pollution is implementing the project "Integrating Management of Watersheds and of Coastal Areas in Small Island Developing States (SIDS) in the Caribbean (funded by GEF) and which is being executed in partnership with the Caribbean Environmental Health Institute

¹³ Although this project has closed, the e-mail list server BIOPLAN, archived at http://www.unep.org/bioplan_archive/bioplan/archive.html and web site <http://www.undp.org/bpsp> established under BPSP will continue to be used to make high-quality biodiversity planning information, especially in relation to the sectoral integration, or mainstreaming, of biodiversity into overall national development planning, available to national biodiversity planners. The main reports produced for UNEP under this project can be accessed at <http://www.unep.org/bpsp/TS.html>

¹⁴ Additional details about UNEP-GEF biodiversity Enabling Activities may be found at: <http://www.unep.org/gef/BD-EA.html>

Box 4

UNEP BIODIVERSITY PLANNING SUPPORT PROGRAMME (BPSP) THEMATIC STUDIES

GEF funded activities are jointly implemented by UNDP and UNEP. The objective of BPSP is to provide support to national biodiversity planners, specifically in relation to [Article 6 General Measures](#) of the [CBD](#). UNEP's main task within the BPSP projects has been to generate information to assist national biodiversity planners with sectoral integration of National Biodiversity Strategy and Actions Plans (NBSAPs) into the broader national development framework. In order to do this, UNEP has commissioned the following thematic studies:

- [Integration of Biodiversity into the National Agriculture Sector](#)
- [Integration of Biodiversity into the National Fisheries Sector](#)
- [Integration of Biodiversity into the National Forestry Sector](#)
- [Integration of Biodiversity into the National Tourism Sector](#)
- [Integration of Biodiversity with Environmental Assessment Procedures](#)
- [Improved Use of Economic Tools in National Biodiversity Planning](#)
- [Improved Financial Planning for National Biodiversity Strategy and Action Plans](#)
- [Harmonisation of Legal Obligations under Biodiversity-related Multilateral Environmental Agreements \(MEAs\)](#)

(CEHI). This project is being implemented in thirteen Caribbean SIDS.

UNEP, as GEF Implementing Agency, is carrying out a GEF-funded project "Global International Water Assessment" (GIWA) directed at developing a global assessment of water resources, focusing primarily on freshwater systems and coastal areas, aimed at identifying priorities for supporting projects within the international waters portfolio of GEF. The overall objective of GIWA is to develop a comprehensive strategic assessment that may be used to identify priorities for remedial and mitigating actions in international waters, and to achieve significant environmental benefits at national, regional and global levels. The GIWA focus is on five critical water-related issues; (a) freshwater scarcity; (b) pollution; (c) habitat modification and destruction; (d) over-exploitation

of fisheries and other living aquatic resources; and (e) global changes.

The value of the assessment is to provide sound scientific advice to decision-makers and managers concerned with water resources and associated environmental problems or threats to trans-boundary water bodies. GIWA is being executed in 66 sub-regions in nine major regions, which cover most of SIDS.

Table 7. Selected UNEP-GEF Activities in Climate Change

	Status	SIDS
A: ENABLING ACTIVITIES		
Building capacity for implementation of the UNFCCC		Comoros, Haiti, Mauritius, Niue
B: PDFs Projects		
Solar and Wind Energy Resource Assessment (Full-size project)		Cuba
Sustainable Enterprise Network for Climate Change Exposure (SENCE); SIDS in the South Pacific, Southeast Asia and Caribbean	PDF-A approved in FY02	SIDS in South Pacific, Southeast Asia and Caribbean
Assessment of Impacts of and Adaptation to Climate Change in Multiple Regions and Sectors (AIACC) Full-size project		Global project involving SIDS

3.3.3 Future Directions

Future activities of UNEP-GEF in SIDS will address the outcomes of WSSD and its Plan of Implementation. WSSD recognized the particular challenges and vulnerability that SIDS face within the context of sustainable development and called for support, including for capacity building and for the development and further implementation of freshwater programmes for SIDS through the GEF focal areas.

Recently established GEF strategic priorities for GEF-III are in concert with the outcomes and requirements of the World Summit on Sustainable Development. Its focus on SIDS coincides with a large number of requests from those nations in GEF focal areas, including a number of priority demonstration projects in the GEF pipeline.

The UNEP-GEF planning process reflects these needs. The main form of support to SIDS will continue through enabling activities in biodiversity, climate change and persistent organic pollutants

focal areas. SIDS will also be supported by the implementation of global biosafety projects.

The international waters focal area will continue to assist SIDS in developing projects related to integrated land and water resources management to address threats to their water resources through the project "Integrating Watershed and Coastal Area Management in Small Island Developing States of the Caribbean". Land degradation focal area will support Caribbean SIDS through the project focused on conserving biodiversity and preventing land degradation. Several Pacific SIDS will implement the project on indigenous knowledge and marine biodiversity. Eastern Caribbean SIDS will participate in the climate change project on geothermal development.

3.4 Environment Outlook of Small Island Developing States

In 1999, UNEP published Environment Outlook (EO) reports for SIDS in the Caribbean, Pacific Ocean and Western Indian Ocean (UNEP 1999a, 1999b, 1999c), within the framework of its Global Environment Outlook project. These reports came at a critical time for SIDS when the international community was reviewing agreements reached at the Global Conference on Sustainable Development of SIDS held in Barbados in 1994, i.e., Barbados +5. More recently, in 2002, UNEP published the third Global Environment Outlook report – GEO 3 (UNEP 2002) as a contribution to the WSSD. GEO 3 also includes an analysis of environmental trends in these three SIDS regions.

3.4.1 Environmental trends in SIDS

The 1999 SIDS EO reports and GEO 3 showed indisputable evidence of continuing and widespread environmental degradation in SIDS, relating to all the priority environmental issues (climate change and sea level rise, natural and environmental disasters, waste management, coastal and marine, freshwater, land, energy, tourism, and biodiversity resources) identified in the Barbados Programme of Action (BPoA). These changes have been brought about by several drivers, including high population densities and socio-economic factors. All three SIDS regions faced similar environmental challenges, though the magnitude and extent of the problems varied among them. As the last century drew to an end, SIDS continued to face challenges of environmental degradation, increasing frequency and intensity of natural disasters, habitat destruction, and natural resource depletion. This was accompanied by associated negative health and social impacts, loss of life, and substantial economic losses.

Nevertheless, significant achievements have been made in environment management, for example, governments have strengthened environmental policies through institutional changes and

legislation, the number of global and regional environmental agreements have increased, and there was more public participation than ever before in environmental management and decision making. These initiatives, however, have not significantly slowed the pace of environmental degradation or improved the environment-their impacts were isolated and achievements slow in coming. Analysis of the implications of future scenarios revealed that ‘business as usual’ will exert immense pressures on the environment and natural resources base of SIDS.

The 1999 SIDS reports and GEO 3 discussed future perspectives and emerging environmental issues that may become priorities for SIDS in the future. These included unexpected transformations of existing issues and well-known issues that were not being adequately addressed. Alternative policy responses required to more effectively address these environmental problems were proposed. These reports recognized the need for new and alternative policy responses that are integrated across sectors, for greater political determination, financial resources, and institutional capacity, and involvement of all stakeholders in environmental management.

3.4.2 SIDS EO Booklets 2004

In preparation for the 10-year review of the BPoA to be held in 2004 (Barbados +10), UNEP will publish EO reports in the form of booklets (approximately 60 pages each) for SIDS in these three regions, and including Eastern Atlantic SIDS. This is in accordance with a UNEP Governing Council Decision in 2003 to strengthen the institutional capacity of SIDS to effectively achieve sustainable development goals through provision of dedicated technical and financial support.

The SIDS EO booklets will provide an overview of the environmental state and trends relating to environmental issues of priority importance in SIDS, followed by an analysis of international, regional and national policy responses undertaken

in each of the three SIDS regions. The booklets will also identify emerging environmental issues that require further research, and will propose some alternative policy responses for consideration.

The SIDS EO booklets will provide information that can be used to assess the level of success of the BPoA, where it has been implemented, i.e. whether implementation of the BPoA has had any impact on slowing down or reversing negative environmental trends, and in achieving environmental sustainability, in SIDS. Analysis of policy responses would indicate achievements and failures, and constraints to successful implementation of international, regional, and national policies. Such an analysis would point the way forward to improved environmental governance.

Thus, the booklets will provide a forum for highlighting priority and emerging environmental issues in these countries. The analyses included in the booklets will also provide another opportunity for SIDS to revisit and refocus their national and regional priorities with regard to achieving sustainable development, which is closely intertwined with the environment in SIDS.

Objectives of EO Booklets

The major objectives of the 2004 SIDS EO booklets are to:

- Highlight the state of the environment in SIDS regions, showing the trends of national, regional and global significance;
- Provide policy guidance and early warning information on environmental threats;
- Produce material to feed into national and regional processes leading up to the 2004 review of the implementation of the BPoA for Sustainable Development of SIDS;
- Help to catalyze and promote international co-operation and action based on the best scientific and technical capabilities available.

These booklets, which are being prepared in collaboration with the University of the West Indies for Environment and Development, the South Pacific Regional Environmental Programme, and the Indian Ocean Commission, are currently in various stages of preparation. They will be based on material presented in GEO 3, National Assessment Reports, and other recent sources of information. Drafts of the 2004 booklets are expected to be ready in time to feed into regional preparatory processes for Barbados+10, and will be circulated for review by decision makers and other stakeholders in their respective regions. UNEP is aiming to have the second drafts ready for distribution at the interregional preparatory meeting to be held in the Bahamas in January 2004. These booklets are scheduled to be launched immediately before, or at the Barbados+10 meeting in late 2004.

CHAPTER 4

Future Directions for SIDS and UNEP

In Chapters 2 and 3 several future challenges and policy directions were identified. These were predicated on the implicit conclusion that although UNEP and its partners had accomplished a lot since the SIDS/POA was launched, a substantial amount of work remains to be done to place SIDS on a sustainable development path. The analysis further indicates that most of the initiatives implemented have focused on institutional and technical capacity building and the development of human resources. Furthermore, it is fair to say that the sectors of climate change and adaptation measures, tourism and coastal and marine management have been the major beneficiaries. However, even among these sectors benefiting most, much remains to be done.

In particular, it was noted that climate change adaptation options needed to be evaluated in terms of benefits to cost ratio as the next logical step. This would have a high payoff to SIDS because financial constraints limit the portfolio of technically feasible options.

In the area of biodiversity it was noted that WSSD agreed to achieve by 2010 a significant reduction in the current rate of loss of biological diversity. It was suggested that SIDS might provide a suitable, if not ideal, location and framework for establishing benchmarks against which the rate of national biodiversity loss could be measured in the years leading up to 2010. It was also noted that UNEP-WCMC has developed a proposal to produce a Regional Plan of Action for illegal, unreported and unregulated fishing in the WCR. The proposal has been fully supported by the CARICOM Fisheries Unit. The sites for the pilot program will be the WCR. Outputs will include: (a) quantification of the level and type of illegal unreported and unregulated fishing experienced by CARICOM countries in their EEZs, the monitoring, control and

surveillance capability of each country and the actions taken to combat it; (b) conducting regional workshops to facilitate peer-to-peer exchange, validate the results of the review and draft a regional plan of action; (c) formal presentation of the regional plan of action to stakeholders (national agencies, fishers groups) at a 3-day conference; (d) it is proposed that this project could be initiated in other SIDS. Potential partners for these initiatives include: AOSIS network, UNEP regional offices, UNEP Regional Seas Programmes (e.g. SPREP and Wider Caribbean), International Centre for Island Studies, ICRAN, DFID, SPC/SPREP, CPAC, and Intergovernmental partnerships.

With respect to coastal and marine resources, it was observed that UNEP had developed a comparative advantage in this area and is expected to continue to engage with national, regional and global partners on all matters concerning coastal and marine interests of SIDS. In particular, UNEP intends to lead in addressing the POI adopted at WSSD. However, more attention to the special funding needs of SIDS may be instrumental in strengthening the contribution of UNEP. Increased financial resources would further strengthen the capacity of UNEP to provide leadership and guarantee long-term sustainable development in SIDS.

In terms of disaster management, an increased role was seen for the international community in terms of providing tangible assistance to SIDS to (a) develop a comprehensive and integrated land use and water management strategies capable of alleviating the impact of natural hazards; (b) bring the ecological dimensions and best management practices for natural resources (land, coastal, water) more concretely into the disaster management framework; (c) establish reliable forecasting, early warning and notification systems linking island

states within the same region; (d) introduce effective national mechanisms to receive, analyse and react to early warning notifications of environmental emergencies; (e) develop and implement national contingency plans and environmental emergency mitigation measures; (f) build capacity of national and local authorities for cross-sector planning to prepare and respond to environmental emergencies; (g) increase understanding through education and raising awareness among communities on disaster prevention and preparedness strategies; and (h) incorporate indigenous knowledge and traditional coping strategies in prevention, preparedness and response to enhance community self-reliance in dealing with disasters.

It was noted that all SIDS had adopted policies and strategies for addressing the waste management problem. However these have not been fully implemented. This is in part, attributed to fiscal constraint and competition for funds between sectors such as education, health, national security and rescuing the financial sector. UNEP can facilitate implementation through pilot projects in partnership with SIDS institutions and other agencies to test and demonstrate the applicability of the guidelines. In particular, the guidelines relating to management of non-biodegradable wastes need to be adapted to the conditions of SIDS.

It was emphasized that continued improvement in water resources management is fundamental and requires a co-coordinated effort across many sectors such as water-shed management; strategies aimed at reducing deforestation rates; raising public awareness of wise water use and management and improvements in waste disposal, especially sewage.

The above summary highlights the fact that SIDS will find it extremely difficult, if not impossible, to finance an accelerated environmental agenda and simultaneously address the increasing demand on the fiscal budget for education, health, poverty reduction and social equality. This must also be seen in the context of declining export earnings

resulting from contraction or removal of preferential trade preferences, reduction in tariff incomes, and graduation from concessionary financing windows.

It is against this background that the issue of SIDS vulnerability raised in the introductory chapter needs to be revisited. In the introduction it was emphasized that the shared characteristics of SIDS relates to economic, environmental and social vulnerability. It was also noted that the combined influences of economic, environmental and social vulnerability has serious implications for the sustainable economic development prospects of SIDS.

The issue of vulnerability was first raised in the context of the Global Summit on the Sustainable Development of SIDS held in Barbados in 1994. Concern over the vulnerability of SIDS was expressed because it was perceived that these countries were at a disadvantage in relation to other countries because of their greater economic, environmental and social vulnerability. SIDS, with the support of the UN, expressed the desire, in paragraphs 113 and 114 of the SIDS/POA, of having a vulnerability index integrating ecological fragility and economic vulnerability developed to reflect the status of their countries. The call to develop the vulnerability index has been reiterated by the 57th session of the UN General Assembly in Special Session in Agenda Item 87(f) and paragraph 52 of the WSSD.

Several organizations have been involved in developing vulnerability indexes for different purposes. In 1996 the Commission on Sustainable Development called on "the relevant bodies of the United Nations system to accord priority to the development of the index". Subsequently the Department of Economic and Social Affairs 1997, engaged two consultants¹⁵, one to develop an economic vulnerability index, and the other to develop an ecological vulnerability index. The

¹⁵ These were Professor Lino Briguglio of the University of Malta and Dr Dennis Pantin of the University of the West Indies.

Department also convened an *ad hoc* expert group to review the technical work of the consultants and to make appropriate recommendations. The meeting, held at the UN headquarters in December 1997, concluded that “Judging from the results of a number of studies using a diversity of approaches, in particular, two reports of the Commonwealth Secretariat, the report of UNCTAD and the reports of consultants that were submitted to the meeting, the group concluded that “... **as a group, small island developing States are more vulnerable than other groups of developing countries.**” (A/53/65 - E/1998/5).¹⁶

The Committee for Development Policy (CDP) of the UN ECOSOC developed a vulnerability index, which it uses for the purpose of identifying the Least Developed Countries (LDC, 2000; United Nations, 2001). The indicators employed included the share of manufacturing and modern services in GDP; merchandise export concentration; instability of agricultural production; instability of exports of goods and services; and population size. The CDP uses this index as one of the criteria for the identification of LDCs and for deciding which countries are to be graduated from the list of LDCs.¹⁷

The CDP Vulnerability Index assigns importance to instability, which implies that countries with

¹⁶ The report of this meeting is carried on the following website:

<http://www.un.org/documents/ecosoc/docs/1998/e1998-5.htm>

¹⁶ See, ECLAC, 2002

¹⁷ The CDP uses three indices to identify which countries are Least Developed. These are (1) the GDP per capita index (for one benchmark year, converted at three year average exchange rate, using the *World Bank Atlas Method*) (2) the Augmented Physical Quality of Life Index, consisting of Education, Nutrition and Health sub-indices, and (3) the Economic Vulnerability Index. To be eligible for graduation out of the list of LDCs, a country must at least meet two of the following three criteria, namely (a) a per capita GDP higher than US\$1035 (b) an APQLI score greater than 68 and (c) an Economic Vulnerability Index score smaller than 31. In case of marginal scores a vulnerability profile is to be taken into consideration. To be eligible for inclusion in the list of LDCs a country has to have a population of 75 million or less.

relatively unstable export growth or agriculture production will register higher vulnerability scores. The variables “share of manufacturing and modern services in GDP” and “population size” were intended to capture the extent to which a country was exposed to shocks. The population size indicator is very problematic, if the index is to be used in the context of SIDS, since it will bias the index in favour of small states, thereby begging the question. It would therefore not be proper to use this sub-index to show that small states are more vulnerable than larger ones.

UNEP has concentrated on providing support to the development of Environmental Vulnerability Index (EVI) that is robust, operational and provides a relatively quick and inexpensive way of characterizing the vulnerability of natural systems. SOPAC developed the EVI with the support of UNEP, New Zealand, Ireland, Norway, and Italy. This EVI was developed in the Pacific in 1998 and was extensively peer reviewed and critically discussed at an Expert Group Meeting held in Fiji in September 1999. The next step was to globalise the EVI since it was developed in the Pacific. In furtherance of this objective, UNEP supported the participation of the experts from the regions outside the Pacific to attend the Think Tank Meeting. The outcome of this meeting was the *Report on the Environmental Vulnerability Index (EVI) Think Tank, 7 – 10 September 1999, Pacific Harbour, Fiji (SOPAC Technical Report 299)*. In partnership with SOPAC and the Island and Small States Institute of the University of Malta, UNEP convened a meeting of experts in Malta to review the EVI. Experts attended the meeting from the Indian, Mediterranean, Atlantic and Pacific regions. The outcome of this meeting was documented in a *Report of the Meeting of Experts on the Environmental Vulnerability Index, Valletta, Malta, 29 November - 3 December 1999*. UNEP and SOPAC also convened a meeting in Geneva to extend the EVI globally. The outcomes of this meeting were presented in *Globalising the Environmental Vulnerability Index (EVI): Proceedings of the EVI Globalisation Meeting, 27 –*

29 August 2001, Geneva, Switzerland (SOPAC Technical Report 345)

The UN Human Settlements Programme (UN-Habitat), through its Risk and Disaster Section, is also developing a vulnerability assessment tool targeted at local authorities and national governments. The tool is presently being tested in several countries in South East Asia and its application is slated for introduction in the Caribbean soon. The Commonwealth Secretariat has also contributed to the development of a composite index based on a range of economic and environmental influences.

Despite the efforts in developing vulnerability indexes, at the present time there is no agreement on a simple, robust and widely accepted composite index. The lack of agreement has several implications for the sustainable development of SIDS. First, a composite vulnerability index is expected to be an operational tool in helping SIDS to make the case differential treatment by the international development community and the WTO¹. In addition, the same tool should help the international community to decide whether or not to accord to SIDS any special treatment. It is therefore easy to see that the composite index should be acceptable to both.

Second, the composite index should form a basis for determining which countries are granted graduation from LDC status. This too is expected to replace or complement existing benchmark (GNP or GDP) which is widely accepted as being deficient since it

distorts the way such states appear and results in countries being graduated from LDC status with deleterious consequences for their economic development. Absence of such a tool implies continued scarcity of financial resources or technical assistance for allocation to urgent environmental issues in SIDS.

It would appear that there is a need to make an assessment of what has been accomplished to date and what needs to be done and who has comparative advantage in doing it. This is important because SIDS believe that economic and environmental vulnerability must be seen as the lens through which support is gathered for dealing with their sustainable development challenge, including negotiating positions defined at global fora and through which resources are mobilized in the international arena.

Third, the vulnerability index is expected to assist in distinguishing vulnerability from poverty or economic backwardness. For example, Singapore, Cyprus and Malta were very economically vulnerable countries, but had managed to generate high income per capita in spite of this. In the present deteriorating geo-political context and the adjustments that the region would have to make, there is need to consider whether increased vulnerability is associated with a particular pattern of growth.

Appendix 1

Appendix 1. List of Small Island Developing States by Regions

State	Other information
AFRICA	
Cape Verde	Population: 436,000 (1995); Terrain: rugged, rocky, volcanic; Coastline: 965 km;)
Comoros	Population: 550,000 (1995); Terrain: volcanic islands; Coastline: 340 km.)
Mauritius	(Population: 1,127,000 (1995); Terrain: small coastal plain, central plateau; Coastline: 177 km)
Sao Tome & Principe	(Population: 140,400 (1995); Terrain: volcanic, mountainous; Coastline: 209 km)
Seychelles	(Population: 77,400 (1997); Terrain: narrow coastal strip, coral, flat; Coastline: 491 km)
ASIA & PACIFIC	
Bahrain	(Population: 580,400 (1996)
Cook Islands	(Population: 19,400 (1995); Terrain: low coral atolls, volcanic, hilly; Coastline: 120 km)
Fiji	(Population: 773,000 (1996); Terrain: mountainous of volcanic origin, coral atolls; Coastline: 1,129 km)
Kiribati	(Population: 79,000 (1995); Terrain: low-lying coral atolls; Coastline: 1,143 km)
Maldives	(Population: 245,000 (1995); Terrain: flat; Coastline: 644 km)
Marshall Islands	(Population: 56,000 (1995); Terrain: low coral limestone and sand islands; Coastline: 370 km)
Micronesia	(Population: 123,000 (1995); Terrain: low coral atolls, volcanic, mountainous; Coastline: 6,112 km)
Nauru	(Population: 10,200 (1995); Terrain: sandy beach, coral reefs, phosphate plateau; Coastline: 30 km)
Niue	(Population: 2,300 (1994); Terrain: limestone cliffs, central plateau; Coastline: 64 km)
Palau	(Population: 16,700 (1995); Terrain: low coral islands, mountainous main island; Coastline: 1,519 km)
Papua New Guinea	(Population: 4,295,000 (1995); Terrain: coastal lowlands, mountains; Coastline: 5,152 km)
Samoa	(Population: 165,200 (1996); Terrain: narrow coastal plains, interior mountains; Coastline: 403 km)
Singapore	(Population: 2,987,000 (1995); Terrain: lowland, undulating central plateau; Coastline: 193 km)
Solomon Islands	(Population: 399,000 (1995); Terrain: low coral atolls, rugged mountains; Coastline: 5,313 km)
Tokelau	(Population: 1,690 (1986); Terrain: atolls)
Tonga	(Population: 105,600 (1995); Terrain: coral formation, volcanic; Coastline: 419 km)

Tuvalu	(Population: 10,000 (1995); Terrain: low-lying and narrow coral atolls; Coastline: 24 km)
Vanuatu	(Population: 177,400 (1997); Terrain: narrow coastal plains, mountains of volcanic origin; Coastline: 2,528 km)
EUROPE	
Cyprus	(Population: 737,000 (1995); Terrain: plains, mountains; Coastline: 648 km)
Malta	(Population: 375,000 (1995); Terrain: low, flat plains, coastal cliffs; Coastline: 140 km)
LATIN AMERICA & CARIBBEAN	
Antigua and Barbuda	(Population: 67,500 (1995); Terrain: low-lying limestone and coral islands; Coastline: 153 km)
Aruba	(Population: 79,800 (1996))
The Bahamas	(Population: 284,000 (1996); Terrain: long, flat coral formations; Coastline: 3,542 km)
Barbados	(Population: 257,000 (1995); Terrain: flat, central highland; Coastline: 97 km)
Cuba	(Population: 10,998,500 (1995); Terrain: terraced plains, small hills, mountains; Coastline: 5,746 km)
Dominica	(Population: 83,000 (1995); Terrain: rugged mountains of volcanic origin; Coastline: 148 km)
Dominican Republic	(Population: 7,823,000)
Grenada	(Population: 94,500 (1995); Terrain: volcanic in origin, central mountains; Coastline: 121 km)
Haiti	(Population: 7,325,000 (1996));
Jamaica	(Population: 2,528,000 (1996); Terrain: narrow coastal plains, mountains; Coastline: 1,022 km)
Netherlands Antilles	(Population: 204,000 (1995); Terrain: hilly, volcanic interiors; Coastline: 364 km)
Saint Kitts and Nevis	(Population: 41,000 (1995); Terrain: volcanic, mountainous interiors; Coastline: 135 km)
Saint Lucia	(Population: 156,000 (1995); Terrain: volcanic, mountainous with broad valleys; Coastline: 158 km)
Saint Vincent & the Grenadines	(Population: 118,000 (1995); Terrain: volcanic, mountainous; Coastline: 84 km)
Trinidad & Tobago	(Population: 1,272,000 (1995); Terrain: flat, hilly, mountainous; Coastline: km)
U.S. Virgin Islands	(Population: 97,300 (1995); Terrain: hilly, rugged, mountainous; Coastline: 188 km)

Source: United Nations Department of Social and Economic Affairs , Division for Sustainable Development, Small Island Developing States: <http://www.un.org/esa/sustdev/sids/sidlist.htm>

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