

**CARIBBEAN MINISTERIAL MEETING ON THE IMPLEMENTATION OF THE
PROGRAMME OF ACTION FOR THE SUSTAINABLE DEVELOPMENT
OF SMALL ISLAND DEVELOPING STATES**
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THE WAY FORWARD

**A REVIEW OF THE IMPLEMENTATION OF THE SIDS POA:
PRIORITIES FOR THE FUTURE**

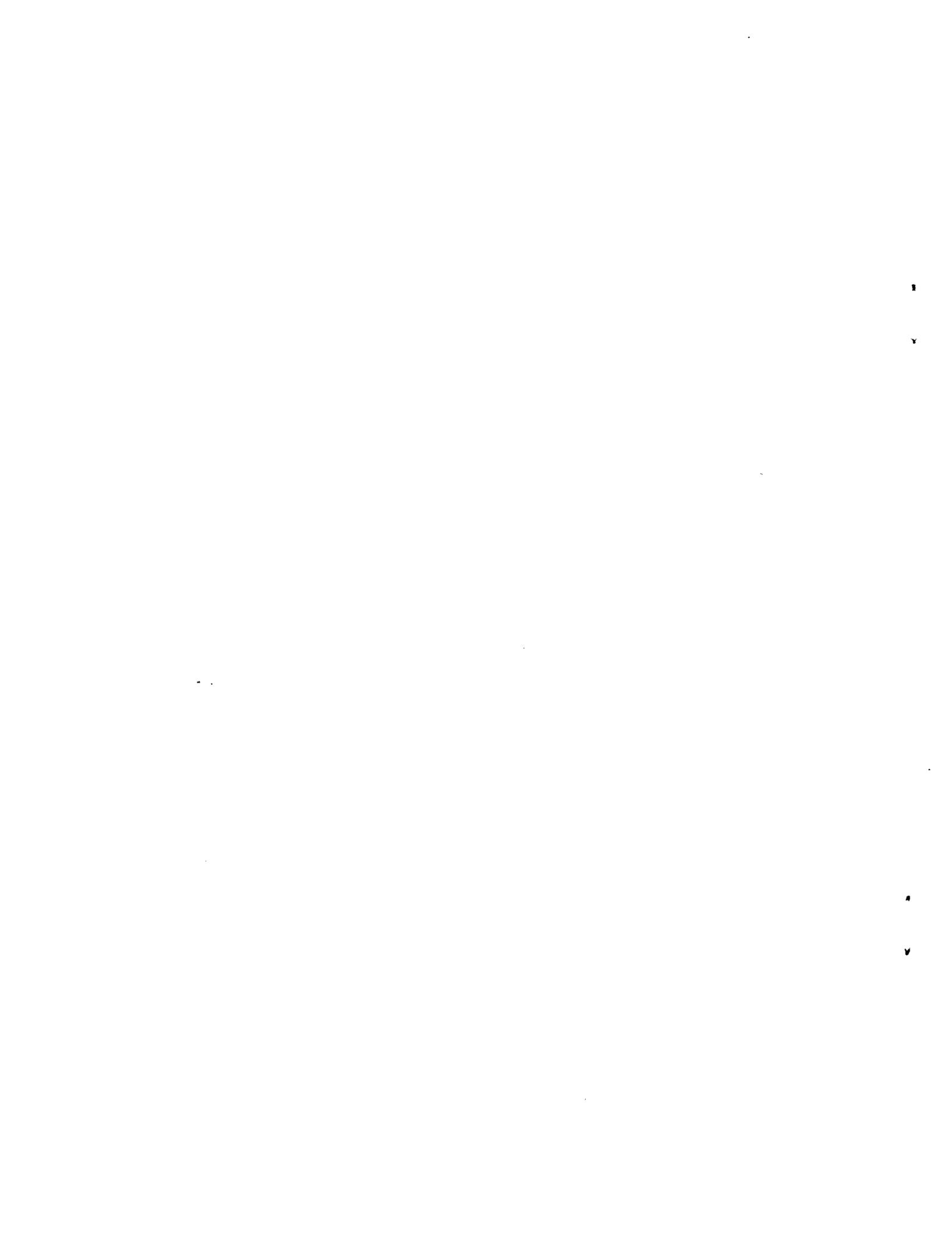


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List of Acronyms

ACS	-	Association of Caribbean States
BDDC	-	British Development Division - Caribbean
CANARI	-	Caribbean Natural Resources Institute
CARDI	-	Caribbean Agricultural Research and Development Institute
CARICAD	-	Caribbean Centre for Development Administration
CARICOM	-	Caribbean Community Secretariat
CARICOMP	-	Caribbean Coastal Marine Productivity Programme
CARIRI	-	Caribbean Industrial Research Institute
CBD	-	Convention on Biological Diversity
CCA	-	Caribbean Conservation Association
CCST	-	Caribbean Council for Science and Technology
CDB	-	Caribbean Development Bank
CDERA	-	Caribbean Disaster Emergency Response Agency
CEHI	-	Caribbean Environmental Health Agency
CEP	-	Caribbean Environmental Programme
CFRAMP	-	Caribbean Fisheries Resource Assessment and Management Programme
CIDA	-	Canadian International Development Agency
CSD	-	Commission on Sustainable Development
CTO	-	Caribbean Tourism Organization
ECLAC	-	United Nations Economic Commission for Latin America and the Caribbean
EIA	-	Environmental Impact Assessment
EIB	-	European Investment Bank
EU	-	European Union
FAO	-	Food and Agricultural Organisation of the United Nations
FMC	-	French Mission for Cooperation
GCSIDS	-	Global Conference for Small Island Developing States
GEF	-	Global Environmental Facility
GIS	-	Geographic Information Systems
GTZ	-	German Fund for Technical Cooperation
IADB	-	Inter-American Development Bank
IMA	-	Institute of Marine Affairs
IMO	-	International Maritime Organisation
IOCARIBE	-	Inter-governmental Oceanographic Commission, Sub-Commission for the Caribbean and Adjacent Regions
IPID	-	Regional Programme on Integrated Planning and Institutional Development for the Management of Marine and Coastal Resources
ITU	-	International Telecommunications Union
JCU	-	Joint Coordinating Unit
NRMU	-	Natural Resources Management Unit
OAS	-	Organisation of American States
OECS	-	Organisation of Eastern Caribbean States
PAHO	-	Pan-American Health Foundation
RCG	-	Regional Consultative Group
RCU	-	Regional Coordinating Unit
SIDS POA	-	Small Island Developing States Programme of Action
TCDC	-	Technical Cooperation among Developing Countries
UNCED	-	United Nations Conference on Environment and Development
UNCHS	-	United Nations Centre for Human Settlements
UNDP	-	United Nations Development Programme
UNEP	-	United Nations Environment Programme
UNESCO	-	United Nations Educational, Scientific and Cultural Organisation
UNICEF	-	United Nations Fund for Children

USAID
UTECH
UWI
UWICED
WB
WCR
WHO
WWF

- United States Agency for International Development
- University of Technology (Jamaica)
- University of the West Indies
- University of the West Indies Centre for Environment and Development
- World Bank
- Wider Caribbean Region
- World Health Organization
- World Wide Fund for Nature

1 Background and Objectives

In 1994, the United Nations Global Conference on the Sustainable Development of Small Island Developing States (GCSIDS) held in Barbados from April 25 - May 06, affirmed Agenda 21 and the Rio Declaration and adopted the Programme of Action (POA). This Conference and the agreements signed by 111 Governments marked an important epoch in the evolutionary thinking and assimilation of "sustainable development" as an essential element in the socio-political and economic development paradigm of small island developing states (SIDS).

Prior to 1994, the United Nations Conference on Environment and Development (UNCED) was convened in Rio de Janeiro, Brazil. This represented the first serious attempt by the world community to define a development agenda which had as its underpinning, the sustainability of the environmental resource base and its elevation to a level of critical importance. The SIDS conference, using Agenda 21 as its foundation and the vulnerability and fragility of small states as its context, articulated a set of procedures known as the Plan of Action (POA) which governments, in partnership with national, regional and international organizations in both the public and private sector, should adopt in order to realize the sustainable development objectives as defined in Agenda 21.

The salience of GCSIDS is recognized not just because of its reaffirmation of the theoretical constructs underlying "sustainable development" but because of the global consensus on a set of axioms which characterize small islands described by the SIDS acronym. These truths as contained in the Declaration of Barbados affirmed that:

The survival of small island developing States is firmly rooted in their human resources and cultural heritage which are their most significant assets; those assets are under severe stress and all efforts must be taken to ensure the central position of people in the process of sustainable development.

Sustainable development programmes must seek to enhance the quality of life of peoples, including their health, well-being and safety.

Small island developing States have sovereign rights over their own natural resources. Their biodiversity is among the most threatened in the world and their ecosystems provide ecological corridors linking major areas of biodiversity around the world. They bear responsibility for a significant portion of the world's oceans and seas and their resources. The efforts of small island developing States to conserve, protect and restore their ecosystems deserve international cooperation and partnership.

Small island developing States are particularly vulnerable to natural as well as environmental disasters and have a limited capacity to respond to and recover from such disasters.

Small island developing States are limited in size, have vulnerable economies and are dependent both upon narrow resource bases and on international trade, without the means of influencing the terms of that trade.

Having affirmed the above, the GCSIDS declared that:

Based on the principle of the right to development, small island developing States should, in accordance with their own priorities, endeavour to achieve the goals of sustainable development by, inter alia, formulating and implementing policies, strategies and programmes that take into account development, health and environmental goals, strengthening national institutions, and mobilizing all available resources, all of which are aimed at improving the quality of life.

Through regional and subregional cooperation, small island developing States and the international community should encourage strong functional cooperation in the promotion of sustainable development by sharing information and technology, strengthening institutions and building capacity.

Based on the above Declaration and other succeeding paragraphs of the SIDS POA, the relevant regional commissions of the United Nations have been requested to provide technical and functional support for regional activities to coordinate the implementation of GCSIDS and the SIDS POA.

In response to this request, the United Nations Economic Commission for Latin America and the Caribbean (UN/ECLAC), Subregional Headquarters for the Caribbean, together with the United Nations Development Programme (UNDP), Caribbean Development Bank (CDB), University of the West Indies Center for Environment and Development (UWICED) convened a Meeting of Experts to help to define and refine the goals of sustainable development to be pursued by Caribbean SIDS.

The May 1995 Caribbean Meeting of Experts on the Implementation of the SIDS POA, took note of the fact that not much progress had been made in the adoption of sustainable development approaches or in the integration of the SIDS Programme of Action at the national level. Some of the reasons for this delay were attributed to the lack of an adequate regulatory framework to support and facilitate integrated development planning, the need for a broad-based Sustainable Development Committee at the national level and strengthening of the human resource capacity at all levels, particularly in fostering public awareness.

It was also noted that there is need for greater coordination in the area of strategy and policy formulation and that the absence of a coordinating mechanism is a particularly critical factor affecting the slow pace of implementation of the SIDS POA at national and regional levels. It was therefore recommended that a mechanism should be established at the regional level to facilitate coordination and implementation of the SIDS POA.

In this regard it was recommended that CARICOM (Caribbean Community Secretariat) and UN/ECLAC assume joint responsibility for the creation of a mechanism to facilitate speedier implementation of the SIDS POA. After much discussion, the two institutions agreed on the

establishment of a Joint Coordinating Unit (JCU) which would facilitate coordination and implementation of the SIDS POA as requested by the participants at the Meeting of Experts. Under this arrangement, the JCU would be guided by the deliberations of a Regional Consultative Group (RCG), which would meet on an annual basis to review the performance of the countries in implementing the SIDS POA. The work programme of the JCU, it was envisaged, would emphasize capacity building, information management, public awareness and sourcing additional finance to meet the anticipated shortfall.

1.1 Purpose of the Review

In preparation for the Meeting of Experts in Port-of-Spain, Trinidad, May 15-19, 1995, an assessment had been undertaken of the status of countries regarding the implementation of the SIDS POA. That assessment, coming one year after the GCSIDS, though quite informative in terms of the context which it gave to the Meeting of Experts, may have been undertaken too soon after the GCSIDS. However, the review was able to identify several initiatives which were in the conceptual phase or which were being implemented, that were a direct result of recommendations and needs identified in Agenda 21 and the GCSIDS meeting. That review has now made it possible to measure the progress of SIDS in light of the constraints identified in that review. More importantly, the Meeting of Experts itself, made several recommendations which it was hoped would have addressed the problems and constraints identified in that initial review.

Another factor influencing a review at this stage is that Resolution 50/113, December 1995 of the United Nations General Assembly called for a special session to review and appraise the implementation of Agenda 21. This General Assembly session was convened in June 1997. The Resolution also welcomed the decision of the Commission on Sustainable Development (CSD) to devote its fifth session in 1997 to preparations for the special session of the General Assembly. It also invited governments and regional and sub-regional organizations to consider undertaking reviews on progress achieved since the United Nations Conference on Environment and Development (UNCED) with a view to contributing towards the special session. The review of Agenda 21 includes the SIDS POA. This preliminary review has revealed that throughout the Caribbean region progress has been made towards the objective of sustainable development. However, these achievements are not well known.

The main achievements have been a better understanding of issues of sustainable development which has resulted in a better identification of environmental and poverty concerns throughout the region. Caribbean governments and civil society have reacted to these concerns by working more closely together. Also, in many countries the changed perception of the role of civil society in achieving the objectives of the Earth Summit has led to the adoption of the principles of co-management of natural resources and in close collaboration between governments, NGOs, community organizations and the private sector in setting standards, and the preparation of environmental policies or action plans.

Other achievements have been institutional strengthening through capacity building, enactment of environmental legislation, the application of tools such as Environmental Impact Assessments (EIAs)

or in the adoption and implementation of environmental action plans. As a result, many governments have now established environmental authorities or environmental ministries.

The region has begun to implement well over 700 projects and programmes directly related to the implementation of the SIDS POA and Agenda 21. Almost all governments have ratified the Convention on Biological Diversity (CBD) and the Framework Convention on Climate Change (FCCC). Also the Caribbean has moved towards closer regional collaboration. Links between the CARICOM and Cuba, Dominican Republic and Haiti, have been strengthened while cooperation between the Caribbean, Central America and Venezuela, Colombia and Mexico has resulted in the establishment of the Association of Caribbean States (ACS).

There have been other achievements in the region as a response to global conferences such as those on Habitat, Poverty, Women and Development and Population. In most instances, the region has followed up by the adoption and implementation of Caribbean specific action plans.

Notwithstanding the mandate of the UN and the publicity generated by GCSIDS, many people had high expectations that it would have marked a turning point in global efforts to address common problems in pursuit of sustainable development paths. It is imperative that the SIDS themselves, take some time to assess their progress in meeting their original mandate. More importantly, this stock-taking exercise, if undertaken properly and systematically could serve as a launching pad for a more structured and analytical measurement of the progress being made in the implementation of the SIDS POA. More importantly, it will help to identify gaps in the POA which have to be filled.

1.2 Objectives of the Review

These are to:

- Assess the status of implementation of the SIDS POA;
- Highlight major factors contributing to success as well as any constraints to implementation;
- Assist in fulfilling UN/ECLAC's reporting responsibilities in this area.
- Identify ways in which success can be replicated as well as solutions to the constraints;
- Identify major challenges, priorities for the future and strategies for the implementation of priorities.

In undertaking this review, national focal points in governments as well as representatives of several regional and international organisations were invited to submit their comments to a set of questions which would have provided some indication of their efforts to implement any of the activities listed in the SIDS POA. The response, though encouraging, particularly from the regional and international

organizations, were not as encouraging from the national focal points. In addition to these comments, great reliance was placed on the project database being developed by UN/ECLAC, Port of Spain. This database which contains over seven hundred entries on different sectors, provides a useful listing of the various initiatives being undertaken in the region which address some of the structural and human development deficiencies which have been highlighted in several fora.

Though this review does not seek to analyse the efficacy of those projects in terms of their real contribution to sustainable development, nor the extent to which they have been initiated as direct outputs of the GCSIDS, it does attempt to identify sustainable development deficiencies.

Valuable issues have emerged out of this exercise, some of which will serve to point the way forward. These issues relate not just to the constraints and problems being encountered with regard to the implementation of the SIDS POA, but also to the opportunities to refine the mechanisms for undertaking reviews.

1.3 Progress in the Implementation of the SIDS POA at the National and Regional Levels

There is general agreement among many observers that not much has been achieved with regard to the implementation of the SIDS POA since the convening of the historic GCSIDS. However, it must be acknowledged that several governments, regional and international organizations and others in the donor community have been making greater efforts towards ensuring that development initiatives conform to certain sustainable development principles. Many of the activities in the region relevant to the SIDS POA were not a consequence of the SIDS POA but were initiatives started before the GCSIDS and which continue along national and regional priorities that were established. The SIDS POA has, however, given greater focus to and renewed emphasis on the importance of these projects and in some way has contributed to a more holistic approach to the development of new programmes and projects.

The following is not intended to be an exhaustive collection of national and regional actions in support of the SIDS POA, but rather an indicative summary of the types of activities that have taken place in the region over the past few years. Information on actions taken in the annual programme of activities at the level of government departments, and on national and ministerial policies have not been included because of the unavailability of that information at the time of writing.

2 Assessment by Programme Areas

2.1 CLIMATE CHANGE

Capital cities and towns and the majority of settlements in SIDS have been developed in the coastal zone and are therefore susceptible to sea level rise and its associated impacts on living conditions, infrastructure and the economy. There is also the perception among island decision makers that the emission of green house gases from SIDS is miniscule and that it requires no special efforts or expenditure at the national level. However, given the possible effects of climate change and sea level rise on the physical and economic interests of the region this issue must be given further attention. The following key issues should be considered.

2.1.1 Key Issues

- Inundation of coastal settlements.
- Loss of fertile agricultural lands.
- Insufficient attention to potential effects of sea level rise in new coastal developments.
- Insufficient attention to emissions of greenhouse gases.
- Inadequate incentives for the development and use of renewable sources of energy.

2.1.2 National Action

Many Caribbean states have ratified the Framework Convention on Climate Change but have not yet acceded to the Convention, nor have they formulated mitigation policies for sea level rise or greenhouse gas emissions. While monitoring, collection of data and planning for climate change is a necessary exercise, it has not yet been placed among national priorities and is not reflected in national budgets nor in national physical planning. Vulnerability assessment and development of plans for adaptation to climate change is being carried out in Antigua and Barbuda as part of a project funded by the Global Environmental Facility (GEF) and executed by the United Nations Environmental Programme. In Belize, the Environmental/Global Climate Change Programme was designed to help reduce emissions of greenhouse gases through policy reform, research and technology transfer centered on sustainable efficient use of forest and energy resources. The emphasis in the region seems to be less on the regulation of emissions of green house gases *per se* and more on the use of renewable sources of energy, especially solar water heaters and solar dryers. The University of the West Indies has pioneered a lot of research in this area over the last 15 years and continues to develop commercial applications.

2.1.3 Regional Action

The most significant initiative to date aimed at addressing the issue of climate change is that coming out of the Caribbean Planning for Adaptation to Global Climate Change Project being funded by GEF. The project which was developed and executed by the Organisation of American States (OAS), the Executing Agency for the World Bank is scheduled to start by the middle of 1997. This project will attempt to support 11 countries in preparing to cope with the adverse effects of global climate change through vulnerability assessments of sea level rise, adaptation planning and capacity building linked to adaptation planning (See Box 1.). This project is being implemented by a Project Unit attached to UWICED.

There are however, initiatives on the monitoring of coastal variables which can inform planning for adaptation to climate change and which were started before the SIDS POA was developed. Regional efforts at monitoring selected coastal parameters continue in several islands though in an infrequent manner, e.g. the Caribbean Coastal Marine Productivity Programme (CARICOMP) Level I and the Inter-governmental Oceanographic Commission for the Caribbean and Adjacent Regions (IOCARIBE) ocean climate research.

As a contribution to the Climate Change project, UNEP-CAR/RCU is developing a computerized numerical model to assess the socio-economic impacts of Climate Change in Small Island States. This work is being undertaken by the Dutch Institute, RIKS, together with a Centre belonging to the University of Miami, CIMAS. The model will be tested in a case study in St. Lucia.

BOX 1

Planning For Adaptation to Climate Change

The Caribbean: Planning For Adaption to Climate Change project was designed in anticipation of possible threats to low-lying coastal states as a result of global warming and sea level rise. The project will assist governments and regional institutions in strengthening their capability for monitoring and analyzing climate and sea-level trends; identify areas vulnerable to the effects of climate change and sea-level rise; develop an integrated management and planning framework; enhance regional and national capabilities through human resource development and institutional strengthening; identify and assess policy operations and instruments, and collect information for preparing national communications. The project will build on existing initiatives and will include the following components:

- Sea Level and Climate Monitoring Network
- Databases and Information Systems
- Inventory of Coastal Resources
- Coral Reef Monitoring
- Coastal Vulnerability and Risk Assessment
- Policy Framework for Coastal and Marine Management
- Economic Valuation of Coastal and Marine Resources

The project will focus on capacity building of national and regional institutions to implement specific measures, administer the network and information systems, research and monitor selected parameters, analyse data, and manage the process of preparation for adaptation. Partners in this exercise are the CARICOM Secretariat, UWICED, OAS and the World Bank (WB).

2.2 Natural and Environmental Disasters

Most of the islands in the Caribbean lie within the hurricane belt and are vulnerable to frequent damage from seasonally intense weather systems. Many of the islands are also volcanic in origin, however, destructive volcanic activity and earthquakes are less frequent and have not had as significant an impact on the region in the last two decades as hurricanes. Those natural disasters which have occurred have had an impact on coastal communities, commercial, industrial and agricultural areas and those developed for tourism. These disasters have severely affected the economies and social fabric of SIDS making disaster preparedness and mitigation an integral part of sustainable development. Too often in the past, forward planning has been neglected and disaster preparedness and mitigation has generally only been addressed after disaster has struck. The following key issues illustrate the range of priority concerns:

2.2.1 Key Issues

- Lack of disaster preparedness in development planning.
- Poor mitigation mechanisms for dealing with oil spills and other environmental disasters.
- Lack of or inadequate building code legislation.
- Limited use or knowledge of appropriate building codes and guidelines.
- Inadequacy of administrative arrangements and human resources for the implementation of building codes.
- Unavailability of suitable insurance policies for low income households.
- Inadequate support systems for affected communities.

2.2.2 National Action

Early warning systems for hurricanes and tropical storms are effective and a wealth of information on precautionary measures are usually publicised well in advance by all the media.

Most countries have national disaster response coordinating agencies that are able to provide fairly precise assessments of damage and to render assistance. Severe earthquakes have not been widespread in the region over the last 25 years. However, earth tremors are frequent and all such activity is monitored by the Seismic Unit at the University of the West Indies.

Disruptive volcanic activity is also infrequent but recent pyroclastic flows with gaseous and ash emissions at the Soufriere Hills Volcano in Montserrat has challenged the local coping strategy.

Safe shelter and social support services are presently inadequate but are receiving attention from the relevant authorities. Periodic flooding appears to have increased in severity over the years and contributes to economic losses in agriculture, homes and national productivity.

Donor assistance has been secured in a few countries for rehabilitation of agricultural holdings and infrastructure such as sea defenses, roads, bridges, drainage and irrigation systems, and for building materials. Increased attention to building codes has occurred in some countries, particularly in those recently affected by hurricanes.

National coping strategies for affected communities still appear to be inadequate, particularly for low income communities, small farmers and artisanal fisherfolk.

2.2.3 Regional Action

The Regional Response Mechanism is an effective disaster response mechanism with good telecommunication links that incorporates all of the National Disaster Coordinators, the Eastern Caribbean Donor Disaster Coordination Group, the Caribbean Disaster Relief Unit, and the Caribbean Disaster Emergency Response Agency (CDERA). These agencies are able to quickly assess damage, establish needs and mobilise resources for initial relief to affected communities. CDERA has also organised training in Basic Disaster Preparedness and disaster simulation exercises. OAS has also continued implementation of a five-year Caribbean Disaster Mitigation Project funded by the United States Agency for International Development (USAID).

The Caribbean Disaster Mitigation Project (CDMP) is a coordinated effort to promote the adoption of natural disaster mitigation and preparedness practices by both the public and private sectors in the Caribbean region through a series of activities carried out over a five-year period. The CDMP is funded by the USAID Office of Foreign Disaster Assistance (OFDA) and implemented by the Organization of American States/Unit of Sustainable Development and Environment (OAS/USDE) for the USAID Caribbean Regional Program (USAID/CRP).

The CDMP provides a framework for collaboration with the Caribbean region to establish sustainable public and private sector mechanisms for natural disaster mitigation that will measurably lessen loss of life, reduce the potential for physical and economic damage, and shorten the disaster recovery period over the long term. Project activities vary according to location, contents and implementation strategy, but all contribute to attainment of the overall CDMP goal: a more disaster-resistant environment for the people who live, work and invest in this hazard-prone region.

2.3 Management of Wastes

Safe disposal of solid and liquid wastes has always been a challenge to island governments. Landfills, gullies, rivers and the marine environment have been the traditional disposal sites and their suitability has only recently provoked large national debates as the consequences of these actions have impacted

or become known to communities. Finite land mass, intense utilisation of accessible coastal zones and increasing numbers of tourists (creating greater demands on the waste management system), make it imperative that infrastructure upgrading, recycling and reuse and waste reduction strategies be given greater priority. The following key issues should be considered in the formulation of required strategies:

2.3.1 Key Issues

- Inadequate and malfunctioning sewage treatment facilities.
- Lack of support for national waste reduction, reuse and recycling strategies.
- Inadequate legislation for control of dumping, emission and effluent discharges.
- Ineffective enforcement of existing regulations concerning discharge of wastes.
- Lack of or inadequate port reception facilities for ship-generated wastes.
- Unsuitable location and improper management of many landfills.
- Inappropriate storage and disposal of hazardous and toxic wastes.
- Lack of a united response to the shipment of hazardous wastes through the Caribbean Sea.

2.3.2 National Action

Several countries (e.g. Barbados, Bahamas, Belize, Guyana, Jamaica, St. Lucia, Trinidad and Tobago), have been able to secure donor support (e.g. CDB, WB and the Inter-American Development Bank (IADB)) for upgrading of waste management infrastructure. These improvements include construction of water and sewage system to serve small towns, revision of solid waste management legislation and regulatory framework, rehabilitation and maintenance of sewage system, and institutional strengthening.

2.3.3 Regional Action

On March 24, 1983, Caribbean countries, at a meeting in Cartagena, Colombia, adopted the Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region (Cartagena Convention). This Convention which entered into force on 11 October, 1986 is the authority on providing the legislative framework for the Caribbean Environment Programme. The Convention has been supplemented by two Protocols, a

Protocol Concerning Cooperation in Combating Oil Spills in the Wider Caribbean Region which was adopted in 1983 and entered into force on 11 October 1986, and a Protocol Concerning Specially Protected Areas and Wildlife (SPA) in the Wider Caribbean Region which was adopted in two stages, its text on 18 January 1990 and its Annexes on 11 June 1991. However, the SPAW Protocol has not yet entered into force. A third Protocol on Marine Pollution from land-Base Sources and Activities (LBSM) is under preparation.

Many Caribbean states have not yet ratified the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) or the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. The International Maritime Organisation (IMO) with GEF funding is assisting 22 countries in the region to overcome the legal and technical obstacles preventing the efficient implementation of MARPOL 73/78, and to facilitate the Special Area statutes for the Wider Caribbean area under Annex V of MARPOL 73/78. Components of this programme include the assessment of existing waste management systems, criteria development for port waste reception facilities, development of integrated waste management alternatives and public awareness.

The OECS Solid and Ship-Generated Waste Management Project (See Box 2.) funded by GEF, WB, CDB, EU, the European Investment Bank (EIB) and OECS governments has been initiated and will attempt to:

- improve the coverage and effectiveness of domestic solid waste collection and disposal facilities;
- reduce pollution of international and territorial waters caused by ship-generated solid wastes;
- improve the collection, treatment and disposal of ship-generated solid wastes;
- assist the beneficiary countries with the establishment of appropriate legal and institutional frameworks to enable effective management and disposal of shore and ship-generated wastes;
- assist in the preparation of plans and programmes to address the problems of collection, treatment and disposal of liquid waste; and
- identify regional opportunities for the reduction, recovery and recycling of solid waste.

BOX 2

OECS/World Bank Solid and Ship-Generated Waste Management Project

The OECS, with funding from the WB, has embarked on a Solid and Ship-Generated Waste Management Project. The objective of this project is to address the problems of managing ship and shore-generated waste in the countries of Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines. The project will support and provide for five principal programmes. These are:

- (a) Construction of new sanitary landfills, or the upgrading of existing landfills.
- (b) A system of waste collection and disposal for MARPOL Annex V wastes.
- (c) Enhancement of waste collection including, where appropriate, development of transfer stations, and provision of equipment.
- (d) Waste minimization/recycling through analysis of policy measures needed for encouraging waste minimization.
- (e) Institutional strengthening, including development of legislation on solid waste and environmental health, as well as public education programmes.

This project is expected to become fully operational by the middle of 1997. A project manager has been recruited and all of the participating countries have identified sites for the construction of landfills and firms shortlisted to undertake the construction work. They are also required to establish independent authorities to manage the implementation of the project and to enact legislation mandating the imposition of an environmental levy on all visitors and tipping fees for all waste from ships requiring disposal.

BOX 3

**World Bank/IMO Wider Caribbean Initiative
for Ship-Generated Waste**

This project was conceived as the first phase of a long term process of overall cleaning up and protecting the Caribbean Sea. It is envisaged that the countries of the region will invest in port reception facilities, waste management infrastructure and institutional training programmes that will contribute to the longer-term goal of ending the discharge of all ship-generated waste into the territorial and wider waters of the Caribbean Sea. It is also intended that this project will provide the basis for ratification and implementation of the MARPOL 73/78 convention by the developing countries of the Wider Caribbean Region (WCR). Project activities include:

- (a) Assistance to governments and port authorities on legal, technical, and institutional measures needed to implement MARPOL 73/78.
- (b) Provision of a forum for considering options and for reaching a regional consensus on the actions to be taken.
- (c) Assisting ports in the WCR in setting tariffs for receiving Annex I, II and V wastes, including cost recovery for waste management systems.

Recently, a draft Code of Conduct for the Prevention of Pollution from Small Ships in Marinas and Anchorages in the Caribbean Region was prepared and endorsed by delegates from 23 Caribbean countries at a forum in November 1996 in Trinidad and Tobago. This code was designed primarily for small vessels engaged in nautical tourism and recreational navigation, and prescribes best practice guidelines for administrations, facilities and users. The Code is being circulated to States and Territories of the Caribbean.

2.4 Coastal and Marine Resources

The coastal zone in SIDS is considered as that area bounded landward by the upper reaches of the watershed and seaward by the limit of the Exclusive Economic Zone (EEZ). This implies that the management of forest, river, other terrestrial and marine resources on which the sustainable development of these States depend, must be carried out in an integrated manner. Resource use conflicts and development patterns that degrade or diminish coastal resources can be rectified through genuine participatory planning and management and increased institutional capability to manage human activities in the coastal zone. The key issues in this sector are identified below:

2.4.1 Key Issues

- Lack of integrated coastal zone planning and management.
- Inadequate coastal resources protection legislation.
- Uncontrolled development in key watersheds, wetland areas and in active beach zones.
- Unsustainable near-shore fishing practice by trawlers.
- Illegal fishing in territorial waters and Exclusive Economic Zones.
- Continued destruction of coral reefs and sea grass beds from insensitive recreation and commercial activities.
- Inadequate management of Marine Protected Areas.
- Inadequate institutional capability for monitoring and enforcement.

2.4.2 National Action

Few countries in the region had a specialised agency which focused on coastal zone management before the GCSIDS. Since the Barbados Declaration, more emphasis has been placed on coastal zone management through exploring the options for strengthening existing agencies and collaborating mechanisms among relevant agencies, or establishing specialized units with responsibility for coordinating coastal zone management. Donor assistance has been secured from GEF, IADB, CDB, the Food and Agricultural Organisation (FAO), the Canadian International Development Organisation (CIDA) and from the Governments of France, the Republic of China, Japan and the USA for projects that address selected aspects of coastal resources management.

Some of these activities included: development of coastal zone management plans, resource surveys, mapping and assessment, institutional and infrastructural support to fisheries departments, development of fishery policy, awareness and public information, management support to Marine Protected Areas and training of personnel.

BOX 4

Coastal Zone Management in Barbados

The Coastal Conservation Unit (CCU) was initially set up as a project unit to execute joint Government of Barbados/IADB Diagnostic and Pre-feasibility Studies for coastal conservation. That Unit has been renamed the Coastal Zone Management Unit and is now a permanent government agency. In 1991, the CZMU undertook a 4-year IADB funded project on Feasibility and Institutional Strengthening Studies for the west and south coast of Barbados. One output of this project was the preparation of a draft Coastal Zone Management Act. In 1996 the CZMU coordinated detailed studies of the east and south east coasts which were not included in the earlier studies. The aim of this last study is to carry out scientific assessments and develop a comprehensive integrated shoreline management plan for the study area, review and update investment phase designs from the previous studies, and provide technical assistance for the strengthening of local institutions responsible for coastal zone management.

The CZMU has also been involved in the following activities over the past few years: oceanographic monitoring, sediment transport monitoring, water quality monitoring at beaches, coastal development planning, education outreach, beach enhancement/protection pilot projects and participation in international and regional advisory meetings and workshops.

The success of the CZMU's intervention in coastal development planning is a result of extensive coastal data collection for more than a decade. Coastal-related applications submitted to the Town Planning Office are evaluated on the technical advice and experience built up over the years.

2.4.3 Regional Action

The SPAW Programme has developed guidelines for establishment and management of protected areas as well as a comprehensive training programme for trainers and protected area managers. This programme has also been supportive of the management of protected coastal and marine species such as sea turtles, manatees, migrating birds, other endangered species and marine ecosystems such as black coral. The SPAW Programme has been further

supportive of the development of management plans for protected areas and assisted Governments with the implementation of these plans.

Through programmes coordinated by the United Nations Environmental Programme/Caribbean Environmental Programme (UNEP/CEP), the Caribbean Fisheries Resources and Assessment Programme (CFRAMP), the Organisation of Eastern Caribbean States/ Natural Resources Management Programme (OECS/NRMU), UNDP, UWI and Canadian International Development Programme/ Caribbean Conservation Association (CIDA/CCA), countries have benefitted from training of personnel, acquisition of equipment and facilities, production of stock assessment data and other resource inventories, production of coastal zone management plans (e.g. "Guidelines for Integrated Planning and Management of Coastal and Marine Areas in the Wider Caribbean" CEP/UNEP and Island Resources Foundation, 1996) and upgrading of capability for management of marine parks, studies on pollution, information exchange and sharing of experience within and outside of the region.

Since 1990, UNEP-CAR/RCU, through the Regional Programme on Integrated Planning and Institutional Development for the Management of Marine and Coastal Resources (IPID) supported by the Swedish Government, has been working with integrated planning and management of coastal areas in the Wider Caribbean Region. Several pilot studies have been carried out in the coastal areas of large countries as well as of small island states under the name of "Development of Pilot Integrated Management Plans for Small Islands and Coastal Areas". The experiences of these pilot studies have been presented in the Guideline by UNEP-CAR/RCU in collaboration with IRF.

Another activity within the IPID sub-programme of the CEP is Environmental Planning and Management of Heavily Contaminated Bays and Coastal Areas. This programme has been carried out during several years with different case studies all over the Caribbean area. The experience documented in these case studies will also be analyzed, assessed and presented in the form of guidelines or a "tool box" for environmental management.

The Regional Programme on Specially Protected Areas and Wildlife in the Wider Caribbean Region (SPAW), a sub-programme of UNEP/CEP is addressing issues arising from two major global initiatives, i.e the Convention on Biological Diversity (CBD) and the International Coral Reef Initiative (ICRI). Many of these issues relate specifically to the management and protection of coastal and marine resources.

The SPAW Programme has had a number of major achievements during the 1994- 1996 period in the area of coastal and marine resources. Some of these are described in the following.

- Successful raising of US \$645,000 from USAID towards the implementation of CEP activities relevant to conservation of coral reefs and their associated ecosystems and the impact of tourism on these ecosystems;
- Active participation in the ICRI and nomination as regional contact point for ICRI's Agenda for Action.

- Implementation of a number of country priority activities as outlined in their Sea Turtle Recovery Action Plan (STRAPs) for Aruba, Barbados, Belize, British Virgin Islands, Netherlands Antilles, St. Kitts-Nevis, St. Lucia and St. Vincent and the Grenadines, emphasizing in particular, capacity building and awareness. Several countries have developed and/or enacted legislation relevant to sea turtle conservation, increased number of beaches protected for sea turtle nesting, and retail of turtle products has been sharply reduced in countries where STRAPs are being implemented.
- Successful fundraising of US\$80,000 from the Government of the USA for sea turtles, manatee and coastal ecosystems conservation activities during 1994 - 1995.

In addition to the CPACC project, the OAS has initiated three activities in the sphere of coastal and marine resources to be implemented by regional institutions and consultants. One of these is a study to assess the current situation respecting coastal and marine issues and problems, including actions and policies being implemented and the steps required to improve the current situation. Further, a catalogue of relevant Caribbean research and academic institutions and programmes will be undertaken. A second activity will assess the present state of effluent disposal in the region, including major problems and issues, relevant initiatives and recommendations for the short and medium term. This activity will also include a strategy and work plan to assist with the establishment or revision of national standards for sewage and industrial pollutants based on established guidelines. Capacity-building will also form an element of this activity. The third OAS activity under the coastal and marine component involves a comprehensive review of Integrated Coastal Zone Management legislative systems of the English-speaking members of the OAS. The Caribbean Law Institute of the UWI will undertake the study.

BOX 5**Caribbean Marine Parks and Protected Areas Programme**

During 1991-1996, the Caribbean Conservation Association (CCA) implemented a Marine Parks and Protected Areas Programme with funding from CIDA. This programme improved national and regional marine parks and protected areas management capabilities through the provision of policy and planning support, training, information, technical assistance and public education activities. Pilot projects in the following ten countries received support through this programme: Anguilla (Training in Species Habitat Monitoring and the Installation of Mooring Systems), Barbados (Development of a Marine Coastal Interpretation Centre), British Virgin Islands (Development and Implementation of a Reef Awareness Programme), Dominica (Development of the Scott's Head/Soufriere Bay Marine Protected Area), Grenada (Initiation of a System of Marine Parks), Jamaica (Assessment of the Montego Bay Marine Park's Impact on the Fishing Industry), Montserrat (Demarcation of an Artificial Reef and Environmental Education), St Kitts/Nevis (Feasibility Study for the Development of a Marine Bird Sanctuary and the Establishment of a Marine Park System), St Lucia (Preparation for the Establishment of a Marine Park in Soufriere), and Trinidad and Tobago (Physical, Oceanographic and Bathymetric Surveys of Buccoo Reef).

2.5 Freshwater Resources

The integrity of water catchment and groundwater storage areas is increasingly threatened primarily by settlements and agricultural expansion. Forest removal and contamination by agricultural and industrial chemicals are major factors affecting the quantity and quality of raw water supplies. Water conservation has not been widely practiced in households with pipe borne water, although increasing demands have generally been met with various forms of supply regulation by national water resources management agencies, particularly in the dry season. Improving the availability and supply of potable water requires that the following issues be addressed:

2.5.1 Key Issues

- Continued degradation and loss of watersheds.
- Inadequate and unreliable water distribution and storage systems.

- Contamination of groundwater supplies.
- Insufficient control of water loss through leakage, commercial and domestic wastage.
- Lack of incentives to encourage recycling and to minimize wastage.
- Conflicts in allocation demands among the tourism, commercial/industrial and domestic sectors.

2.5.2 National Actions

In many countries, the unreliability of water distribution systems has forced many households to install water storage tanks. Recently in Barbados, it has become a requirement that water storage tanks be installed for all new houses. The IADB, CDB, WB, EU and the British Development Division - Caribbean (BDDC) have funded projects in several states for diagnostic studies, capacity building, rehabilitation and expansion of potable water production, storage and distribution systems, irrigation and drainage works, and watershed management.

The Agriculture Ministries in some of the islands have also promoted awareness campaigns on agrochemical use with the aim of minimizing contamination of freshwater supplies. Some of the water management agencies have also tried unsustained public education projects to make consumers more sensitive to water conservation practices. It is difficult to ascertain the success of these efforts.

2.5.3 Regional Action

UWICED, together with the University of the West Indies, Mona, Jamaica and the Commonwealth Science Council convened a regional meeting on water resources problems in SIDS, in August 1995. The meeting agreed to a Water Resources Action Plan which used both Agenda 21 and the SIDS POA as the basis for the plan. The central elements of the plan are the formulation of a Programme for Integrated Water Resources for Caribbean SIDS, a SIDS Water Resources Information System and the need for comprehensive policy reviews and assessments of water resources.

The OECS/NRMU implemented a multimedia pesticide awareness campaign in the Eastern Caribbean, targeted mainly at farmers and young persons, however, the impact of this exercise is not clear. The Caribbean Agricultural Research and Development Institute (CARDI) has been providing technical assistance to farmers in designing and installing irrigation and water management systems for crops and nurseries.

2.6 Land Resources

Human settlements, agriculture, commerce, industry and tourism development have historically been the major competing uses for land resources in the SIDS of the Caribbean. Conflicts in allocation and appropriate use continue to increase as human needs and population expand at faster rates producing greater pressure on finite land mass and natural resources. The rationale for preferred management options must therefore be developed with regard to the following key issues:

2.6.1 Key Issues

- Lack of integration of economic planning with physical planning for the management of land use and protection of land resources.
- Inadequate incentives and enforcement of laws and regulations for sustainable management of land and its natural resources.
- Weak local institutional capability for data gathering, analysis and planning.
- Lack of participatory approach in development planning.
- Insecurity of land tenure and poorly serviced informal housing developments.
- Inadequate rehabilitation of degraded watersheds, abandoned mines and quarries.
- Inappropriate mechanisms for meeting the housing needs of low income groups.

2.6.2 National Actions

Technical assistance to all of the Physical Planning Units in the OECS has been supplied by the United Nations Development Programme/ United Nations Centre for Human Settlements (UNDP/UNCHS) for the preparation of Physical Development Plans, and for institutional strengthening through training of personnel and provision of GIS equipment. WB, IADB, CDB, USAID and FAO have funded projects in several States for the preparation of policy, environmental impact assessments, guidelines and draft legislation for several aspects of land use planning and management, institutional strengthening, surveys and resource assessments, watershed and protected areas management.

2.6.3 Regional Actions

Training for Planning Technicians at UTECH in Jamaica and for postgraduates in planning at UWI in Trinidad has improved the accessibility of skills upgrading for staff at Physical

Planning Units in the region. The Caribbean Human Settlements Development and Related Environmental Management Programme executed by UNCHS has assisted in capacity building to CARICOM countries through the provision of technical assistance and tools for development planning.

At the sub-regional level the OECS/NRMU has assisted its member countries in the preparation of EIAs Guidelines. A draft Harmonized EIA Guidelines was prepared and circulated to all the Member States. Since then, several countries have requested specific assistance by providing hands-on training in the application and interpretation of EIAs.

2.7 Energy Resources

Caribbean countries are heavily dependent on petroleum for electricity generation and transport because of the convenience, favourable cost and widespread acceptance of petroleum-based technology. However, in many cases, increasing demand for electricity has not always been met with a corresponding increase in supply. Energy conservation in households and in the manufacturing sector has not become common practice. The following issues provide the context for future action:

2.7.1 Key Issues

- Insufficient public awareness of, and incentives for energy conservation.
- Inadequate generation and distribution capacity.
- Unavailability of competitively priced, large scale, renewable energy generating equipment.
- Lack of widespread use of alternative sources of renewable energy at the household level.

2.7.2 National Action

Several countries have developed small scale applications with solar energy and bio-gas generators (eg. Cuba, Jamaica, Dominican Republic, Barbados, and Trinidad and Tobago), and a few have tried wind, hydroelectric and geothermal sources of energy. Research into further development of these alternative sources continues. The UWI has been doing a lot of work on solar water heaters, cookers and driers. The use of compressed natural gas for powering motor vehicles has also found limited use in the region.

Over the last few years most countries have pursued upgrading and expansion of electricity generating and distribution capacity. Several of these were assisted by funding from the WB, IADB and CDB.

2.7.3 Regional Action

Several workshops on alternative sources of energy have been held in the Caribbean for the sharing of information and demonstration of model systems. The most recent being the Caribbean Renewable Energy Conference and Exhibition held in December 1996 in Barbados. The US Export Council for Renewable Energy has set up a Permanent Mission to the Caribbean in Trinidad and Tobago to provide technical assistance for the setting up of small scale projects utilising sources of renewable energy. Strengthening the information network on energy data has been executed by the Scientific Research Council in Jamaica through the Caribbean Energy Information System Project. The Caribbean Centre for Science and Technology (CCST) Secretariat located at the UN/ECLAC sub-regional office, helps member states with the acquisition of information and access to technical assistance for alternative energy projects.

2.8. Tourism Resources

Within the Caribbean, tourism is expected to generate 25.5% of Gross Domestic Product, provide employment for 22% of the region's population, and earn billions of dollars in foreign exchange by the year 2000. The beneficial aspects of tourism have been its major attraction to small islands with limited opportunities for earning foreign exchange. The negative impacts of tourism on coastal ecosystems and on local social norms have also generated much concern but little local mitigatory action has been taken thus far. Policies and collaborative action to safeguard the sustainability of island resources and lifestyles require commitment from decision makers to ensure integrated and enforceable sustainable tourism management strategies. These strategies will be guided by an analysis of the following key issues:

2.8.1 Key Issues

- Poorly documented and insufficient information on the financial and environmental costs and benefits of tourism projects in the Wider Caribbean.
- Inadequate or non-functional mechanisms for controlling the negative impacts of tourism development.
- Insufficient marketing support for micro-tourism enterprises and linkages with other sectors of the economy.
- Underdevelopment of niche markets (ecotourism, heritage etc.).
- Inadequate financing mechanisms and incentives for pursuing ecotourism initiatives.
- Poorly documented and insufficient information on 'carrying capacity' as management tools in controlling visitor use.

2.8.2 National Action

Over the past few years, several countries have been undertaking major infrastructure work including the construction of new hotels and cruise ship facilities, expansion and construction of new airports and improvement and enhancement of visitor attractions. Tourism Development Plans have also been completed or are in the process of being completed for several countries, with greater emphasis being given to ecotourism development, particularly in Belize, Dominica, Trinidad and Tobago, and Guyana. Many countries now require EIA for tourism related projects (hotels, ports, harbours and other ecotourism sites, thus ensuring that some of the potential impacts are identified and addressed.

2.8.3 Regional Action

The EU has funded a Regional Tourism Sector Programme that includes marketing, education, training, research and statistics, product development and protection of cultural heritage. The Caribbean Tourism Organisation provides on-going technical assistance to its 33 member countries and encourages the sharing of experiences and information through its annual ecotourism conferences. The CTO also hosts an annual ecotourism conference as a mechanism for networking among practitioners and interested parties, and for exchange of information and sharing of experience.

At the sub-regional level, the OECS/NRMU is developing a strategy for sustainable tourism development and has been working with several of its member states in exploring ecotourism potential in these states. More importantly, the OECS/NRMU is undertaking pioneering work in developing a strategy for community-based sustainable tourism development and will soon be initiating pilot projects in a few countries. The objectives of the programme are:

- (a) to provide a forum for discussing the development of a strategy for community-based sustainable tourism development;
- (b) to develop appropriate policies and legislation for implementing community-based environmentally sustainable tourism; and
- (c) to assist member States in the initiation of the Strategy.

2.9 Biodiversity Resources

Conservation of biological diversity has largely been promoted by researchers and environmental/conservation organisations in the Caribbean but has not found widespread support in the general population. Selected aspects of biodiversity conservation have been practiced by forestry and fishery officials in the region during their sector management programmes, but national biodiversity strategies have generally remained a low priority in many States. The key issues which follow, provide important considerations for the conservation of biodiversity resources:

2.9.1 Key Issues

- Lack of inventory of biological resources.
- Lack of integrated strategies for the management of terrestrial and marine biodiversity.
- Inadequate socio-economic and biological research on key species.
- Increasing habitat degradation and destruction.
- Unsustainable exploitation of commercially important indigenous species.
- Insufficient or non-existent safeguards against loss of rights to genetic resources.

2.9.2 National Action

Most countries in the region have ratified the Convention on Biological Diversity (CBD), but most of them have not yet put in place many of the mechanisms suggested under the CBD for the protection of local biological resources. Many States have received donor assistance for the conduct of surveys and mapping of resources, education and awareness programmes, establishment of protected areas, development of management plans, and training of staff. Several countries, eg. Montserrat, Antigua and Barbuda and the Dominican Republic have initiated or completed assessment of the status of biodiversity.

Guyana, which ratified the CBD in August 1994, has prepared both a National Forestry Action Plan and a draft National Biodiversity Strategy and Action Plan. These two initiatives, together with the Iwokrama Project have served notice of its intention to not only set aside areas of high biodiversity for conservation, but to serve as a classroom for biodiversity protection in the Western Hemisphere (See Box 7).

BOX 6

**Coastal and Marine Biodiversity Project
in the Dominican Republic**

The Coastal and Marine Biodiversity Project in the Dominican Republic is funded by the GEF and executed by the National Planning Office with assistance from UNDP. The major areas which are being addressed by this project include: community development, environmental education, biodiversity inventories, data base and information system development, sustainable financing, dissemination of bio-iversity information, development of regional management plans, development of coastal zone management policies, and the strengthening of technical institutional capability. One landmark output has been an inventory of coastal biodiversity which was completed in 1995. Pilot projects have been initiated with the collaboration of universities and NGOs in Samana Bay, Jaragua National Park, Monte Cristi National Park, and in Los Haitises National Park.

BOX 7

Protecting Rainforest Biodiversity in Guyana

The Iwokrama International Centre for Rain Forest Conservation and Development was formed in 1994 to study and manage 360,000 hectares of tropical rain forest set aside by the Government of Guyana. Iwokrama's mission is: to promote the conservation and the sustainable and equitable use of tropical rain forests in a manner that will lead to lasting ecological, economic and social benefits for the people of Guyana and for the world in general by undertaking research, training and the development of relevant technologies. On March 14, 1996 the National Assembly of Guyana passed the Iwokrama International Centre for Rain Forest Conservation and Development Act.

Participatory and democratic approaches to planning and implementation are being utilised to achieve the objectives of this project which include:

- Demonstrating that tropical forest resources can be both conserved and used to generate socio-economic benefits for the people of Guyana.
- Researching, developing and disseminating techniques and methods for the conservation of biological diversity and the sustainable management of the multiple resources of the tropical rain forest, for the benefit of Guyana and the wider world community.
- Preserving and more widely applying the knowledge, innovations and practices of local Amerindian communities which contribute to conservation and sustainable utilization of biological diversity; and ensuring that the benefits arising from the utilization of such knowledge, innovations and practices are equitably shared with local Amerindian communities.

The Iwokrama Centre has received substantial funding from UNDP/GEF for several specific preparatory activities. Support has also been received from the Commonwealth Secretariat, the ODA, and International Development Research Centre.

2.9.3 Regional Action

Critical natural habitats as sites for biodiversity conservation are being identified and will be published as the major output of the Study of Critical Natural Habitats in Latin America and the Caribbean, funded by the Italian Consultant Trust Fund and WB. A Conservation Assessment of the Terrestrial Eco-Regions of Latin America and the Caribbean has been published through a collaborative effort of the WB, GEF and World Wildlife Fund (WWF).

2.10 National Institutions and Administrative Capacity

Many States have prepared national environmental strategies, sector strategies and action plans with donor support. However, since effective national coordinating mechanisms have generally not been established to ensure the cross-sectoral and inter-departmental cooperation required, these initiatives lack the momentum to make them effective. In addition, many government departments still seem unable to implement or are unaware of an approach for integrating environmental considerations into national development. Institutional adjustments for such integrated planning and management of programmes have not yet evolved and are constrained by the following issues:

2.10.1 Key Issues

- Insufficient staff with appropriate skills and experience.
- Inadequate resources for timely and effective discharge of duties.
- Ineffective mechanisms for inter-sectoral collaboration.
- Ministerial and departmental priorities are often determined by political and economic considerations without due consideration to environmental implications.

2.10.2 National Action

The key issues identified above indicate the major limitations among state agencies with jurisdiction over activities outlined in the SIDS POA. Nonetheless, most national institutions have had constant access to and have utilized opportunities for training, equipment procurement, facilities upgrading, information and experience sharing through regional and international workshops and conferences, and grants or loans for special projects. New agencies have also been set up to undertake the lead role in environmental management in some countries, while in others, re-organisation of existing institutions to better facilitate environmental protection has been preferred. Examples include the establishment up of the Ministerio de Ciencia, Tecnologia y Medio Ambiente in Cuba, the Environmental Management Agency in Trinidad and Tobago and the Environmental Protection Agency in Guyana.

UNDP's Capacity 21 Project executed by the Caribbean Centre for Development Administration (CARICAD) is assisting Barbados, BVI, Dominica, Grenada, Jamaica and St Lucia to establish institutional mechanisms for sustainable development (See Box 8). This will be done through the strengthening and streamlining of governments' institutional capabilities to be more effective in national development planning and policy formulation.

2.10.3 Regional Action

Other than regional conferences and workshops, there has been the Technical Cooperation among Developing Countries (TCDC) mechanism which has been utilised in CARICOM countries for sharing technical expertise. Active networking among professionals in the region for solving particular local or national problems has been an underutilized mechanism. This process has been constrained by inadequate access to suitable equipment and prohibitive communication costs in some cases, but moreso by the lack of a network animator and a failure to recognize the full potential of regional networking in problem solving.

BOX 8**UNDP/CARICAD Capacity 21 Project**

The Capacity 21 (Eastern Caribbean) Project funded by UNDP was formulated in collaboration with CARICAD and the CDB as one of the concrete follow-up activities of the SIDS Conference. The primary object of this project is to assist six Caribbean SIDS in the pilot phase to build capacity through strengthening and streamlining the institutional capabilities of government to be more efficient and effective in national development planning and policy formulation. This is being accomplished through the establishment of "Sustainable Development Councils" comprised of NGO, government, and business representatives. The responsibilities of the Council includes:

1. Inter-agency coordination of policies and programmes.
2. Facilitation of national level coordination for broad-based participation in discussion of issues of national interest.
3. Advising government on measures required to integrate economic and environmental concerns into decision-making for local, regional and global issues of sustainable development.
4. Promoting greater understanding and public awareness of the interface between cultural, social and economic issues, and providing for the monitoring of progress on recommendations made to government.

So far, the National Economic and Social Consultative Council has been set up in St Lucia, and the Sustainable Development Council was established in Dominica last year. National consultations have already begun in these islands on several issues related to the SIDS POA.

2.11 Regional Institutions and Technical Cooperation

Regional institutions and organisations in the Caribbean have contributed significantly to regional development through their programmes. Many of these initiatives have been able to identify and address some of the weaknesses in member States for the improved management of natural resources and for the development of sustainable livelihoods. However the effectiveness of several of these institutions is affected by the following key issues.

2.11.1 Key Issues

- Insufficient coordination of action among regional institutions.

- Late payment and non-payment of financial contributions by some governments.
- Reduction in the availability of grants for the region from donors.
- Inadequate or unfulfilled government counterpart arrangements.
- Lack of national ownership of many donor coordinated projects.
- Insufficiently trained and experienced staff.

2.11.2 National Action

Regional institutions have provided periodic technical assistance, training, equipment, facilities and information-sharing many of which were already identified in previous sections.

2.11.3 Regional Action

There are many agencies with regional programmes that address several of the priority areas in the SIDS/POA. These organisations include: OECS/NRMU, CARICOM, UNCHS, UNDP, UNEP/RCU/CEP, ITU (International Telecommunications Union), IMO, CEHI, CIDA, EU, FAO (Food and Agricultural Organisation of the United Nations), PAHO/WHO (Pan American Health Organisation/World Health Organisation), UNESCO (United Nations Education, Scientific and Cultural Organisation), CDERA, CCA, CANARI (Caribbean Natural Resources Institute), CDB, UWI, ECLAC, OAS, CTO (Caribbean Tourism Organisation), USAID, IADB, CARICAD, GTZ (German Fund for Technical Cooperation) and FMC (French Mission for Cooperation). The impacts of many of these donor-assisted projects have not been rigorously analyzed to determine whether or not the desired effects were realized or sustained. Delays in the delivery of outputs frequently occurred and utilization of most of the outputs by governments was less than desirable in many cases.

In a few cases, projects have been cancelled because of poor performance. A Caribbean SIDS Technical Assistance Programme, Needs Assessment Survey developed by UNDP and implemented by CARICAD has been completed and the results grouped in three thematic areas in which unmet technical cooperation needs should be addressed. These are:

- (a) capacity building - skills development and best practices;
- (b) policy formulation, legal and administrative infrastructure;
- (c) socio-economic opportunities and inter-sectoral linkages.

Coming out of this Survey CARICAD identified the need for a regional programme of Technical Cooperation among Developing Countries (TCDC) for Caribbean SIDS which should address the unmet needs which were identified.

CARICAD is also currently collaborating with the International Training Centre of the International Labour Organization towards the implementation of an inter-regional training and capacity building project. The project implemented by ECLAC/CDCC with support from UNEP and IDRC has carried out a study on Environmental Information Management in the Caribbean which identified (a) environmental information needs from the perspective of different user categories (including those of NGOs and the private sector) and (b) constraints which adversely affect development of national and regional environmental information systems in the Caribbean. As part of this study a regional strategy and national action plans were defined to respond to the needs and to alleviate constraints.

BOX 9

**CARICOM Fisheries Resource Assessment
and Management Program**

CFRAMP is a CIDA funded programme that assists 12 CARICOM member States through enhancement of institutional capacity and the information base to enable sustainable management of the region's fisheries. The programme is coordinated from the CARICOM Fisheries Unit in Belize and two Resource Assessment Units, one in St Vincent and the Grenadines, and the other in Trinidad and Tobago. Collaborative arrangements have been made with national fisheries administrations, national research agencies, sub-regional and international organisations for planning and implementation of activities. Major achievements since 1991 include:

1. Scholarships to 15 fisheries staff for long term academic training in areas related to fisheries management.
2. Dozens of other staff members of national fisheries units received short term training in stock assessment, statistics, management, vessel inspection and registration, computer programming and other relevant areas.
3. Sampling programmes, data management and reporting systems, including data bases established in all participating countries.
4. Draft Fisheries Management Plans have been prepared for all participating countries.
5. Several specialized assessment studies have been conducted, including:- habitat mapping in the Leeward Islands, conch abundance surveys in Belize and Jamaica, a study of fish export from a marine reserve in St Lucia, an economic study of the conch fishery in Jamaica, a biomass survey of Alice Shoal, a study of trading boats in the Grenadines, association of pelagic fishes with flotsam, and a review of fish spawning aggregations in the region.

2.12 Transport and Communication

The importance to SIDS of the tourism industry and trade (both inter-regional and external) underscores the importance of effective transportation and communications. Generally, the region has good transportation and communication networks. Recent threats of strike by one of the main airlines servicing the region brought into sharp focus the dependence of the region on outside interests and emphasized the need for closer cooperation among the regions' airlines. In addition, as the issue of free trade continues to feature prominently on the economic agenda of decision-makers, linkages to the outside world will become the sustainable lifeline of the region.

Emerging technology has unveiled new possibilities for increased communications with the outside world. However, high costs of telecommunications, buttressed by monopolistic control of the industry is constraining the expansion and more intensive application in the region. At the national level, the expansion of settlements and the relative ease of access to motor vehicles has challenged the pace at which road improvement and development are undertaken, as well as the capacity of existing infrastructure to accommodate increased vehicular traffic. Continuous improvement in this sector is influenced by the following issues:

2.12.1 Key Issues

- Lack of area for expansion of roads in urban centres.
- Acute traffic congestion in capital cities and towns.
- Insufficient off-road parking in urban centres.
- Inadequate road improvements, particularly in rural areas.
- Inadequate public transportation system.
- Unreliability of inter-island air travel and transportation of cargo by sea.
- Inadequate port facilities in some of the smaller islands.
- High costs of telecommunications
- Restricted access to telecommunication in rural areas.

2.12.2 National Action

The CDB, IADB and WB have been the major donors for ongoing improvement of roads and bridges, studies on ports and airports and expansion of port facilities in several countries in the region. Telecommunication service has also expanded annually, though not quickly

enough in some states.

Access to the Internet is becoming more widespread and affordable, and email communication may provide the best low cost option for information sharing among professionals and the general public. Traffic management plans have been reformulated in a few instances to minimize vehicular congestion in some urban centres.

2.12.3 Regional Action

Regional airlines have been trying various management options in a bid to improve service and reduce operational costs. The CTO in 1993 commissioned a functional Cooperation Study which revealed the fragile financial base of the industry and the need for greater private sector involvement in the operations and management of the airline industry. The recent strike threats by American Airlines pilots has served to revive interest in closer cooperation among regional airlines.

2.13 Science and Technology

The use of science and technology is a part of daily life in the region, however, innovative research seems confined to universities and other research institutions, and the results of their activities make little impact on the rest of society. The integration of traditional knowledge and experience of natural resources use with scientific learning is still in its infancy. Appropriate technology for natural resource management can be further developed with the sectors of our communities whose livelihoods depend on the use of these resources. The following key issues illustrate the limitations of current efforts:

2.13.1 Key Issues

- Poorly documented endogenous technologies and traditional sustainable practices.
- Inadequate promotion of results and application of relevant research.
- Lack of economic incentives for encouraging innovative research and development.
- No priority given to determination of appropriateness of conventional technologies in use in the Caribbean.
- High cost of implementing many environmentally sound technologies.
- Lack of or inadequate intellectual property legislation.

2.13.2 National Action

Several countries have initiated documentation of traditional resource use practices including the use of herbal medicines. Research has also been conducted into the utilization of waste products from the sugarcane industry and other farm waste products. Additionally, much research and technological applications for agricultural development have been done in most of the countries. Biological pest control has been practiced on a limited scale in the region for a long time. More recently, it has been actively carried out in three islands as a means of combating the infestation of the pink mealy bug, not only because of the need to reduce dependence on chemicals, but because this method is more effective and cheaper than chemical control. Attempts have been made to encourage scientific and technological innovations through the organisation of secondary schools competitions and national competitions, such as the Young Inventors Competition in Trinidad and Tobago.

Increased public awareness has also been fostered through science exhibitions and fairs, and through the national agencies set up to promote science and technology, such as the National Council for Science and Technology (Barbados), National Institute for Higher Education, Science and Technology (Trinidad and Tobago), Scientific Research Council (Jamaica) and Agencia de Ciencia y Tecnologia (Cuba).

2.13.3 Regional Action

CARDI, the Caribbean Industrial Research Institute (CARIRI) and UWI have provided research, development and training support to the CARICOM countries. The CCST has provided support for national institutions in terms of information exchange and promotion of cooperation in science and technology activities in the region.

2.14 Human Resource Development

Populations of most countries in the region have good access to basic education and training with illiteracy rates below 10%, and at least fair access to basic healthcare services and food. Employment opportunities and skills upgrading are major challenges for the ever increasing population of small island States, with limited resources. Despite the high levels of training that have been obtained by professionals and technical staff at most government agencies, the capacity of many of these agencies to promote actively sustainable development is still inadequate. Human resources development in the region is impacted by the following issues:

2.14.1 Key Issues

- Insufficient family life education delivery to youth.
- Inadequate participatory approach to national planning and development activities.
- Lack of genuine national efforts at reducing the underlying causes of poverty.
- Limited opportunities for tertiary level and post-secondary technical and vocational training for low income groups.
- Insufficient facilities for affordable distance teaching.
- Low priority for appropriate skills upgrading in some government departments.

2.14.2 National Action

The primary and secondary levels of basic education in the majority of countries are generally adequate and accessible to most of the population. The number of annual scholarships and bursaries available for tertiary education and short in-service courses is inadequate. There has been an increase in the number of environmental and development short courses available for in-service training over the past three years, which are relevant to the SIDS POA. The GEF Small Grants Programme provides support for strengthening the capacity of NGOs and community based organisations to implement small scale projects under the GEF programme areas, which have the potential to contribute to sustainable development.

2.14.3 Regional Action

The Caribbean Ministerial Meeting on Eradicating Poverty has recently adopted the Directional Plan of Action for Poverty Eradication in the Caribbean. The framework for an action plan to implement Health and Family Life Education in schools of CARICOM member states has been produced by the United Nations Fund for Children (UNICEF). Additionally, UNICEF has prepared "A Guide for Developing a National Policy on Health and Family Life Education". PAHO/Carnegie Guide for Strengthening Health and Family Life Education in Teacher's Colleges in the Eastern Caribbean is a useful teaching tool in support of the education process. Long and short term training opportunities continue to be offered through regional sector specific programmes, several of which have already been mentioned in the previous sections.

2.15 Implementation, Monitoring and Review

The effective implementation, monitoring and review of the SIDS POA has not been a national priority although governments have endorsed the Barbados Declaration and subscribed to the ideals of sustainable development. Perhaps there needs to be a review of the feasibility of implementing many of the actions prescribed in the SIDS POA to determine their appropriateness to local conditions. It may be too soon to expect significant progress on the POA because of the lack of support mechanisms to facilitate the process. Governments need assistance in determining how national development agendas and mechanisms could be adjusted to accommodate required action for sustainable development as proposed in the SIDS POA. The establishment of a regional coordinating mechanism can be a preferred short term option. The key issues for consideration are as follows:

2.15.1 Key Issues

- Lack of a mechanism to facilitate the implementation of the SIDS POA at the national level.
- Lack of a system for the monitoring of national progress on the implementation on the SIDS POA.
- Inadequate distinction in activities that were developed after GCSIDS in support of the SIDS POA and those initiated before GCSIDS.
- Lack of dissemination of SIDS POA and results of review meetings to governmental departments.
- Lack of or ineffective application of appropriate indicators of sustainable development.
- Insufficient analysis of the full impacts of SIDS POA related projects.

2.15.2 National Action

No information was available to assess national action.

2.15.3 Regional Action

ECLAC has taken the lead role in coordinating the monitoring and review of the implementation of the SIDS POA. A study on *Operational Review on Implementation of SIDS Programme of Action in the Caribbean* was commissioned for presentation at the Caribbean Meeting of Experts on Implementation of the SIDS Programme of Action held in

Trinidad and Tobago in May 1995. This meeting made several recommendations including a request to CARICOM and ECLAC/CDCC to provide a regional coordinating mechanism for implementation of the SIDS POA on an interim basis. The meeting also suggested that an appropriate regional consultative or advisory body should be set up to include governmental and non-governmental organisations, for the purpose of providing guidance on sustainable development in the Caribbean.

A draft Regional Coordinating Mechanism for the implementation of the SIDS POA with an operating budget, which also identified the roles for CARICOM and ECLAC/CDCC in this process, was prepared by ECLAC for submission to the Sixteenth Session of the CDCC which met in Antigua and Barbuda in February 1996.

An inter-agency meeting to discuss the strengthening of the process of developing an integrated Inter-Agency Programme for the implementation of the SIDS POA and to plan for the SIDS POA Meeting of Ministers, was held in Trinidad and Tobago in October 1996. The following agencies were represented: CARICAD, UNDP, IDB, CARICOM, EU, UWICED, OAS, and ECLAC (coordinator).

ECLAC has since commissioned for the Ministerial meeting, this study on the Review of the Implementation of the SIDS POA which will include an analysis of the problems and constraints to implementation, and will propose strategies for overcoming these obstacles.

