

Foreword



A decade after the Global Conference on the Sustainable Development of Small Island Developing States, held in Barbados in 1994, sustainable development in small island developing States (SIDS) poses not only the challenges of that time but also new ones.

UNEP SIDS state of the environment reports and the UNEP Third Global Environment Outlook of 2002 showed indisputable evidence of continuing and widespread environmental degradation in SIDS, relating to all the priority environmental issues identified in the 1994

Programme of Action for the Sustainable Development of Small Island Developing States—climate change and rise in sea level, natural and environmental disasters, waste management, tourism, and coastal and marine, fresh water, land, energy and biodiversity resources. Factors that include high population densities and socio-economics have brought about these changes. All three SIDS regions—the Caribbean; the Atlantic, Indian Ocean, Mediterranean and South China Seas (AIMS); and the Pacific—faced similar environmental challenges, although the magnitude and extent of the problems varied among them. As the last century drew to an end, SIDS continued to face problems of environmental degradation, increasing frequency and intensity of natural disasters, habitat destruction, and depletion of natural resources. Associated with these problems were negative health and social effects, loss of life, and substantial economic loss.

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 the public participated more than ever before in environmental management and decision making. These initiatives, however, have not significantly slowed the pace of

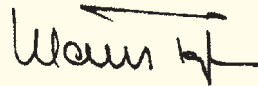
environmental degradation or improved the environment—their impacts were isolated and their achievements slow in coming. Analysis of implications for the future reveals that “business as usual” will exert immense pressures on the environmental and natural resource base of SIDS.

The SIDS reports and the Third Global Environment Outlook recognized the need for new and alternative policy responses that are integrated across sectors, for greater political determination, financial resources, institutional capacity, and involvement of all stakeholders in environmental management.

New challenges for SIDS include trade liberalization and the environment, health-related issues such as SARS and HIV, and security-related issues such as terrorism. The Millennium Development Goals (2000), as well as the Plan of Implementation of the World Summit on Sustainable Development (2002) are ambitious agendas for reducing poverty and improving lives that SIDS have also committed to undertake.

The preparatory process for the full and comprehensive review of the Programme of Action for the Sustainable Development of Small Island Developing States has provided UNEP with another opportunity to show its commitment to the sustainable development of SIDS.

This publication highlights UNEP efforts since 1994, with emphasis on the last five years of assisting SIDS in implementing the Programme of Action for the Sustainable Development of Small Island Developing States. Preparing for the International Meeting in Mauritius in 2004, it outlines a renewed way forward. UNEP is confident that joint efforts with governments, regional organizations, institutions and civil society in SIDS and with the international community at large, in the years ahead, will yield the yearned fruits of well-being for present and future generations in SIDS.



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Why UNEP Is Focusing on Small Island Developing States

The natural, biological and genetic resources of small island developing States (SIDS), although varied, are unique. The particular circumstances of these islands have led them to develop their own cultures, distinctive and rich. Many of these small States themselves comprise not one but a number of islands. They are resilient and independent in spirit—and that spirit should be further supported in economic, social and environmental spheres.

Vulnerabilities

As a group, SIDS have special needs that must be addressed if they are to develop in a sustainable way. They share characteristics that make them economically, environmentally and socially vulnerable to shocks over which they exercise little or no control, placing them at a distinct disadvantage in comparison with larger countries.

They are economically vulnerable because of their geographic dispersion, small domestic markets, low economic diversification, high dependence on traditional primary exports, and inability to capture economies of scale in industry, education, health, public utilities, public administration, and other infrastructure.

They are environmentally vulnerable because of their extremely fragile natural ecosystems that include coral reefs, wetlands, freshwater, coastal and marine areas, and forest and soil resources. And they are socially vulnerable when external forces bring stresses and hazards, with which they have less capacity to respond.

The interdependence between economic activities and ecology is evident throughout these island States. In one out of every four, agriculture contributes more than 20% of the gross domestic product (GDP). Agriculture ranges from plantations of sugarcane and banana to subsistence crops of roots and tubers. It is the major source of income and export earnings. Now indiscriminate trade liberalization is threatening the future of the main export crops of sugar and banana.

Tourism is by far the fastest-growing economic sector in all SIDS regions. Earnings from tourism as a proportion of total exports exceeded 20% in 19 SIDS, 30% in 13, and 40% in 8. In Antigua the proportion is 86%, in Bahamas 84%, St Lucia 75%, Maldives 70%, Barbados 59% and St Kitts and Nevis 52%. Yet tourism as currently developed often spoils the very environment on which it depends—development destroys mangroves and wetlands, yachts and divers damage coral reefs, and hotels and cruise ships may discharge raw sewage into the sea.

In principle, SIDS exercise control over extensive ocean areas in their exclusive economic zones (EEZ). Although the rich fishery resources that they harvest are only a miniscule proportion of these areas, others who overfish them need to be monitored and the areas managed. Managing the vast EEZs is especially vital in an archipelago like Kiribati, for instance, where the EEZ is 3.6 million square kilometres and the country's total land area is less than 1000 square kilometres.



SIDS are rich in culture—a major attraction in tourism, Seychelles

Where agriculture is the dominant economic activity, its present and future productivity will be determined by soil quality and freshwater resources. Where tourism and fisheries are the major industries, the States must use their marine and coastal environments intensively. It is therefore clear that further tourism, agricultural or fisheries development without the necessary environmental and social safeguards will be destabilizing. Already, high population densities in many SIDS have increased pressure on land resources and wildlife; intensified demand for facilities to deal with waste on both land and sea; contributed to coastal areas being degraded, adversely affecting beaches, mangroves and coral reefs; and unsustainably used scarce freshwater resources.

Building Resilience

Biodiversity, in which SIDS are rich, is the very basis for sustainable development. Their genetic diversity, if sustainably used, will contribute to the global pool by producing goods—food, medicines to improve human health, building materials—and by delivering services—purifying air and water, detoxifying and decomposing wastes, stabilizing climate, moderating floods and droughts, dispersing seeds and pollinating plants, renewing soil fertility and recycling nutrients. SIDS thus contribute to the world at large, and it behoves the world to help maintain the richness of their environment. Moreover, their genetic diversity should yield benefits to the SIDS populations themselves.

Cultural identity in SIDS accounts for distinctive music, gastronomy, traditional knowledge, customs and particular social institutions. These are foundations upon which SIDS can further build their resilience.



Some land-use practices such as cutting slopes have resulted in massive soil erosion...



...polluting rivers (above) that ultimately wash into oceans and seas, causing sedimentation (below)





How UNEP Comes In

Over the past decade “sustainable development” has occupied centre stage when development strategies are being discussed. Sustainable development as an ideal was endorsed at the United Nations Conference on Environment and Development, also referred to as the Earth Summit; it was reiterated in Rio de Janeiro in 1992, at the United Nations Global Conference on Sustainable Development of Small Island Developing States in Barbados in 1994; and it was further promoted at the World Summit on Sustainable Development, convened in South Africa 2002.

The role of UNEP, as the UN agency responsible for the environment, is described in the SIDS Programme of Action (SIDS/POA) thus: “UNEP, taking into account development perspectives, should continue to provide policy guidance and coordination in the field of environment, including in the implementation of the SIDS/POA.” UNEP has perspectives that can efficiently address the sustainable development needs of SIDS. Its Regional Seas Programme links it with all SIDS. UNEP can build an effective and productive work programme for SIDS.

Policymakers, practitioners and the general public must fully comprehend that economic development is inextricably linked with environmental sustainability. This relationship is critical since the evidence suggests that in most countries handling of the environment and natural resources has

worsened as traditional measures of economic development have indicated progress. But economic development as a measure of human welfare is unsustainable if the environment and natural resources are steadily deteriorating. Small island developing States are particularly conscious of their environment since it is so vital for their endeavours such as fishing and tourism. They are aware also of their responsibility to the world's environment by preserving their biodiversity and managing their coastal and marine resources.

International Agenda

Within the United Nations, the 1994 Barbados conference led to the Programme of Action (POA) for the Sustainable Development of SIDS (SIDS/POA) being adopted. It identified UNEP as one of the key UN organizations for implementing its activities. A number of multinational environmental agreements and protocols, such as the Convention on Biological Diversity, have also explicitly recognized the special sustainable development needs of SIDS.

UNEP's Regional Presence

To help carry out its global mandate on environmental stewardship, UNEP has taken the strategic decision to operate through six regional offices, one each in Africa, Asia and the Pacific, West Asia, Latin America and the Caribbean, North America, and Europe. This regional presence works two ways; it ensures that regional priorities are represented in the UNEP work programme and that the regions are kept fully aware of global concerns. Also, through its Regional Seas Programme UNEP can act within and among regions.

All SIDS participate in the Regional Seas programmes:

- Barcelona Convention / Mediterranean SIDS
- Cartagena Convention / Caribbean SIDS



The UNEP Regional Seas

- East Asian Seas Action Plan / Singapore
- Kuwait Convention / Bahrain
- Nairobi and Abidjan Conventions / African SIDS
- Noumea Convention / South Pacific SIDS
- South Asian Seas Action Plan/ Maldives

The global and regional scientific authority of UNEP is bolstered by its policy decision to build and sustain a large network of research and monitoring centres with demonstrated competency in their areas of specialization. Through this network UNEP carries out environmental capacity-building activities at global, interregional, regional and national levels.

World Summit on Sustainable Development

At the World Summit on Sustainable Development held in 2002 the international community was encouraged to assist SIDS in managing their coastal areas in a sustainable manner. This assistance would come within the context of the UNEP Regional Seas Programme and the United Nations Convention on the Law of the Sea. Priority issues identified at that summit included sustainable tourism, marine and coastal biodiversity, fisheries, exclusive economic zones, fresh water, waste and pollution, natural disasters, trade, vulnerability indices, climate change, intellectual property, energy and health care. The summit called for an international meeting for the full and comprehensive review of the implementation of the Barbados Programme of Action in 2004. When the UN General Assembly decided to convene this international meeting, Mauritius offered to host it.

UNEP and the Programme of Action for SIDS

UNEP integrates activities in all the priority areas of the SIDS/POA. 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.



UNEP's contribution towards the management of freshwater resources has positive impacts on agriculture, economy, environment, health and industry in SIDS

Climate Change and the Rise in Sea Level

Past and current emissions are already bringing about some degree of climate change in the 21st century. Any strategy must be underpinned by this reality. UNEP believes that the world must reduce uncertainties about climate change, its effects, and the costs of various response options. Furthermore, it is absolutely necessary to balance concerns about risks and damages with concerns about economic development. Therefore, the prudent policy response is to adopt a portfolio of actions that will control emissions, adjust to the inevitable changes that will take place, and encourage scientific, technological and socio-economic research.

Major Issues for SIDS

Climate change and the rise in sea level affect small island States keenly. Low-lying deltas, coral atolls and reefs are particularly sensitive to changes in the frequency and intensity of rainfall and storms. Coral will likely grow fast enough to keep pace with rising sea level but it may be damaged by warmer sea temperatures.





Small islands are particularly vulnerable to sea-level rise, which may be brought about by rise in the earth's temperature and melting ice in polar regions



An increase in sea water temperature can cause coral bleaching, a threat to marine ecosystems of SIDS

Rising sea levels are already contaminating underground freshwater supplies in several SIDS scattered across the Pacific and Indian Oceans and the Caribbean Sea. The expected sea-level rise will inundate lowlands, damaging coastal cropland and displacing millions of people from coastal communities. Sanitation, storm-water drainage and sewage disposal systems may be disrupted.

UNEP Activities

Recognizing the interest and urgency of SIDS during climate change negotiations, UNEP focused on building capacity to adapt to assessed regional changes in temperature and precipitation. Synergistic projects would link sustainable development with public awareness and insurance programmes to reduce risks from extreme events.

UNEP developed a technical support project, "Strengthening the Adaptive Capacity of Least Developed Countries in the Context of Climate Change", that has developed tools to help identify priority activities for adapting to climate change and incorporate these activities into national sustainable development planning.

UNEP has assisted SIDS in other ways:

- developing an index of comparative vulnerability to climate change and strategies for the South Pacific, western Indian Ocean and Caribbean SIDS
- helping convene an international conference, "Climate and Health in Small Island States", in 2000, along with the World Health Organization and the World Meteorological Organization
- organizing workshops, in collaboration with the Caribbean Community, on the regional impacts of climate change
- supporting the conference "Climate Variability and Change and Their Health Effects in the Caribbean", in May 2002

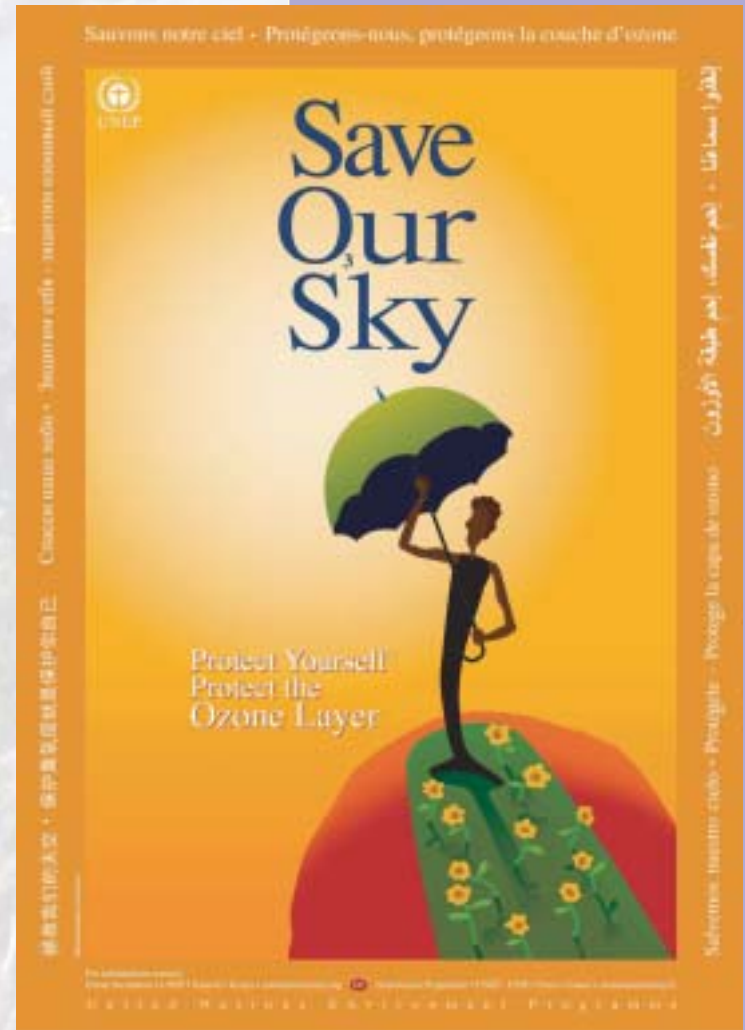
The Montreal Protocol: A Success Story in Capacity Building in SIDS

The Montreal Protocol on Substances that Deplete the Ozone Layer has been cited by UN Secretary General Kofi Annan as “perhaps the single most successful international agreement to date”. Brokered by UNEP, it has proven a successful model for future multilateral environmental agreements. Its remarkable success in phasing out ozone-depleting substances in developing countries is cemented in history as a pioneering example of international cooperation to address global environmental issues.

Much of this success can be attributed to the far-reaching policies and measures pursued by the Multilateral Fund of the protocol. The fund has enabled developing countries, including SIDS, to meet their compliance obligations through such capacity-building activities as programmes in information, education and communication, and in training and networking.

The Multilateral Fund explicitly recognizes that implementing multilateral environmental agreements successfully requires transfer of technology and investment projects, complemented by legislative and regulatory interventions to enhance the sustainability of the change under the agreement.

UNEP has been the fund implementing agency that assists developing countries with capacity-building initiatives. By late 2002 UNEP through its OzonAction Programme was assisting nearly 130 developing countries, including 41 SIDS, with capacity-building initiatives.





The Information Clearing House, global in scope, provides information tools and services to encourage and enable decision-makers to make informed decisions on policies and investments required to phase out ozone-depleting substances.

Country programmes and institutional strengthening. UNEP is assisting 32 SIDS prepare and implement their country programmes and 30 SIDS prepare and implement institutional-strengthening projects.

Regional networking provides a regular forum for officers in national ozone units to meet and exchange experiences, develop skills, and share knowledge and ideas with counterparts from both developing and developed countries.

Training and refrigerant management plans provide countries with an integrated, cost-effective strategy for phasing out ozone-depleting substances used in refrigeration and air conditioning.

National and regional phase-out plans facilitate the gradual phase-out of ozone-depleting substances so that SIDS are able to meet their phase-out targets by 2010.

Facilitating bilateral cooperation. UNEP has enjoyed successful and ongoing cooperation with Australia, Canada, France, Germany, New Zealand and Sweden in assisting SIDS.

Developing local capacity. UNEP has contributed to building the capacity of relevant local SIDS partners. Examples are the Fiji Institute of Technology, the Oceania Customs Organization, the Samoa Polytechnic Institute and the University of the South Pacific.

Biodiversity Resources

The accelerating loss of biological diversity is undermining opportunities for global sustainable development in general and for SIDS in particular. The challenge is to identify the socio-economic causes and effects of change in biodiversity, and to use the components of biological diversity to expand frontiers of production 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, analysing 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





Small islands are rich in biological diversity and are home to many endemic species such as the giant land tortoise (above) and the spider Nephila sp. (page 13), both in Seychelles, and the ring-tailed lemurs of Madagascar (below)



Major Issues for SIDS

SIDS are rich in their biological diversity, providing habitat for over 4000 endemic species of plants and animals as a consequence of their isolation. Restricted habitats and small populations often generate unique features such as flightlessness in birds and modifications of form, diet and behaviour. But these populations often lack the ability to adapt rapidly to change and are therefore vulnerable.

Deforestation and forest degradation in SIDS have led to extinction of many animal and plants species, with irreversible loss of genetic resources and ecosystems. They have affected the dynamic interactions of ocean, coral reefs, land formations and vegetation.

Although subsistence agriculture is environmentally friendly it is low in productivity. Now moderate to intensive input systems and modern cultivars are displacing traditional farming systems in SIDS. Plant and animal genetic resources are the basis for sustainable agriculture. SIDS need to have access to these resources from countries in the same agro-climatic zones to diversify their main enterprises. They need to establish protected areas such as forest reserves and national parks, which will not only conserve their biological diversity but also encourage ecotourism.

The biodiversity of marine ecosystems is especially susceptible to degradation. Fishing and tourists destroy coral reefs; driftnets ensnare marine mammals, turtles, birds and non-targeted fish; and the areas are overfished in general. Important freshwater biological diversity includes rare, endemic plants and animals whose habitats are threatened.

Activities of UNEP and the World Conservation Monitoring Centre

UNEP and the World Conservation Monitoring Centre have worked together in these activities:

- coordinating a pilot project in Seychelles to analyse current procedures in national reporting to the Convention on Biological Diversity

- supporting existing and new agreements on protecting and conserving 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
- publishing the *World Atlas of Biodiversity*, which assesses trends in global biodiversity, and helping produce publications describing protected areas in the Pacific and the Caribbean
- collaborating with the IUCN World Commission on Protected Areas to develop a Web-accessible database and interactive maps of fisheries-restricted areas in the Caribbean
- developing an interactive mapping service, in collaboration with the oil industry, for responding to oil spills

Levels of endemism for selected Caribbean countries (for selected taxa)				
	Birds	Mammals	Amphibians and reptiles	Higher plants
Bahamas	3	4		
Cuba	22	15	43+91	3475
Dominica		1	0	
Eastern Caribbean	38	11		68
Guadeloupe and Marie Galante		2	2	
Hispaniola (Haiti and Dominican Republic)	34	3	47	1800
Jamaica	34	5	47	830
Montserrat		0	5	
Puerto Rico	26	1	42	234
St Kitts, St Eustatius and Nevis		0	1	
St Lucia		0	2	
St Vincent and the Grenadines		0	2	

Source: *Caribbean Environment Outlook*, UNEP 1999

A photograph of a sunset over the ocean. The sky is filled with warm, golden light, and the sun is low on the horizon. In the foreground, three children are silhouetted against the water, standing and playing. The water is calm, reflecting the light from the sky.

Coastal and Marine Resources

UNEP's Regional Seas Programme, headquartered in Nairobi, is the channel for most of UNEP's work to protect the marine and coastal environment. This work reflects a multisectoral and integrated approach. Specific support to SIDS is provided 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. Other important UNEP activities emphasizing the marine environment are the International Coral Reef Action Network, the Global Marine Assessment, the Global International Waters Assessment, the Global Environment Outlook process, the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection, and the Convention on Biological Diversity, specifically through the Jakarta mandate. All in all, UNEP promotes international cooperation in managing coastal-marine and associated freshwater drainage basins.

UNEP and SIDS Protecting Coastal and Marine Environments

Marine and coastal environments of SIDS are a vital resource for socio-economic development. They encompass diverse ecosystems and habitats, which perform a number of functions and services. Marine species provide many ingredients for food, medicines and industrial products such as cosmetics, chemicals and dyes. Coastal ecosystems such as coral reefs, mangroves, seagrass beds, estuaries, coastal lagoons and wetlands serve as nursery grounds to commercial fish species and play roles such as protecting shorelines from storms.

The major threats to the health, productivity and biodiversity of the marine environment result from human activities on land—not only in coastal areas but also further inland. Some 80% of the pollution load in the oceans originates from land-based activities. This includes municipal, industrial and agricultural wastes and runoff, as well as atmospheric deposition. The marine environment is also threatened by physical alterations of the coastal zone, including destruction of habitats vital to maintaining ecosystem health.

UNEP Coastal and Marine Activities in SIDS

UNEP's Regional Seas Programme provides an important globally coordinated, regionwide mechanism to implement all relevant global environmental conventions and agreements. SIDS dominate two regions—the Wider Caribbean and the South Pacific—but all SIDS are part of the programme.



Sea moss farming in Antigua and Barbuda and (inset) sea moss

Priorities addressed by the UNEP Regional Seas Programme

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



Marine litter is a major issue for small islands. UNEP through its Regional Seas Programme is currently engaged in a feasibility study on establishing a global programme of action for marine litter

UNEP's Global Programme of Action for the Protection of the Marine Environment from Land-based Activities is a non-binding instrument designed to be a source of conceptual and practical guidance to be drawn upon by national and regional authorities for devising and implementing sustained action to prevent, reduce, control or eliminate marine degradation from land-based activities.

In the Caribbean, Jamaica and St Lucia have started to develop national programmes of action to protect the marine environment from land-based activities. Two SIDS in the South Pacific will also soon be engaged in this process. A regional project addressing land-based activities in the western Indian Ocean has been developed that 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.

The Global Programme of Action organized and conducted three regional meetings, in South Asia, East Africa and the Caribbean, to initiate action in the areas of mining, tourism and aquaculture. Follow-up studies include:

- a comparative review of coastal legislation in South Asia
- a review of national legislation related to management of coastal and marine resources in various Caribbean countries
- a review of national legislation in eastern Africa

Global Marine Assessments

UNEP's Division of Early Warning and Assessment is assigned to establish "by 2004 and under United Nations... 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."

Caribbean Region

Caribbean SIDS are contracting parties to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena, 1983), which sets out the legal foundation for actions to be developed. UNEP is the designated administrator of the convention and its protocols, and its Caribbean Environment Programme (UNEP-CEP) is responsible for coordinating regional action.

UNEP-CEP has conducted three regional training courses in which 36 marine protected area managers received training and in turn have trained over 300 park staff or other stakeholders within their areas, approximately half from SIDS. The training manual developed for the courses contains eight modules, covering the range of issues most pertinent to management of the marine protected areas in the wider Caribbean region. Sustainability was a key factor in the design, and communication and training skills are included to facilitate further training by managers.

It has conducted a course for on-scene commanders on information and training in the event of an oil spill in marine waters, and a workshop on preventing marine pollution in ports in the wider Caribbean region.

Supporting the Specially Protected Areas and Wildlife Protocol to the Cartagena Convention (1990), UNEP assisted Caribbean SIDS with recovery plans for sea turtles and with assessing, monitoring and increasing public awareness of coral reefs.

Eastern African Region

The Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern Africa Region (Nairobi Convention, 1985), central to the work of the UNEP Regional Seas Programme in the region, has as its main activities:

- promoting and monitoring long-term regional effects of climate change and planning how to adapt to rising sea level



Coral sand beaches with granite formations are unique to Seychelles (above), and a palm-studded beach on a Caribbean island (below)



Priorities of the Cartagena Convention

- Pollution from ships
- Waste dumping at sea
- Land-based sources
- Seabed activities
- Airborne pollution
- Protection of fragile marine habitats

- inventorying potential hotspots in the region
- establishing and strengthening forecasting and early warning capabilities to deal with natural disasters

Most 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
- eastern African coastal and marine environment resources database and atlas

South Asian Region

The South Asian Seas action plan includes the Maldives. The plan emphasizes:

- integrated coastal zone management
- oil-spill contingency planning
- human resource development
- environmental effects of land-based activities

South Pacific Region

The South Pacific Regional Environment Programme (SPREP), based in Apia, Samoa, is the primary regional organization concerned with environmental management in the Pacific. UNEP, through the Global Programme of Action, has recently strengthened cooperation with SPREP in developing national programmes of action, the Pacific SIDS state of the environment report, and various conventions. SPREP serves as secretariat for the following conventions:

- Convention for the Protection of the Natural Resources and Environment of the South Pacific Region, with the priorities of nature conservation, pollution prevention, climate change and variability, and economic development

- Apia Convention on the Conservation of Nature in the South Pacific, which deals with protected areas, natural ecosystems, geological formations, and sites of aesthetic, historic cultural and scientific value
- Waigani Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous Waste within the South Pacific Region

Mediterranean Region

Cyprus and Malta are contracting parties to:

- Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean and Its Emergency Protocol on Cooperation in Combating Pollution of the Mediterranean Sea by Oil and Other Harmful Substances
- International Convention for the Prevention of Pollution from Ships, as modified

UNEP supports and assists countries in implementing the conventions and protocols through:

- BP/RAC—Blue Plan Regional Activity Centre
- CP/RAC—Cleaner Production Regional Activity Centre
- ERS/RAC—Environment Remote Sensing Regional Activity Centre
- PAP/RAC—Priority Actions Programme Regional Activity Centre
- REMPEC—Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea
- SPA/RAC—Specially Protected Areas Regional Activity Centre



SIDS depend on marine ecosystems, such as this reef flat, as a major source of protein



UNEP is assisting SIDS in oil spill preparedness and response activities through the Regional Seas Programme



Coral Reefs

The SIDS Programme of Action states that “action is needed to sustain healthy reefs and such action should build 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 actions and activities agreed to in various frameworks.

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, seagrass and beach systems, their importance cannot be overstated. Without reefs, many atoll countries and most beaches in the tropics would not exist.

Pacific Region

The Pacific region has more coral reefs than any other region of the world—about 40% of the world’s mapped reefs are found here. Coral reefs in many uninhabited areas

remain in good condition; however, others have been affected by long-term effects of nuclear testing and other military activities and by the poaching of rare species. Human development has been assessed at putting 59% of the reefs in the Pacific at low risk, approximately 31% at medium risk and 10% at high risk.

Wider Caribbean Region

The Caribbean region contains about 20,000 km², or about 10% of the world's coral reefs. Probably 10 times that area is made up of shallow water systems such as sand banks, seagrass beds and sponge beds at depths less than 100 metres. The UNEP-CEP training programme described on page 19 covers material on coral reefs.

Eastern African Region

Coral reefs and reef fish biodiversity of the eastern African region are increasingly threatened by mining, harvesting of coral for trade, construction, pollution, destructive fishing practices, and siltation from increased erosion. This region contains around 15% of the world's coral reefs, and over 50% are at risk.

UNEP Coral Reef Activities in SIDS

The UNEP Regional Seas Programme has assisted ICRI with regional workshops that facilitated the development of national committees or initiatives and action plans to set priorities for coral reef conservation. ICRI works with three networks:

- **Global Coral Reef Monitoring Network (GCRMN)** promotes coral reef biological and socio-economic monitoring and assessment worldwide
- **International Coral Reef Information Network (ICRIN)** serves as a worldwide communication hub
- **International Coral Reef Action Network (ICRAN)** is an innovative and dynamic global



Gorgonian sea fan in the Pacific Ocean



Coral reefs are one of the most important and extensive, yet highly threatened, ecosystems in SIDS

programme that focuses on strengthening the capacity of communities to manage their tropical marine resources through monitoring, education and public awareness. Its activities are coordinated through the Regional Seas Programme and implemented in cooperation with governments, non-governmental organizations and local stakeholders. ICran draws on its partners' investments in reef management and monitoring to act strategically across local, national, regional and global scales. The network responds to

global conservation needs by recognizing both traditional and scientific perspectives of coral reef dynamics and respective social dependency. It seeks to put financial mechanisms in place that support and sustain direct on-the-ground action throughout the world's coral reef regions. UNEP undertakes global and regional activities on coral reefs that benefit SIDS. For example, the *World Atlas on Coral Reefs* produced by UNEP and the World Conservation Monitoring Centre includes maps of all SIDS reef areas.



In promoting sustainable tourism relevant to SIDS, UNEP has produced a communication kit on conserving coral reefs, "It's My Choice", for industry.

UNEP contributes to conventions relevant to coral reefs, and the UNEP Coral Reef Unit will further strengthen UNEP's role. UNEP has been active in coral reef management and awareness activities through the International Coral Reef Action Network in the East African, Pacific and Caribbean regions since 2001.

UNEP expects to continue to engage with national, regional and global partners on all matters concerning coastal and marine interests of SIDS, such as its regional training programme for marine protected area managers (see page 19). In particular, UNEP is expected to lead in addressing the programme of implementation adopted at the World Summit on Sustainable



Development. 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.



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.



Natural and Environmental Disasters

In developing its disaster management policy and strategy, UNEP takes its cue from the priorities that SIDS have established. SIDS anticipate more frequent and more devastating natural disasters, seeking assistance “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”.

Prevention and preparedness entails pivotal strategies for lessening exposure to risk and reducing losses to the social and economic infrastructure and environmental capital.

Assessment and early warning aims to evaluate the vulnerability of human society to environmental changes.

Mitigation and response is designed to strengthen

cooperation with other organizations to carry out emergency response activities and facilitate timely mobilization of international assistance.

Communications and publicity come about by disseminating information and raising awareness with governments and relevant organizations on the environmental dimensions of a disaster management cycle.

Resource mobilization sets priorities on activities, tapping into existing resources and mobilizing additional resources.

UNEP Disaster Management Activities

UNEP's general policy is to assist SIDS in managing threats from environmental emergencies or disasters by developing measures to handle them through programmes especially tailored to specific disasters, locations and regions.

Two projects are being developed:

- a management programme of preparedness and response to environmental emergencies caused by rapid onset of natural events in the South Pacific SIDS region
- implementation of programmes for local awareness and preparation for emergencies in the Galapagos Islands

It is estimated that 12% of the major petroleum spills in the marine environment occur from tanker accidents. Most areas covered by the Regional Seas Programme have adopted a technical protocol that provides the legal basis for mutual assistance among neighbouring countries to combat pollution from maritime-related spills. By pooling resources and expertise, these types of agreements provide a cost-effective mechanism for immediately responding to emergencies. These protocols provide a legal framework for:

- early notification of a pollution emergency
- continuous exchange of information for both preparedness and response
- mutual assistance among neighbouring countries



Tropical cyclone Ando in the Indian Ocean (above) and a watertank damaged by a cyclone in Tonga (below)





Waste Management

Waste management in its broadest sense encapsulates both prevention and disposal. UNEP concentrates on prevention, with strong initiatives on cleaner production technologies and sustainable consumption to avoid wastes and unnecessary end-of-life products being generated in the first instance. UNEP has forged strong links with leading waste management institutions, allowing it to give advice on how to manage the entire life cycle of the waste stream. UNEP has also devoted substantial effort on how to deal with hazardous and toxic wastes.

Waste Management Issues in SIDS

Waste management for SIDS is not limited to disposing of litter and presents special difficulties. Sewage and the growing percentage of hazardous and toxic wastes also form part of the problem. Dealing with the large amount of wastes that tourists produce, for example, is difficult for SIDS.

The quality of solid wastes has changed over the last two decades from the dense organic wastes associated with agriculture to less biodegradable wastes produced by industry. In some countries organic waste has decreased by about 50% over 14 years while plastic wastes have

increased fivefold. Liquid wastes are also changing from organic to inorganic as a result of industrialization.

UNEP Waste Management Activities in SIDS

UNEP has supported Indian, Mediterranean and Atlantic Ocean SIDS as they prepared their strategies to minimize waste.

UNEP embarked on an initiative to assist SIDS manage waste using an integrated concept, founded on the principle that small islands are made up of integrated ecological, social and economic systems. Thus a waste management system must handle interactions of drainage, sanitation, industry, agriculture and water supply systems. Fundamental is the “zero concept”, in which the waste cycle is managed until the residual waste requiring disposal is progressively reduced to zero.

Global Programme of Action and the Production and Dissemination of Information

As part of the Global Programme of Action (GPA) clearing-house mechanism, regional nodes have been developed in both the Caribbean and the South Pacific regions. Activities undertaken to implement the GPA Strategic Action Plan on Sewage in cooperation with WHO, Habitat and the Water Supply and Sanitation Collaborative Council include:

- preparing a set of case studies illustrating the environmental, social and economic benefits of addressing waste water in coastal areas of East Asia, South Asia, eastern Africa and the South-east Pacific
- securing funding to conduct regional partnership meetings in the wider Caribbean, eastern Africa and wider East Asia regions
- organizing regional stakeholder meetings to further implement the strategic action plan on municipal waste water



Capacity for waste-water treatment is low; 98% of domestic waste water is discharged into the north-east Pacific and 90% into the wider Caribbean without treatment



Indiscriminate solid waste dumping



Constructing sanitary landfill in the Caribbean

Technology Transfer

UNEP and partners published *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 Regions*. A similar directory has been published for the Pacific. Work to adapt the directory to suit the Caribbean region is ongoing and it is expected that the directory will be published by March 2004.

In 1997 UNEP collaborated in holding a workshop, "Waste Management in Small Island Developing States, for South Pacific SIDS"; and a similar workshop for Indian Ocean and Atlantic Ocean SIDS.

Integrated Waste Management

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

- *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 Regions*
- *Strategic Guidelines for Integrated Waste Management in Small Island Developing States*

Working with UNEP and the project implementer, 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.

Freshwater Resources

Supplying adequate fresh water remains one of the most critical issues of the 21st century. Statistics indicate that 1.2 billion people lack access to safe drinking water and 2.5 billion do not have access to basic sanitation. Water is pivotal in the fight against poverty and fundamental to protecting and managing natural resources.

Through its work on water policy and strategy, UNEP promotes a better understanding of the links between fresh water, coastal areas and the marine environment. It addresses:

- inadequate quantity
- declining quality
- insufficient access

UNEP's Water Policy and Strategy also provides a framework for responding to the challenges highlighted in the World Summit on Sustainable Development and the United Nations millennium development goals. In particular, the international community pledged 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—that is 274,000 a day—from 2000 to 2015.



Freshwater Issues in SIDS

Freshwater resources rank high on the SIDS priority list. This is understandable. SIDS are extremely sensitive to natural disasters such as typhoons, hurricanes, cyclones and rising sea level that make their freshwater resources more vulnerable. And despite the relatively heavy rainfall that many SIDS receive, many experience water shortages because their capacity to store water is limited. SIDS are therefore heavily dependent on groundwater, and any withdrawal rate exceeding the sustainable water yield can result in temporary or permanent damage. The issue of freshwater resources for SIDS must therefore be addressed in a comprehensive multisectoral and integrated manner.

UNEP Freshwater Activities in SIDS

Recognizing that SIDS have special development needs, UNEP with others in 1998 compiled the *Source Book on Alternative Technologies for Augmenting Freshwater Resources in SIDS*.

In 1997 UNEP and others conducted a workshop, "Integrated Management of Freshwater, Coastal Areas and Marine Resources in SIDS". In Tonga, UNEP in partnership with others is implementing a Swedish-funded pilot project to empower women in rainwater harvesting.

Freshwater resources and withdrawals

	Comoros	Madagascar	Mauritius	Seychelles
Total annual renewable water, 1998 (km ³)	n.a.	337	2.21	n.a.
Per capita renewable water (m ³)				
1995	1 667	20 614	1 970	n.a.
2025	760	n.a.	1 485	n.a.
Percentage of water resource withdrawn				
Domestic	n.a.	1	16	63
Industrial/commercial	n.a.	0	7	25
Agricultural	n.a.	99	77	0
Government	n.a.	n.a.	n.a.	12

n.a. = not available

Source: UNEP 1999

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 sea water. 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 south-west 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 Geoscience 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 with a limited 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.

Spinoffs from the project should benefit the whole Pacific region, in particular the atoll island countries.



Group work carried out by 'Utungake community members during a water-mapping exercise



Washing clothes in a river in Samoa



Tourism

Taking into account environmental, social and economic aspects is key to guaranteeing the long-term survival of tourism as well as conserving the environment. Sustainable tourism can be a major industry for generating income and protecting the environment, especially in areas important for their biological diversity and natural beauty.

UNEP's programme for sustainable tourism calls for:

- production and dissemination of guiding principles
- support for voluntary industry initiatives and codes of conduct
- support for governments to integrate sustainable tourism into national development strategies

Sustainable Tourism Issues

SIDS have long recognized the importance of sustainable tourism for their environments and peoples. But they face pressing environmental problems, including limited land resources and uncontrolled tourism development in the past. Many SIDS have established initiatives for sustainable tourism, aiming for sustainable development with assistance from the international community.

UNEP Sustainable Tourism Activities in SIDS

UNEP has held conferences promoting ecotourism to outline how careful planning and control over tourism is critical and how important it is to create opportunities for communities to participate in tourism.

Activities Targeting the Public Sector

UNEP has produced a book, *Principles for the Implementation of Sustainable Tourism*, that addresses integrating tourism into an overall policy for sustainable development, developing sustainable tourism and managing tourism for success. Also produced with others are 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.

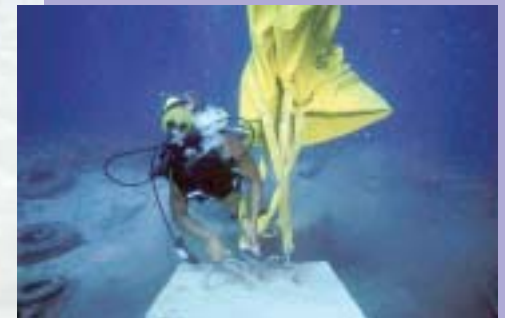
Activities Targeting the Private Sector

Hoteliers and others providing tourist accommodation must count on sustainable tourism for their livelihoods. The cumulative environmental effect of hotels can be quite negative, as they consume fresh water and energy, and without proper management, pollute with solid and liquid wastes. UNEP has produced a series of technical reports to describe how hotels can improve their performance.

Tour operators can influence not only their service suppliers such as hoteliers and ground transport operators but also how tourists behave at destinations. UNEP with others has therefore launched the "Tour Operators Initiative for Sustainable Tourism Development", a network of more than 25 tour operators who have different specialties and countries of origin and deal with more than 30 million tourists each year. The network integrates environmental, social and cultural considerations into its activities; adopts best practices in managing sustainable tourism; and creates awareness of these considerations among customers and partners.



Diving is a popular sport in the Caribbean (above). Mooring buoys are installed to reduce damage caused to reefs by anchoring (below)





Activities Targeting Consumers

Consumers substantially influence the environment and social structures of the destinations they visit. To promote responsible holiday making in coral reef destinations, UNEP has developed a communication tool kit available free of charge to any organization or company that wishes to promote responsible travel. These "Tips for Travellers" are also available through the UNEP Web site.

UNEP also promotes eco-labelling and similar certification and awards to advance sound environmental management and sustainable consumption. A Caribbean project designed to focus on tourism 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 negative effects of tourism in coastal areas

The pilot projects are:

- integrated coastal resources management in the Dominican Republic with special emphasis on target tourist areas
- rehabilitation of sand dunes in Anguilla
- improvement of quality of near-shore waters on the west coast of St Lucia: sewage treatment plant operations in tourism facilities

SIDS biodiversity is a major tourist attraction. The coco de mer is found only in the Seychelles. Inset, the female fruiting (left), and male flowering (right) parts.

Growth of tourism in the Caribbean 1993–97 (in 000s of overnight visitors per year), and tourism intensity

	1993	1994	1995	1996	1997	Tourist intensity per hectare	Tourists per inhabitant 1993–1997
Anguilla	37.7	43.7	38.5	37.5	43.2	4.7	5.4
Antigua and Barbuda	249.4	262.9	220.0	228.2	240.4	5.5	3.6
Bahamas	1 448.7	1 516.0	1 598.1	1 633.1	1 617.6	1.6	5.6
Barbados	396.0	425.6	442.1	447.1	472.3	11.0	1.8
British Virgin Isles	200.2	238.7	219.5	243.7	244.3	16.3	12.2
Cayman Islands	278.6	314.4	361.4	373.2	381.2	14.7	11.6
Cuba	544.1	617.3	762.7	1 004.3	1 170.1	0.1	0.1
Dominica	51.9	56.5	60.5	63.3	65.4	0.9	0.9
Dominican Republic	1 636.4	1 766.9	1 775.9	1 925.6	2 211.4	0.5	0.3
Grenada	93.9	109.0	108.0	108.2	110.7	3.3	1.2
Guadeloupe	452.7	555.6	640.0	625.0	660.0	3.9	1.5
Haiti	76.7	70.3	145.4	150.1	148.7	0.1	0.0
Jamaica	1 105.5	1 098.3	1 147.0	1 162.4	1 192.2	1.1	0.5
Martinique	366.4	419.0	457.2	477.0	513.2	4.8	1.3
Montserrat	21.0	21.3	17.7	8.7	5.1	0.5	0.5
Netherlands Antilles	1 377.3	1 474.5	1 400.6	1 302.9	1 376.0	9.1	3.7
Puerto Rico	2 923.2	3 112.7	3 053.9	3 127.7	3 378.5	3.8	0.9
St Lucia	194.1	218.6	232.3	235.7	248.4	4.1	1.7
St Kitts and Nevis	88.6	94.2	78.9	84.2	88.3	2.5	2.2
St. Vincent and the Grenadines	56.7	55.0	60.2	57.9	65.1	1.7	0.6
Trinidad and Tobago	248.0	265.6	259.8	265.9	324.3	0.6	0.2
Turks and Caicos	66.8	70.9	77.8	86.5	92.1	2.1	6.1
US Virgin Islands	549.5	540.0	454.0	372.6	411.4	12.1	3.9
Total overnight tourists	14 496.3	15 341.0	15 607.0	16 017.0	17 057.0	0.7	0.4

Source: *Overnight Stay Tourists* (Caribbean Tourist Organization, 1998); tourism intensity data from FAOSTAT

The Cuban National Statistics Office estimates that tourists from all sources in 1998 totalled nearly 1.7 million visitors.

Tourists per hectare is an indicator of the likely effect of tourism on local infrastructure such as lodging facilities, airports, highways, vehicular traffic and freshwater consumption for washing and irrigation of lawns and golf courses.

Tourists per inhabitant, obviously linked to the social pressures occasioned by tourism, also indicates heightened consumption of imported foodstuffs, higher volume and lower cost of freight for these imports, and lifestyle amenities such as swimming pools and lawns, the last increasing demands for fresh water and all affecting the natural environment.



Cross-cutting Activities in Environmental Management

Assessment of SIDS Environment and UNEP

In 1999, UNEP published environment outlook reports for the three SIDS regions—Caribbean; Atlantic and Western Indian Ocean; and Pacific. In 2002, UNEP published the third *Global Environment Outlook* report—GEO 3—for the World Summit on Sustainable Development. GEO 3 also analysed environmental trends in these three SIDS regions.

As part of the 10-year SIDS/POA review to be held in 2004, UNEP is publishing another three booklets on the environmental outlook, one for each of the regions but also including the eastern Atlantic SIDS.

These booklets provide an overview of the environmental state and of trends relating to environmental issues of priority importance in SIDS. They analyse national, regional

and international policy responses undertaken in each of the regions. They identify emerging environmental issues that require further research and propose alternative policy responses for consideration.

They have been prepared in collaboration with the University of the West Indies Centre for Environment and Development, the South Pacific Region Environment Programme, and the Indian Ocean Commission. They highlight issues for each region:

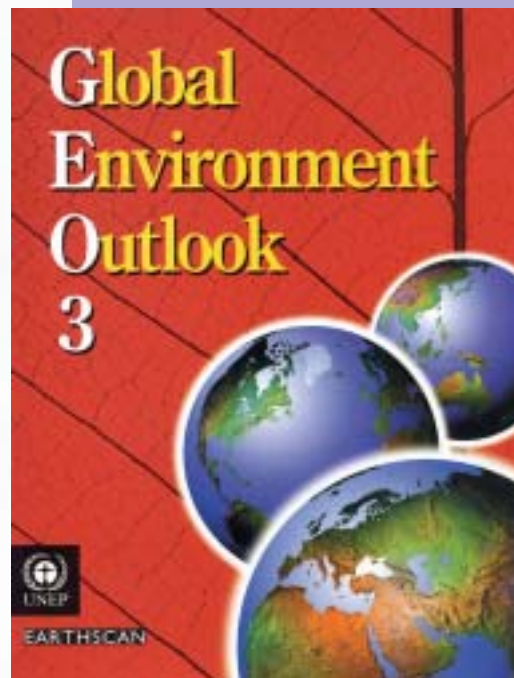
- pressures and policy responses critical to SIDS for sustainably managing fisheries, coastal areas, exclusive economic zones and the continental shelf
- development of community-based initiatives for sustainable tourism
- measures to help effectively control waste and pollution, and their health-related effects
- efforts to manage and maintain systems to deliver water and sanitation services in both rural and urban areas
- how to deal with adverse effects of climate change, sea-level rise and climate variability
- environmental policy measures aimed at alleviating poverty

SIDS and Multilateral Environmental Agreements

A way must be found for SIDS to participate effectively in the work of multilateral environmental agreements.

The special needs of SIDS, in particular the least developed among them, should be taken into account, for example by allowing measures to be introduced in phases and extending the time for compliance. SIDS need:

- 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 that reflect regional interest in promoting in-country capacity development and also represent regional interests globally



Assessing the SIDS Environment

UNEP is looking intently at the environment in the three SIDS regions of the Caribbean, Pacific Ocean and western Indian Ocean. It is publishing its assessment on the state of their environmental health and welfare in three booklets, coming out this year, in 2004, as a contribution to the 10-year SIDS/POA review.

The information they contain can be used to assess whether implementing the Barbados plan has slowed down or reversed negative environmental trends and helped achieve environmental sustainability. Analysing policy responses will indicate achievements and failures, and hurdles to overcome in successfully implementing national, regional and international policies. Such an analysis can point the way forward to improved environmental governance. Thus these booklets highlight SIDS priority environmental issues and pinpoint emerging ones.

The major objectives of these forthcoming SIDS booklets are to:

- highlight the state of the environment in SIDS regions, showing 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 at the Barbados +10 meeting
- help catalyse and promote international cooperation and action based on the best scientific and technical capabilities available

These booklets provide continuity with the reports that UNEP published in 1999 and with *Global Environment Outlook 3*, consistently analysing the state of SIDS environment.

UNEP Assistance to SIDS

UNEP supports SIDS by:

- complementing their efforts to coordinate and harmonize approaches between multilateral environmental agreements
- strengthening national capacity to implement agreements, recognizing the need for international cooperation and coordination
- assisting in harmonizing reporting to different but related agreements, to reduce the burden of reporting to the agreements separately

International environmental law. UNEP has been the lead agency for developing most of the multilateral environmental agreements and is constantly engaged in providing support for updating them and for developing associated protocols. UNEP hosts the secretariats of several global and regional conventions. UNEP is active in providing SIDS with technical assistance to develop regional legal instruments.

National environmental law. UNEP provides SIDS with technical assistance for strengthening their regulatory and institutional capacity to develop and implement environmental laws,

harmonize existing environmental laws, and implement existing multilateral environmental agreements. SIDS that have benefited from UNEP's technical assistance in this field are Kiribati, Papua New Guinea, Sao Tome and Principe, Seychelles, Trinidad and Tobago, and Vanuatu.

Environmental law information. Information on environmental law is a major component of capacity building. UNEP has a programme to produce and disseminate such information through publications and electronic media. A major endeavour, conducted along with the World Conservation Union (IUCN) and the Food and Agriculture Organization of the UN (FAO), is Ecolex, an information service on environmental law that includes all SIDS and contains multilateral environmental agreements, national legislation, court decisions and literature.

Environmental Vulnerability Index

The environmental vulnerability index 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 activity.

The index is a robust, flexible tool, aimed at providing a simple measure of the vulnerability of a country's environment—that is, its liability to future damage.

The strength of such an index is that it can not only provide information that will help to identify which parts of a nation are vulnerable and in what ways but will, through its simple threshold approach, enable countries to begin the important process of building resilience. By using the index to monitor environmental vulnerability through time, as levels of risk and resilience related to human choices change, countries can get a better understanding of their relative vulnerability and measure their progress in managing it and building resilience.



The environmental vulnerability index will help assess the risk of damage to the environment

At a glance, the global environmental vulnerability index devised by the South Pacific Applied Geoscience Commission

Purpose: A globally applicable vulnerability index for the environment capable of highlighting sources and magnitude of vulnerability for each country

Funding: Ireland, Italy, New Zealand, Norway, UNEP

Collaborators: UNEP, World Metrological Organization, Australia, Bangladesh, Barbados, Botswana, Cook Islands, Costa Rica, Fiji, French Polynesia, Greece, Guam, Jamaica, Kenya, Kiribati, Kyrgyzstan, Maldives, Malta, Marshall Islands, Mauritius, Federated States of Micronesia, Nauru, Nepal, New Caledonia, New Zealand, Niue, Palau, Papua New Guinea, Philippines, St Lucia, Samoa, Singapore, Solomon Islands, Thailand, Tonga, Trinidad and Tobago, Tuvalu, Vanuatu

Responders: The natural environment, including ecosystems, species, natural resources, biodiversity, ecosystem services such as attenuating pollution or forming soil as the basis for all human development

Hazards: Natural disasters, country characteristics, anthropogenic factors

Approach: 54 indicators of vulnerability on a scale of 1 to 7 in an unweighted averaging model tested for redundancy and sensitivity, and validated

Outputs: 1) Overall index score for a country, 2) three sub-indices showing risk, intrinsic resilience and extrinsic resilience, and 3) profiles identifying factors contributing to the vulnerability of a country

Functionality: By Mauritius 2004, the environmental vulnerability index will have been tested and be functional, although it will rely on several indicator proxies where data have been difficult to obtain


UNEP Support for Continued Development of the Index

To globalize the index, UNEP:

- supported the participation of experts from outside the Pacific region to attend a think tank meeting
- in partnership with SOPAC and the Islands and Small States Institute of the University of Malta, convened a meeting of experts in Malta to review the index
- with SOPAC convened a meeting in Geneva to extend the index globally
- has supported the compilation of data profiles for several target countries to enable functional testing of the environmental vulnerability index in time for Mauritius 2004

Mobilizing Resources: UNEP and the Global Environment Facility in SIDS

UNEP is one of the three implementing agencies of the Global Environment Facility (GEF), launched as a pilot in 1991 and formalized in 1994. GEF provides new and additional grants 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 for the Convention on Biological Diversity since 1994 and the UN Framework Convention for Climate Change (UNFCCC) since 1995, and since 2001 has been the principal entity operating the financial mechanism of the Stockholm Convention on Persistent Organic Pollutants.



GEF financial support is provided within 15 operational programmes through medium-sized projects (requiring up to US\$1 million GEF financing), full-size projects and enabling activities. Funding for the preparation of projects is available through the Project Preparation and Development Facility. GEF enabling activities are designed to build national capacity to implement the global environmental conventions. In addition, most UNEP/GEF projects address capacity building as a part of their objectives to achieve long-term sustainability. GEF has defined strategic priorities in all focal areas in its third phase (GEF-III) to support the outcomes of the World Summit for Sustainable Development. Capacity building is identified as a strategic priority that cuts across all focal areas.

GEF enabling activities support countries and build capacity to meet obligations of being Party to the Convention on Biological Diversity, UNFCCC, the Stockholm Convention and the Cartagena Protocol on Biosafety. They support fulfilment of national communication requirements 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. In addition, through multiple focal area enabling activities, 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 catalysing domestic or externally assisted actions to meet those needs in a coordinated and planned manner. Another category of GEF enabling activities commenced in 2003, to support the least developed countries and SIDS in preparing national adaptation programmes of action to climate change.



Future Directions for SIDS and UNEP

Climate Change

UNEP-supported activities aim at finding ways to assess vulnerability to climate change that will help select the most cost-effective adaptation options. Strategies that could be evaluated and subjected to benefit–cost analyses include:

- undertaking preventive measures such as building barriers against rise in sea level and reforesting degraded hillsides
- redesigning crop mixes to ensure a guaranteed minimum yield under even the worst scenario
- undertaking measures to mitigate the burden on those directly affected by climate change such as spreading or sharing losses through insurance or public disaster relief programmes
- changing a use or an activity that is no longer viable, or changing the location of an activity; for example, relocating agricultural activities from steep hill slopes
- improving water storage management to help reduce vulnerabilities; developing new supplies or using existing supplies more efficiently
- developing long-term strategies for managing water supply and demand
- introducing measures to protect watersheds and reduce water pollution

Biodiversity

Several areas of future activities for UNEP with SIDS are emerging:

- The World Summit on Sustainable Development (WSSD) agreed to achieve by 2010 a significant reduction in the current rate of loss of biological diversity. SIDS might provide the benchmarks against which the rate of national biodiversity loss could be measured.
- WSSD identified capacity-building initiatives in SIDS as a priority. UNEP and the World Conservation Monitoring Centre propose producing a regional plan of action to combat illegal, unreported and unregulated fishing in the wider Caribbean region.
- UNEP has been requested to implement the Convention on Biological Diversity clearing-house mechanism in SIDS to promote scientific and technical cooperation by using tools and procedures to share information and experience.

Coastal and Marine Resources

The World Summit on Sustainable Development called for action to achieve the sustainable development of oceans, coastal areas and seas through its programme areas of integrated management and sustainable development of coastal areas, including exclusive economic zones, marine environmental protection, sustainable use and conservation of marine living resources, strengthening of international and regional cooperation and coordination, and sustainable development of small islands. It further called for strengthening of regional cooperation and coordination between the relevant regional organizations and programmes, the UNEP Regional Seas programmes, regional fisheries management organizations, and other regional science, health and development organizations. This call for action sets a basis for UNEP's future activities in the field of marine and coastal environment of small island developing States.



Hawksbill and green turtles in the Caribbean



Spinner dolphins in the Pacific Ocean

The Regional Seas Programme and the Global Programme of Action for the Protection of the Marine Environment

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 programmes as an existing, effective platform for improving and coordinating regional implementation of international agreements, programmes and initiatives related to oceans, seas, coasts and the catchments affecting them. The limited geographic focus of Regional Seas action plans and conventions enables them to channel the energies of a wide range of interest groups towards the global aim of preserving the world's ocean and coastal ecosystems and the human livelihoods they secure.

GPA Pollutant Source Categories

Sewage

Physical Alterations &
Destruction of Habitat

Nutrients

Persistent Organic Pollutants

Radioactive Substances

Heavy Metals

Sediment Mobilization

Litter

Oils (Hydrocarbons)

Adaptive and proactive, the Regional Seas Programme includes these strategic guidelines:

- Increase Regional Seas contribution to sustainable development, through national and regional partnerships with relevant social, economic and environmental organizations.
- Enhance the sustainability of Regional Seas by increasing country ownership, translating its conventions into national legislation and regulations, involving civil society and the private sector, and ensuring financial sustainability.
- Increase Regional Seas visibility and effectiveness in global and regional policy settings that reflect and share a common vision.
- Use Regional Seas as a platform for implementing global conventions, initiatives and programmes.
- Promote appropriate national and regional monitoring and assessment systems.
- Promote ecosystem-based management of the marine and coastal environment.

The summit also called for advancing the implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA)

in the period 2002 to 2006, with a view to achieving substantial progress by 2006. The Johannesburg plan of implementation advocates reducing, preventing and controlling waste and pollution and their health-related effects in small island developing States by 2004 by implementing GPA.

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. UNEP, the GPA coordination office and numerous partners also launched the Hilltops-2-Oceans (H₂O) initiative as an official type 2 partnership at the World Summit on Sustainable Development. The H₂O initiative aims to further the environmental, economic and social importance of oceans, coasts and islands. In the framework of the H₂O initiative UNEP expects to:

- facilitate recognition by governments and the international community of the basic links between freshwater and marine environments
- assist governments and regions in making better use of existing domestic resources and in raising new and additional financing
- assist governments and regions in evaluating alternative options for funding projects that address priority problems of river, coastal and marine pollution including marine litter
- assist governments and intergovernmental organizations to identify opportunities for effective partnerships, including through establishing specific cooperation activities, alliances and networks with financial institutions such as the regional development banks

Coral Reefs

UNEP expects to continue engaging national, regional and global partners on all matters concerning coastal and marine interests of SIDS. However, increased financial resources



The pins represent each Regional Seas Programme area. The Global Programme of Action for the Protection of the Marine Environment from Land-based Activities identifies the Regional Seas Programme of UNEP as an appropriate framework for delivering GPA within the regions



Disaster awareness training at school in Vanuatu

would further strengthen UNEP's ability to provide leadership and guarantee long-term sustainable development in SIDS.

Natural and Environmental Disasters

The international community must be prepared to assist SIDS to:

- 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 notification 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 by education and raising of 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



Recycling cans at Kiribati Island

Waste

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 by:

- evaluating the extent to which existing guidelines and technologies are used
- conducting pilot projects in partnership with SIDS institutions and other agencies to test and demonstrate the applicability of the guidelines, particularly those adapted for SIDS on managing plastic and other non-biodegradable wastes

- assessing best practices for transboundary waste management in the Caribbean and promoting their use in other SIDS regions

Freshwater Resources

UNEP's activities dealing with fresh water have focused on implementing policy, in particular technology transfer and stakeholder participation. However, providing technologies alone is not enough. The next step is to promote their use in different regions and disseminate the results widely. Continued improvement in managing freshwater resources is fundamental and requires a coordinated effort across many sectors.

UNEP and other agencies have developed guidelines pertaining to managing freshwater resources in SIDS. UNEP can assist SIDS by promoting integrated management in three areas:

- strengthening SIDS capacity to manage water resources in a holistic manner including promoting the links between fresh water, coastal areas and the marine environment
- developing water policy and strategies using as reference successful institutional and legal framework approaches (such as developed by Sao Tome and Principe and the Partnership for Development of Environmental Law and Institutions in Africa, PADELIA)
- implementing policy through pilot projects to promote technology transfer and development of practical guidelines

Tourism

Tourism is one of the world's leading industries, and its effects on resource consumption, waste and social systems are of special concern in SIDS. Governments, donors and other stakeholders need to make more concrete commitment 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 and multiply the positive effect of the experiences of the Tour Operators Initiative and similar



Tyre baling before disposal in Jamaica



Plentiful and clean is the international community's pledge to 1.2 billion people without access to safe drinking water



Marine park managers in the Hol Chan Marine Reserve in Belize being trained to ensure minimal damage to the environment from tourism

initiatives. UNEP is also examining how to support local authorities and destination managers as they incorporate sustainable guidelines into their tourism development and management plans. Other strategies aiming to overcome the implementation gap include:

- strengthening Pacific countries' responses to international commitments that have a bearing on tourism, including the World Trade Organization, through improved information flow 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 ship industry within the Caribbean region, particularly through continued, enhanced cooperation among Caribbean cruise ship destinations
- developing a monitoring system with achievable, measureable and timely indicators to denote incremental achievements

Challenges in Assessing the State of the Environment of SIDS

To sustainably manage their natural environment, SIDS need access to credible and timely information on the state of their environment and early warning of emerging threats, as well as economic, social, cultural and political drivers and socio-economic effects of environmental changes, and appropriate policy responses. In this regard, UNEP under its Global Environment Outlook project will keep engaged in environmental assessments of SIDS in the Caribbean and the eastern Atlantic, western Indian, and Pacific Oceans through a participatory process, involving its large network of regional and sub-regional stakeholders, regional and international experts, and collaborating centres around the world.

Future Activities of UNEP-GEF in SIDS

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.



Stream gauging in Vanuatu

List of Small Island Developing States

All population figures given are for 1995 except as noted in parentheses

	Population	Terrain	Coastline (km)
Africa			
Cape Verde	436 000	rugged, rock, volcanic	965
Comoros	550 000	volcanic islands	340
Mauritius	1 127 000	small coastal plain, central plateau	177
Sao Tome and Principe	140 400	volcanic, mountainous	209
Seychelles	77 400 (1997)	narrow coastal strip, coral, flat	491
Asia and Pacific			
Bahrain	580 400 (1996)		
Cook Islands	19 400	low coral atolls, volcanic, hilly	120
Fiji	773 000 (1996)	mountainous, of volcanic origin, coral atolls	1 129
Kiribati	79 000	low-lying coral atolls	1143
Maldives	245 000	flat	644
Marshal Islands	56 000	low coral, limestone and sand islands	370
Micronesia	123 000	low coral atolls, volcanic, mountainous	6 112
Nauru	10 200	sandy beach, coral reefs, phosphate plateau	30
Niue	2 300 (1994)	limestone cliffs, central plateau	64
Palau	16 700	low coral islands, mountainous main island	1 519
Papua New Guinea	4 295 000	coastal lowlands, mountains	5 152
Samoa	165 200 (1996)	narrow coastal plains, interior mountains	403
Singapore	2 987 000	lowland, undulating central plateau	193
Solomon Islands	399 000	low coral atolls, rugged mountains	5 313
Tokelau	1 690 (1986)	atolls	

List of SIDS *continued*

Tonga	105 600		coral formation, volcanic	419
Tuvalu	10 000		low-lying and narrow coral atolls	24
Vanuatu	177 400	(1997)	narrow coastal plains, mountains of volcanic origin	2 528
Europe				
Cyprus	737 000		plains, mountains	648
Malta	375 000		low flat plains, coastal cliffs	140
Latin America and Caribbean				
Antigua and Barbuda	67 500		low-lying limestone and coral islands	153
Aruba	79 800	(1996)		
Bahamas	284 000	(1996)	long, flat coral formations	3 542
Barbados	257 000		flat central highlands	97
Cuba	10 998 500		terraced plains, small hills, mountains	5 746
Dominica	83 000		rugged mountains of volcanic origin	148
Dominican Republic	7 823 000			
Grenada	94 500		volcanic in origin, central mountains	121
Haiti	7 325 000	(1996)		
Jamaica	2 528 000	(1996)	narrow coastal plains, mountains	1 022
Netherlands Antilles	204 000		hilly, volcanic interiors	364
St Kitts and Nevis	41 000		volcanic, mountainous interiors	135
St Lucia	156 000		volcanic, mountainous with broad valleys	158
St Vincent and the Grenadines	118 000		volcanic, mountainous	84
Trinidad and Tobago	1 272 000		flat, hilly, mountainous	
US Virgin Islands	97 300		hilly, rugged, mountainous	188

Source: www.un.org/esa/sustdev/sids/sidslist.htm

Core Environmental Conventions and Related Agreements

	Year of adoption
Atmosphere-related conventions	
Vienna Convention for the Protection of the Ozone Layer	1985
Montreal Protocol on Substances that Deplete the Ozone Layer	1987
United Nations Framework Convention on Climate Change	1992
Biodiversity-related conventions	
Convention on Wetlands of International Importance, Especially on Waterfowl Habitat	1971
Convention on International Trade in Endangered Species of Wild Fauna and Flora	1973
Bonn Convention of Migratory Species	1979
Convention on Biological Diversity	1992
International Coral Reef Initiative	1995
Cartagena Protocol on Biosafety	2000
Chemical and waste-related conventions	
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal	1989
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	1998
Stockholm Convention on Persistent Organic Pollutants	2001
Regional Seas conventions and action plans administered by UNEP	
Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean	1976
Abidjan Convention for Cooperation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region	1981
East Asian Seas Action Plan	1981
Cartagena Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region	1983
Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern Africa Region	1985
Regional Seas conventions and action plans administered by other bodies	
Kuwait Regional Convention for Cooperation on the Protection of the Marine Environment from Pollution	1978
Noumea Convention for the Protection of Natural Resources and Environment of the South Pacific Region	1986
South Asian Seas Action Plan	1995
Desertification-related convention	
United Nations Convention to Combat Desertification	1992