

**GUYANA'S NATIONAL REPORT ON THE
IMPLEMENTATION OF THE UNITED NATIONS
CONVENTION TO COMBAT DESERTIFICATION**



**UNCCD NATIONAL FOCAL POINT
HYDROMETEOROLOGICAL SERVICES,
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GUYANA DATA PROFILE, 1996 – 2000

	1996	1997	1998	1999	2000
ECONOMIC INDICATORS					
Growth Rate of Real GDP	7.9	6.2	(1.8)	3.00	(1.4)
GDP at Factor Cost (US\$M)	590.1	626.5	601.3	593.6	596.9
GNP at Factor Cost (US\$M)	510.9	552.8	545.1	524.6	552.6
Per Capita GDP (US\$)	766.0	808.3	777.5	770.3	773.0
Per Capita GNP (US\$)	663.0	713.2	704.8	680.8	715.6
Net International Reserves of Bank of Guyana	153.9	149.9	122.2	126.8	178.4
Rate of Inflation (% change in Urban CP)	6.6	6.8	4.6	11.9	6.2
POPULATION					
Mid-Year Population ('000)	770.1	775.1	773.4	770.6	772.2
Population Growth Rate (end of period)	0.5	0.1	-0.2	0.5
Crude Birth Rate (per 1,000 persons)	24.0	26.1	24.1	23.2	23.9
Crude Death Rate (per 1,000 persons)	6.5	6.8	6.5	6.6	6.2
Infant Mortality Rate (per 1,000 live births)	25.5	25.5	22.9	25.6	29.0
Life Expectancy at Birth (estimated, years)	64.5	64.5	65.0	65.0	66.0
ANNUAL PRODUCTION					
Sugar ('000 tonnes)	280.1	276.4	255.5	321.4	273.3
Rice ('000 tonnes)	334.5	341.0	339.7	365.4	291.9
Timber (cubic meters)	416,334.0	521,529.0	386,673.0	435,365.0	288,534.0
Fish (kg. mn.)	41.6	35.7	39.2	41.3	48.2
Prawns (kg mn.)	1.2	1.9	1.9	1.6	1.7
Small Shrimp (kg mn.)	23.0	21.1	12.8	12.8	14.2
Poultry (kg mn.)	10.7	11.9	11.3	12.4	11.8
Eggs (mn)	38.5	30.3	24.1	25.7	30.1
Gold (kg)	12,006.0	14,571.4	14,145.7	12,905.4	13,526.7
Diamonds (000' metric carats)	46.7	36.5	35.3	46.7	83.9
Bauxite ('000 metric tonnes)	2,455.0	2,471.0	2,228.0	2,323.0	2,651.0
Dried	2,166.0	2,201.0	1,944.0	2,129.0	2,443.0
Calcined	157.0	178.0	148.0	108.0	106.0
Chemical	132.0	92.0	136.0	86.0	102.0

Source: Bureau of Statistics, Ministry of Finance; Guyana Forestry Commission (Timber)

ACRONYMS

BERMINE	Berbice Mining Enterprise
CDC	Civil Defence Commission
EPA	Environmental Protection Agency
GGMC	Guyana Geology and Mines Commission
IADB	Inter-American Development Bank
ICZM	Integrated Coastal Zone Management
LINMINE	Linden Mining Enterprise
MMA-ADA	Mahaica Mahaicony Abary- Agricultural Development Authority
NAP	National Action Plan
NARI	National Agricultural Research Institute
NBAC	National Biodiversity Advisory Committee
NBAP	National Biodiversity Action Plan
NCB	National Coordinating Body
NCC	National Climate Committee
NREAC	Natural Resources and Environment Advisory Committee
NRMP	Natural Resources Management Project
UK DFID	United Kingdom Department for International Development
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change
WWF-GFECF	World Wildlife Fund-Guiana's Forests and Environment Conservation Project

EXECUTIVE SUMMARY

The United Nations Convention to Combat Desertification (UNCCD) entered into force in December 1996, and Guyana became a party to the Convention on 24 September 1997. Guyana prepared and submitted its first National Report on the Implementation of the UNCCD in April 2000.

Desertification is the degradation of land caused primarily by irresponsible human activities and extreme climate variations which will eventually lead to the reduction or loss in its biological or economic productivity. Over 250 million people are directly affected by desertification, and some one thousand million people in over one hundred countries may experience its economic, social and environmental consequences.

The main purpose of this report is to inform the Parties to the Convention on the activities undertaken in Guyana from 2000 to at present and future plans for the implementation of the Convention.

Whilst land degradation was not of priority when the first national report was submitted, Government has recognized that it is becoming a very serious environmental concern in the country to warrant greater attention. Guyana is well endowed with natural resources: fertile agricultural land diversified mineral deposits and an abundance of tropical forests. Factors which contribute to land degradation are loss of forest and vegetation due to inappropriate logging, irresponsible mining and urbanization; improper land management; changing climatic patterns and coastal erosion due to flooding. Land degradation is occurring at an increasing rate corresponding to an increase in the exploitation of natural resources and coastal erosion. Measures aimed at combating land degradation are being implemented through strategies designed for environment and natural resources management, and policies for poverty reduction.

The Government has, therefore, developed four additional plans relating to natural resources management which contain components to combat land degradation. These include the National Environmental Action Plan 2001-2005, Integrated Coastal Zone Management Action Plan (2001), the National Mangrove Management Action Plan (2001), and the National Climate Change Action Plan (2001).

Government's policy to reduce poverty is elaborated in the Poverty Reduction Strategy Paper of 2001 which explicitly recognizes the need to stimulate growth, reduce poverty and elevate sustainable economic development. It reflects a number of elements contained in the draft National Development Strategy which when finalized will serve as a framework for policy and planning in the respective sectors of the economy.

The National Environmental Action Plan has been prepared by the Environmental Protection Agency (EPA) in collaboration with major stakeholders and articulates the national environmental strategy and policy. It includes a framework for integrating cross-sectoral and sectoral concerns into the broader context of the country's economic and social development program. It can serve as the foundation of an evolving plan to combat land degradation and climate change.

Fundamental to the successful implementation of all of these plans are: institutional strengthening; human resources development; public awareness, education and training; information management and networking; inter-agency collaboration, and environmental legislation.

In this regard, the Environmental Protection Agency and the Guyana Forestry Commission have been strengthened, and the Guyana Geology and Mines Commission is to be reorganized and restructured in the very near future. In addition, the Guyana Lands and Surveys Commission has been established, with responsibility for matters pertaining to land administration. Legislation is also being reviewed to strengthen environmental and natural resources management.

The EPA is broadening its public awareness, education and training program to include a wider spectrum of environmental issues including land degradation. The Natural Resources Management Project has resulted in personnel being trained in the use of Geographical Information System, and the development of the Guyana Integrated Natural Resources Information System to simplify decision making in the natural resources sector.

Government's approach in addressing issues of sectoral and national importance is the promotion of participatory decision making and a policy to conserve and sustainably utilize the country's natural resources. This is with keeping with Guyana's commitment to international conventions, treaties and other relevant instruments. Therefore policies, plans and laws are developed and implemented within this context for the maintenance of environmental standards. This approach is considered conducive in supporting the implementation of the UNCCD in Guyana.

CHAPTER 1 GENERAL INTRODUCTION

1.1 Profile of Guyana

Guyana is a multi-racial country with an area of 214,970 square kilometers and a population of about 775,000. Massive emigration within the last two decades has resulted in marginal population growth. Guyana is one of the eight countries that share the vast Amazon Basin and is the only English-speaking country in South America.

The country has five natural geographic regions: the Coastal Plain, the Hilly Sand and Clay Region, the Highland Region, the Forested Region and the Rupununi Savannahs. The Coastal Plain lies about 1.4 meters below sea level and is protected by sea defences. It is 430 km long and varies in width from 26 to 77 km. Most of the population resides on the coastal plain which consists of the most fertile lands in the country. The Hilly Sand and Clay Region varies in height from 2 m to 400 m and is found immediately south of the coastal belt. The soil consists of sand and is covered with dry evergreen climax vegetation. The Intermediate Savannah is found in this region. The Highland Region consists of the Pakaraima Mountains forming a part of the extensive Guiana Highlands that cover an area of 1,300,000 sq km in Guyana, Venezuela and Brazil.

The Forested Region spans the entire length of the country with elevation southwards, and in which is located lush, almost pristine, tropical forests and extensive mineral deposits. Geologically, the southern section of this region forms a part of the Pre-Cambrian Brazilian Shield and it is a continuation of the Amazon Forest. The Interior Savannahs are located in the southwest of Guyana, and are divided into the North and South Savannahs by the Kanuku Mountains. Cattle ranching and farming are two of the main activities in the Interior Savannahs

Guyana is a tropical country with an equatorial climate that is characterized by seasonal rainfall, high humidity and small variations in temperature. There are two rainy seasons, which occur from April to June and from November to January. The average daily temperature is about 26.7 degrees Celsius.

The country is well endowed with natural resources including fertile agricultural lands, diversified mineral deposits, and an abundance of tropical rain forests. The agriculture sector (mainly sugar and rice) is the most important to the economy, both in terms of foreign exchange generation and the number of persons employed. Mining (gold, diamond and bauxite) and forestry also contribute significantly to the Gross Domestic Product (GDP) which has continued to grow over the last decade. Per capita GDP for 2000 was US\$773, up from US\$528 in 1990 (Guyana Data Profile, 1996-2000).

Guyana is divided into ten administrative regions with varying population densities and economic activities. Region 4, includes the capital city of Georgetown, and is the most populated with nearly 300,000 people. The country's low population density coupled with the difficult terrain in many regions make it extremely costly to provide basic social services and to develop the necessary infrastructure critical to support economic production.

1.2 Land Degradation in Guyana

The situation in Guyana is that land degradation has been increasingly occurring, and the potential exists for it to expand if the country's natural resources are not conserved and sustainably utilized. In this regard, strategies to combat land degradation have been integrated into those designed to address issues related to natural resources management, and other sectors which are of importance to Guyana.

Factors which contribute to land degradation are loss of forest and vegetation due to inappropriate logging, irresponsible mining and urbanization; improper land management; and coastal erosion due to flooding. These factors are dealt within the relevant sections of the report. However, flooding is of serious concern since it affects the majority of Guyanese who live on the coastal plain.

Flooding of coastal areas occurs from both sea water intrusion and from fresh water overflows. Sea defence breaches have been a major cause of coastal flooding. Fresh water overflows cause flooding in two ways. Forest cover on the watersheds facilitates infiltration of rainwater into the ground and thereby protects against flash flooding, inadequately charged aquifers and erosion. Some of the forest cover on the coastal zone and the sandy rolling plains have been lost to competing activities such as mining, agriculture and human settlements, harvesting for fuel wood and poles. Deforestation may be a contributory factor to the frequent and less predictable flooding of the coastal plain. Malfunctioning of the drainage and irrigation systems through lack of regular maintenance also contribute to flooding.

Flooding destroys the country's physical capital and agricultural crops. Agricultural lands remain out of production for long periods, and at least a year, once it is intruded by saline water (by overtopping and breaching sea defences). Floods have serious public health consequences in the coastal areas, and also have major economic and social impacts on those dependent on the land for a livelihood, including the poor, low income families and their communities.

In the mining sector, land degradation takes several forms. In the bauxite mining areas of Linden (Region 10) and east Berbice (Region 6) mined out pits, excavated lakes and ponds have not been rehabilitated or revegetated. Around the bauxite mines there are high levels of acidity in the waste dumps, residual lakes and tailing or settling ponds, which could be releasing acid leachate into ground and river waters, and which prevent natural revegetation. Mining of silica sand on the Linden-Soesdyke Highway has resulted in loss of vegetation and also large mined out areas. Degradation of rivers and streams through discoloration and sedimentation, and pollution of surface and ground waters, result from all mining activities in Guyana. This can also affect the health of residents in hinterland communities who depend on fresh water resources for domestic use.

1.3 Process for the Preparation of the Report

The preparation of the National Report involved a consultative process on issues related to environment and natural resources management, their potential for land degradation and how this could be prevented, climate change and sea level rise, and land use planning. In addition, the meetings focused on program and activities implemented within the last two years. Consultations

were held with government, non-government and private sector stakeholders with interests in the various sectors and sub-sectors of the economy. The information and data gathered during the consultative process form the basis for the preparation of this report.

The main purpose of this second national report is to inform the Parties to the Convention on the activities undertaken in Guyana from 2000 to at present and future plans for the implementation of the Convention. The Hydrometeorological Service of the Ministry of Agriculture is the Focal Point for the CCD.

A National Awareness Seminar on Land Degradation is planned for Environmental Week in June 2002. The agenda include: (i) Overview of the Convention; (ii) Planning/ Policy Framework - Feature Policy Address; (iii) Mining and Land Degradation; and (iv) Forestry and Land Degradation; (iv) Water Resources Management; (v) Tabling of other relevant Presentations; (vi) Group Discussions; and (vii) Plenary and Recommendations. Launching of a national awareness program on land degradation will take place during that week.

1.4 Structure of the Report

Following this introductory Chapter, Chapter 2 deals with major issues relating to environment and natural resources management which have potential for land degradation. The policies and plans are developed within the context of sustainable development and are measures to combat land degradation.

Chapter 3 deals with national strategies, and other relevant programs in support of sustainable development to combat land degradation. These focus on elevating the standards of living in the country and, thus indirectly support policies and plans aimed at preventing environmental and land degradation.

The existing mechanism to coordinate the implementation of the CCD is the focus of Chapter 4. The legal and institutional framework established for environment and natural resources management is reviewed. The Environmental Protection Agency and its relationship with other institutions are critical to environmental management. The roles and functions of the Natural Resources and Environment Advisory Committee and the National Climate Committee are taken into account.

Chapter 5 addresses the financial and technical resources necessary for the implementation of the CCD. Internal and external sources of funding for the implementation of programs and projects are examined. This chapter also presents a summary of projects implemented in the various sectors.

Activities planned for the preparation of the National Action Plan (NAP) are dealt with in Chapter 6. The NAP process will involve national awareness activities on land degradation and convening of national workshops. The National Action Plan will take into consideration areas proposed in the Convention.

Chapter 7 is the conclusion which makes recommendation for information storage and dissemination and makes reference to the information systems developed by the UNCCD.

CHAPTER 2 MAJOR ISSUES, AND NATIONAL POLICIES AND PLANS TO COMBAT LAND DEGRADATION

This chapter addresses major issues associated with environment and natural resources management which have the potential for land degradation. It also includes national policies and plans formulated within the context of sustainable development to address these issues and to combat land degradation. The implementation of policies and plans is part of the process to implement the UNCCD.

2.1 Environmental Management

Guyana's recent National Environmental Action Plan (NEAP) for the period 2001-2005 articulates the national environmental strategy for the country and it includes a framework for integrating cross-sectoral environmental concerns into national socio-economic development. The NEAP was coordinated and prepared by the Environmental Protection Agency (EPA) in collaboration with major stakeholders.

The action oriented plans and programs of this NEAP are based on a full participatory approach among stakeholders, and envisage the participation of all partners in the national development process of the country.

The NEAP defines the main goals of environmental protection as follows:

- The prevention or control of pollution in order to maintain the integrity of the land and the natural purity of the air and water resources;
- the general preservation and conservation of ecological integrity and, in particular, the protection of natural habitats and fragile ecosystems; and
- ensuring sustainability through best practice of the management and use of natural resources for national development.

The NEAP also includes an implementation strategy which recognizes that for its successful implementation a number of strategic issues common to many of the program target areas have been identified. These Implementation Tools or Activity Program Guidelines include: (i) Environmental Education and Public Awareness; (ii) Human Resources Development; (iii) Institutional Capacity Building; (iv) Inter-Agency Collaboration; (v) Public Participation; (vi) Information Management and Networking; (vii) Acquisition of Appropriate Technology; and (viii) Environmental Legislation (NEAP 2001-2005).

NEAP program areas are divided into two sections: nine cross-sectoral and ten sectoral programs with each outlining the major issues and proposed remedial actions. The cross-sectoral programs are: (i) Biological diversity – conservation and management; (ii) Climatic issues – vulnerability assessment, mitigation and adaptation; (iii) Natural resources and land use; (iv) Integrated coastal zone management; (v) Integrated water resource management; (vi) Environmental health; (vii) Environmental pollution; (viii) Integrated waste management; and (ix) Pesticides and toxic

chemicals. The sectoral programs are agriculture, forestry, mining, fisheries, energy, trade and industry, construction, transportation, settlements and tourism.

Some of the program areas are related to or are reflective of existing action plans and policy. These include the National Biodiversity Action Plan, National Forest Policy and Plan, National Climate Change Action Plan, Integrated Coastal Zone Management Action Plan and the National Mangrove Management Action Plan. In addition, some of the programs contained in this report are embodied in the NEAP.

The Environmental Protection Agency (EPA): The EPA was established by the Environment Protection Act No. 11 of 1996 to provide for the management, conservation, protection and improvement of the environment, the assessment of the impact of economic development on the environment and the sustainable use of natural resources. The EPA is also responsible for public awareness through its Education, Information and Training (EIT) Division and all Environmental Impact Assessments.

The EPA is of recent emergence and continues to be strengthened as it evolves. Based on recommendations of the EPA's Institutional Strengthening Project, the following activities have been undertaken:

1. Formation of the Natural Resources Management Division to implement and monitor programs in order to ensure that regulations, guidelines and protocols are instituted. It is divided into four units: Climate Change, Wildlife, Biodiversity and Protected Areas.
2. Development of regulations, standards, codes and practices, and technical guidelines. Regulations for pollution management and environmental concerns of air, water, noise and hazardous substances have been developed and are being implemented by the EPA.
3. Undertaking a capacity building program.

This agency works in close collaboration with other organizations in the execution of its mandate.

2.2 Coastal Zone Management

The Coastal Zone occupies some seven percent (27,000 sq km) of the total area of the country. Climate change due to global warming and rising sea level make it particularly vulnerable to flooding and possible salinization because it lies between 0.5 to 1.0 m below mean sea level. The Coastal Zone must, therefore, be protected in order to support its extensive human settlement and the country's intensely concentrated industrial and economic base

The implementation of the Integrated Coastal Zone Management (ICZM) Action Plan approved by Cabinet in May 2001 is coordinated by the EPA (Environmental Management Division). It is intended to guide the work of stakeholders involved in ICZM in an effort to foster a more coordinated approach to management of the coastal zone. It will serve as the foundation of an evolving plan for ICZM in Guyana.

Major Issues

- Coastal lands are inundated due to the overtopping of weakened sea defenses, which are associated with high cost of maintenance, and poor drainage and irrigation systems;
- Over exploitation of mangrove forests which protects the coast through stabilization of the shoreline by controlling erosion from wave action;
- Habitat destruction caused by the degradation of water quality due to pollution and contamination from solid wastes, industrial effluents, pesticides and chemicals from agricultural fields;
- Poorly coordinated sectoral approach to the management of coastal resources used and the coastal zone;
- Low level of awareness and expertise about coastal resources.

Proposed Actions

1. Delineation of the Coastal Zone;
2. Review of existing legal framework pertaining to coastal zone management;
3. Promotion of public awareness and education on coastal zone management;
4. Modernization of hydrological and climatological data collection systems;
5. Implement programs to investigate water quality (especially salinity) and volume of existing reserves of artesian coastal aquifers;
6. Promote the implementation of programs aimed at the rehabilitation and management of sea defense structures, mangrove management, and effective drainage and irrigation systems;
7. Coordinate and evaluate programs that review and ensure the integrity of natural coastal habitat, ecosystems and marine resources;
8. Phased movement of agriculture and human settlements away from the Coastal Zone;
9. Conduct aerial photography survey of the coast in order to improve capacity to monitor resources more effectively. A training component is necessary;
10. The institutional set-up for ICZM is to be periodically evaluated for its success or failure;
11. Monitor and check benchmarks especially the movement of mud banks. This may be a useful tool to monitor coastal erosion and accretion;
12. Conduct marine resource inventory to determine the status of coastal and marine resources; and
13. Human resources development which is an integral part of the ICZM program.

Some of the proposed actions would be ongoing whilst the others are scheduled to be completed within the next five years. Funding for the implementation of this Action Plan has already been approved by the Caribbean Development Bank.

2.3 Biological Diversity

The legal mandate for the conservation and management of biodiversity resides with the EPA, conferred by the Environmental Protection Act. A National Biodiversity Advisory Committee advises the EPA on all matters pertaining to policies, programs and strategies for biodiversity conservation, management and monitoring, research priorities and related matters.

The EPA has created a Biodiversity Unit within the recently established Natural Resources Management Division. This Unit has the responsibility for program implementation and/or activities and projects that fall within the program areas of the National Biodiversity Action Plan (NBAP) of 1999. The NBAP is a product of national consultation and consensus and is consistent with the Convention on Biological Diversity. The implementation of the NBAP is part of Guyana's obligation to fulfill its commitment to the Convention on Biological Diversity. Nine program areas have been identified in Phase I known as Foundation Programs. The activities undertaken in relation to the programs are outlined hereunder.

Mobilization of financial and technical resources

- A Program Specialist has been recruited and mobilization activities have commenced.

2. Human resources and institutional capacity building

- Two persons have been trained overseas in MSc degrees. Training is done on Government's subvention and external funding.

3. Research and information on biodiversity

- Researchers/Scientists wishing to do research in Guyana must adhere to the rules for biodiversity research. Research applications are processed by the Research Applications Committee.

4. Consolidation of the policy, legal and administrative framework

- The system to access genetic resources has been prepared in the form of a brochure.
- The draft Protected Areas Regulations has undergone technical review.
- A new division, Natural Resources and Management Division has been created and a Director appointed.
- The draft Bioprospecting Regulations are to be revised.

5. Public awareness and education

- The United Nations Development Program has provided substantial financial resources for public awareness and education relating to issues of biodiversity and environmental management. Human resources development should be a component of this program.

6. In situ and ex situ conservation of biodiversity

- A National System of Protected Areas is being developed and a Secretariat was established in 2000 to coordinate and guide the planning and management of protected areas.
- Potential sites identified for protection include: Orinduik Falls, Kanuku mountains, Mabura Hill, Shell Beach, Morabali, Roraima and the Southern Region. Each site has its own ecological, environmental and socio-cultural values.
- Kaieteur National Park - Guyana's only National Park, Kaieteur was established as a Protected Area in 1929 and now covers an area of 242 square kilometers. It is reputed

as the world's highest single drop waterfall with a sheer drop of approximately 213 meters.

- Iwokrama International Centre for Rain Forest Conservation and Management is also involved in the conservation and management of biological diversity (See Section 2.3.2).

7. Incentive measures and economic alternatives

8. Measures for the sustainable use of biodiversity

9. Monitoring, evaluation and reporting on the implementation of program areas 1 to 9.

- Work has not yet commenced on program areas 7 to 9.

Involvement of local communities: Amerindians play an important role in the sustainable use and conservation of biological resources. They utilize forest resources for building materials, food, medicines, clothing, and a number of other uses. Their culture including the use of biological resources is well documented in Guyana. There is an Amerindian Research Unit at the University of Guyana that focuses on Amerindian culture.

2.3.1 Wildlife Management

The management of wildlife in Guyana has become the responsibility of the Wildlife Unit within the Natural Resources Management Division (NRMD) of the EPA. The Unit is responsible for the general management of wildlife resources of the country through the implementation of regulations and guidelines. These regulations make provisions for wildlife sanctuaries, open and closed harvesting seasons, bag limits and the licencing and control of hunting. Guyana has an abundance of wildlife which is harvested for export and local consumption as exotic meat.

Major Issues

- Empirical evidence suggests that there is over harvesting of certain species of wildlife while trappers and exporters believe that the populations of species exploited are large;
- Updated and/or complete species inventory to facilitate development of a sound wildlife management plan does not exist; and
- Lack of public awareness of wildlife trade management issues in Guyana.

Activities/Proposed Actions

1. Scientific surveys of wildlife commenced in late 2000 and should be completed before the end of this year. This project is jointly funded by the World Wildlife Fund (WWF) and the Government of Guyana;
2. Monitoring and conservation activities of sea turtles on the north-west coast of Guyana by the Marine Turtle Conservation Society of Guyana is continuing;
3. Introduction of the Species Protection Regulation of 1999 which is intended to conserve, protect and use wildlife in a sustainable way;
4. Finalization of the draft Wildlife Management and Conservation Regulation;

5. Capacity building to monitor the harvesting of wildlife resources especially as it relates to wildlife trade;
6. Promotion of public awareness and education on wildlife issues as a key component of the EPA's public information program; and
7. Development of species management plans.

2.3.2 Iwokrama International Centre for Rain Forest Conservation and Development

The Iwokrama Centre, established as a legal entity under a 1996 Act, is an autonomous international research and development organization formed by agreement between the Government of Guyana and the Commonwealth Secretariat.

Iwokrama is responsible for the management, conservation and sustainable development of about 360,000 hectares (nearly one million acres) of pristine tropical forest, which Guyana has dedicated to the international community to be used to demonstrate how tropical forests can provide economic benefits while conserving biodiversity

Approximately half of the area is a Wilderness Preserve with the remainder being used for the sustainable utilization of resources. The Iwokrama Centre promotes the following five broad program areas: (i) Sustainable management of tropical forests; (ii) Conservation and sustainable utilization of biodiversity; (iii) Sustainable human resource development; (iv) Forestry research; and (v) Information and communication. The research needs of Iwokrama are extensive and fit into the program areas of Iwokrama. Some of the current research includes: Study of Aquatic Fauna (Giant Otter, Arapaima, and Black Caiman); Biodiversity Inventory and Bioprospecting; Carbon Sequestration Study; Non-Timber Tropical Products and Remote Sensing of Tropical Forests.

The Iwokrama Centre continues to involve the indigenous communities found in and around Iwokrama in its activities, for example, there are the Community Based Wildlife and Beekeeping Projects currently being undertaken. A community radio station, Radio Paiwomak has been initiated by Iwokrama through a grant. The scope of the broadcast service carries a 25 mile radius and is being operated by a corps of community-base volunteers.

2.4 Forest Management

The Guyana Forestry Commission (GFC) is a semi-autonomous organization which is legally mandated to manage and control the utilization of the State forests: ensuring an optimum and sustained yield of forest produce and the maintenance and improvement of the environment. Two-thirds of the forests are classified as State Forests managed by the GFC to maximize their contribution to national development. Forests cover 169,000 sq km of Guyana's total land area.

The National Forest Policy of 1997 emphasizes the importance of multiple use of Guyana's immense forests and directs focus on diversifying forest products and value-added processing. A five-year strategy for the sector based on the Policy has been developed as a National Forest Plan.

Major Issues

- Soil erosion as a result of large scale logging including selective logging, especially on slopes affects streams and rivers (increase in turbidity);
- Poor log harvesting techniques and skidding practices can cause damage to trees and may hinder or prevent seedlings from emerging;
- Division of natural territory of forest fauna by forest roads which also affects erosion control and drainage (poor design and construction of roads and bridges);
- Unregulated chain saw operations;
- Unmanaged and unregulated exploitation of forest resources in Amerindian communities; and
- Limited knowledge and understanding with regards to resource and species dynamics for forest stand enrichment, water shed protection, forest conservation and natural habitat protection.

Activities/Proposed Actions

1. The first phase of a forest zonation process (2001) focuses on the delineation of state forests as production, conversion and protection forests. Multiple uses would include eco-tourism, utilization of non-forest products and bio-prospecting. The draft Forest Zonation Paper is to be finalized.
2. The draft Forest and the Guyana Forestry Commission Acts have been revised to support Policy implementation. These Acts will soon be enacted by parliament. The Code of Practice for Forest Operations which is now optional will then become mandatory.
3. The GFC has been strengthened through the broadening of the top management with highly skilled personnel and increased training for field officers.
4. Investors are required to prepare Forest Management Plans (FMP) including a Business Plan in keeping with guidelines prepared by the GFC. Forestry operations are also subjected to Environmental Impact Assessments.
5. The GFC monitors harvesting practices regularly and compliance with the approved FMP's, through a structured program of field visits.
6. The GFC is developing an appropriate Forest Certification Standard for Guyana with the assistance of the UNDP, through its Program on Forests (PROFOR).
7. GFC issued a three-year exploratory permit in 2000 to Conservation International for 80,938 hectares, located in the upper Essequibo region, to explore the possibility of promoting the benefits of forest conservation.
8. Forest concession holders are required to set aside a block in each concession area representative of all forest types in the concession for the purpose of biodiversity protection.

Guyana's commitment to sound forest management, biodiversity protection, respect for indigenous people's rights, and fair employment practices, encouraged its ratification of and operation within the mandates of several international treaties and conventions, including the UNCCD.

2.5 Mangrove Management

The National Mangrove Management Action Plan (NMMAP) of 2001 has been prepared to foster a

more coordinated approach in planning, policy formulation, inter-institutional cooperation and the implementation of actions. It will serve as the framework of an evolving plan for effective mangrove management in Guyana. The Guyana Forestry Commission coordinated the development of the Action Plan and will be the overall coordinating and implementing agency.

Background: Mangroves are distributed throughout the coastline of Guyana from the Corentyne to the Waini Rivers occupying a total area estimated at 80,432 hectares. Mangrove forests are also found at the interface between the terrestrial and marine ecosystems, in estuarine wetlands and in tidal reaches of riverine areas. Three major species of mangroves including *Rhizophora mangle*, *Avicennia germinans* and *Laguncularia racemosa* exist there.

The National Mangrove Management Action Plan is to raise concerns for mangrove forests as an important coastal and riverine ecosystem in Guyana, which protects the coast through stabilization of the shoreline by minimizing erosion from waves. Mangroves are the first line of defense against wave actions and storms and, therefore, have some capability to reduce the damage caused to the masonry and earthen defense structures.

The failure to treat mangrove ecosystems as a critical element in sea defense strategy is a major concern. Mangroves forests have been endangered or eliminated in some areas due to natural causes (such as erosion) and over exploitation, with potentially dire consequences in terms of coastal erosion and loss of biological resources and ecological services.

The limited data on mangrove ecosystems is a major issue affecting the management of the resource. Rational management of mangrove forest is based on an understanding of the forest and its environment, which can only be obtained through research ((NMMAP 2001).

Proposed Actions

1. Review of policy and legislation to address the conservation of mangrove forests;
2. Establishment of National Mangrove Coordination Committee;
3. Review of zonation of mangrove forest for protection and conservation/utilization;
4. Develop minimum operational standards for mangrove harvesting;
5. Raise public awareness through education and training;
6. Rehabilitation/restoration of mangrove sites;
7. Control, monitoring and enforcement; and
8. Conducting research.

The GFC will work in close collaboration with the other agencies responsible for implementing the proposed actions. The entire project is expected to be completed within ten years with various time frames from two years for various actions.

2.6 Agriculture

Guyana's agricultural sector is a vital contributor to the nation's economy with the sugar and rice industries dominating agricultural activities. Agricultural growth averaged 5.4% from 1993 to 1999,

while output accounted for 32% of total Gross Domestic Product (GDP). The sugar and rice industries are at the forefront of agricultural activity in Guyana but traditional crops, livestock and fisheries have continued to make an impact, accounting for 10% of overall GDP and 32% of agricultural GDP.

The Ministry of Agriculture (MOA) and the Ministry of Fisheries, Crops and Livestock (MFCL), are the two principal governmental agencies entrusted with the responsibility of promoting agricultural development in Guyana.

Guyana's agricultural thrust is supported by fourteen agricultural institutions covering a wide spectrum of activities including agricultural production, fisheries and livestock production, extension services, policy planning, management, research and training, and meteorology and hydrology services.

The National Agricultural Research Institute (NARI) is playing a crucial role in the agricultural diversification drive through applied and adaptive research, and transfer of technology to farmers. It is also coordinating the development of the Intermediate Savannas of Guyana covering an area of 250,000 hectares of virgin undulating land with good agricultural potential.

The Guyana Sugar Corporation conducts its own specialized research for the sugar industry. Research on rice is a collaborative effort among NARI, Guyana Rice Development Board and Burma Rice Research Station.

Activities/Proposed Actions

Sugar and Rice

1. The Drainage and Irrigation (D and I) Board will be strengthened and implementation of the D and I Master Plan developed in 1998 will be undertaken. Parliament enacted a new D and I Bill in 2000 for the creation of a new Authority.
2. The Pesticides and Toxic Chemicals Control Act was passed in August 2000. Draft Regulations for the implementation of this Act have been developed.
3. Government will make all diplomatic and other efforts to ensure that Guyana continues to export sugar and rice to the European Market on the best possible terms.
4. Government will expand and modernize the sugar industry to make it more competitive. A new factory will be installed at Skeldon in Region 6 at a cost of about US\$110 Mn and sugar cane cultivation will be increased
5. A ten-year Strategic Plan has been implemented for the restructuring of the rice industry. Government will vigorously pursue with the European Union, the promise of financial and technical assistance for the industry as provided for in the EU/ACP negotiations.
6. Government will complete the Flood Control and Water Management Program of the Mahaica, Mahaicony, Abary/Agriculture Development Authority scheme. Assistance has already been obtained from the Italian Government and procurement of equipment has commenced

Fisheries, Other Crops and Livestock

1. The largest freshwater aquaculture demonstration farm and training centre in the Caribbean is currently being established to further promote freshwater aquaculture development by providing on site training of farmers. This project is being funded by CIDA, FAO and the Government of Guyana.
2. Launching of two multi-million poultry production facilities including feed manufacturing plants, farms and processing plants while encouraging satellite poultry farming to satisfy the capacity of the processing plants.
3. The Poor Rural Communities Support Services Project is a community initiated agricultural/rural and community development project, with a particular focus on poor rural households, Amerindian communities, and households headed by women. This US\$16.4 mn project is jointly funded by the Government of Guyana (GOG), International Fund for Agricultural Development (IFAD) and the Caribbean Development Bank (CDB).
4. Support has been received from the FAO for a special project to update Guyana 's veterinary legislation to international acceptable standard.
5. Development of the Intermediate Savannah to increase agricultural production.

In addition, the Government will facilitate the establishment of several more fish processing plants, access the very lucrative markets for sea food products in the European Union, expand exportation of all fresh fruits and vegetables, and implement a five-year strategic development plan for the expansion of organic farming.

The initiatives taken by Government in agriculture, fisheries and livestock will ensure greater productivity and food security for the country.

2.7 Climate Change and Sea Level Rise

Guyana's Climate Change National Action Plan of 2001, which complements the Initial National Communication identifies short term (2001-2005) programs and activities Guyana should consider implementing in order to meet its commitment to the United Nations Framework Convention on Climate Change (UNFCCC). Guyana ratified the UNFCCC on 29 August 1994, entering into force on 17 November 1994.

The ultimate objective of the Action Plan corresponds with that of the UNFCCC and focuses on capacity building for national inventory of greenhouse gases, vulnerability assessment, administrative framework, and adaptation and mitigation options. The establishment of a Climate Change Division will be critical to coordinate the programs outlined in the Action Plan and to mobilize the necessary financial and technical resources for its implementation.

Major Issues

The major contributing factor to climate change is through anthropogenic activities which includes the burning of fossil fuels, increase of agriculture releases into the atmosphere, such as methane from rice cultivation and livestock; also industrial releases of nitrous oxides and ozone depleting

substances such as, CFC's and others. These combined factors influence change in weather that result in increase or decrease in rainfall and intensities, frequent and severe storm events and rising sea levels that will inundate low-lying coastal areas. The effects could lead to droughts, land degradation and decrease in fresh water resources or salinity of ground water aquifers (NEAP 2001-2005).

Guyana is very vulnerable to climate change due to its low-lying coastal plain which will bear the brunt of the impacts of rising temperature, changing rainfall patterns and rising sea levels. Ten program areas have been identified as necessary to address the implementation of the Plan and to meet its commitments under the Convention.

Proposed Actions

1. Mobilization of financial and technical resources;
2. Human resource development and institutional capacity building;
3. Consolidation of policy, legal and administrative framework;
4. Response measures for adaptation to climate change;
5. Public awareness, training and education;
6. Research and systematic monitoring of climate and climate change;
7. Measures for furthering the aims of the Kyoto Protocol;
8. Measures for mitigation of climate change (through the development of renewable energy resources);
9. Development of local technologies and transfer of appropriate technologies; and
10. Human resource development, capacity building and response measures for adaptation to climate change should be addressed as a matter of urgency.

The Hydrometeorological Service coordinated the work of the committee involved in the preparation of the Action Plan.

Hydrometeorological Service, Ministry of Agriculture: Hydromet's mission is to observe, archive and understand Guyanese weather and climate and provide meteorological, hydrological and oceanographic services in support of Guyana's national needs and international obligations. Hydromet's activities include monitoring, research, provision of services and coordination of Guyana's involvement in various regional and international conventions.

Apart from routine activities, Hydromet was involved in the following:

1. Hydromet collaborated with other agencies in the preparation of Component 6 of the Caribbean Planning for Adaptation to Climate Change (CPACC) Project – Coastal Vulnerability and Risk Assessment.
2. During the last two years some thirteen additional weather stations were set up with assistance from the Civil Defence Commission.
3. A draft policy paper on Adaptation to Climate Change has been completed.

2.8 Mining

Guyana has a clear mining policy and strategy, which complements the mining laws and regulations.

The Mining Policy of 1997 gives a historical background to the issues and activities related to the mining sector. It also deals with mineral and petroleum policies and their fiscal regimes. The Guyana Geology and Mines Commission (GGMC) has the responsibility for managing mineral and petroleum resources within the legislative framework and policies of the government. The exploitation of economic minerals in Guyana is still limited to gold, bauxite and diamond. GGMC also has the responsibility for the production of stone and mining of silica sand to meet the demands for infrastructure and building construction.

Some measures contained in the draft mining environmental regulations are being implemented. These include the creation and use of settling ponds, use of retorts to recover mercury from gold amalgam, and the progressive reclamation during mining and reclamation after mine closure. The introduction and wide application of these measures will result in a great reduction on the impact of gold and diamond mining on rivers and creeks. It is an acceptable fact that mining has inherent environmental problems including land degradation but these can be minimized to certain acceptable levels.

Currently, cyanide is only used by Omai Gold Mines Limited, the only large-scale gold mine in Guyana. Omai follows an Environmental Management System that was certified in 2001 under the ISO 14000 Environmental Management Systems.

Major Issues

- Dredging operations contribute to water discoloration and sedimentation in rivers and creeks, which impact on hydrological and ecosystem functions and causes water degradation, resulting in the loss of domestic water quality for communities downstream.
- Loss of biodiversity and biological resources may occur as a result of mining, and the landscape is degraded due to the failure by some miners to rehabilitate mine sites.
- Mercury is used in the burning of gold amalgam and discarding of amalgamated tailings contaminate and pollute soils, surface and ground water and can contribute to the loss of aquatic life. Human health, communities downstream and the miners themselves, may also be affected

Activities/Proposed Actions

1. The implementation of the Guyana Environmental Capacity Development Mining Project (GENCAPD) to strengthen environmental management capabilities in the mining sector; The GGMC will be restructured and refocused to make it more efficient;
3. Development and implementation of a Code of Practice for miners;
4. Provision of technical assistance to support the introduction of appropriate mitigation measures;
5. Determination of water quality and assessment of the impact of mining on water quality with a focus on turbidity, total suspended solids and mercury in sediments and fish;
6. Government will continue efforts to develop and adopt a creative and flexible fiscal and legislative environment to further enhance investment in the mining sector;

Figure 1: An example of ‘bad’ mining practice. Mining site has not been rehabilitated.



Figure 2: An example of ‘good’ mining practice. Water discharged from the Tailings Pond indicate very low level of sediments. (Pictures with compliments of GGMC)



7. Spread knowledge of and encourage adoption of improved and more careful methods of operation, to meet desired standards of safety and reduce negative environmental impacts; and
8. Government will continue to support the declining bauxite industry and seek partnership with experienced, capable and reputable international firms and consortia in the bauxite entities.

The GGMC has recognized that there is a need to continue research and surveys to obtain baseline information in the various watersheds where mining is undertaken, to better understand the impact of mining, and to tailor standards for mining effluent discharge to suit local environmental and social conditions.

2.9 Natural Resources and Land Use Management

Government has long recognized the importance of developing an efficient and effective system for natural resources and land use management and has, therefore, initiated the Natural Resources Management Project (NRMP).

Natural Resources Management Project (NRMP): The NRMP (1994-2002), a Technical Cooperation between Guyana and Germany, is designed to ensure that decision making for natural resources management is based on improved information. The project aims to establish a computerized database on land use information, create a framework for land use planning, prepare a legislative framework for natural resources management, and strengthen institutional capacity and coordination.

Activities Undertaken

1. Establishment of a digitized Geographical Information System (GIS) and training of staff from different agencies in the use of GIS. The main maps showing the country's physical features and distribution of natural resources have been digitized to simplify decision making in the use of natural resources.
2. The Guyana Integrated Natural Resources Information System (GINRIS) has been established.
3. Strengthening of the main institutions responsible for natural resources management (EPA, GFC, GGMC, GNRA, GLSC, and NARI).

In addition, a land use baseline project, laid the foundation for the development of a land use policy for Guyana. This project fulfils a part of the Operational Plan of the larger NRMP.

CHAPTER 3 NATIONAL STRATEGIES AND OTHER RELEVANT PROGRAMS IN SUPPORT OF SUSTAINABLE DEVELOPMENT TO COMBAT LAND DEGRADATION

National strategies, social and other relevant programs critical to the sustainable development of the country are addressed in this chapter. These focus on elevating the standards of living through the creation of employment and the reduction of poverty, thus, indirectly supporting policies and plans aimed at preventing environmental and land degradation.

3.1 National Strategies

National Development Strategy (NDS): The draft NDS represents the highest level of national planning in the country and recognizes the causes of poverty and sets out priorities for Guyana's economic and social development. The objectives of the NDS are to: (i) achieve sustainable growth rates; (ii) reduce/alleviate poverty; (iii) satisfaction of basic social and economic needs; (iv) ensure equitable geographical distribution of economic activity; and (v) diversify the economy.

The NDS recommends comprehensive reforms in the social sector (education, health, water, housing and others) as essential for the improvements in services, especially for the poor, and creating the building blocks for the future. The NDS will be subjected to a parliamentary process before its full implementation. Meanwhile, Government is implementing several recommendations outlined in the NDS and donor programming is being informed by this document. The NDS also reflects some elements of policies and plans formulated at sectoral levels.

Poverty Reduction Strategy Paper (PRSP): The Poverty Reduction Strategy Paper (PRSP) is directly linked to the NDS in the areas of economic policy, good governance, infrastructure development and improvement in social services with the objective of reducing poverty. The main goals of the PRS are: (i) sustained economic expansion within the context of a deepening participatory democracy; (ii) access to social services including education, health, water and housing; and (iii) strengthening, and where necessary, expansion of social safety nets.

The NDS and the PRS complement each other in setting out the country's economic and social development in the short and long term. Both strategies take into account environmental and natural resources management, agricultural production, and improvements in the social sectors, amongst others, which are important to combat land degradation directly and indirectly. They have a common objective which is the reduction of poverty. Alleviation of poverty and reversing land degradation goes hand in hand. Both involve improving food security, educating and training people, strengthening the capacity of local communities, and community participation.

Government will focus on vulnerable groups directly through:

- Accelerating access to productive land by small farmers and providing support to small entrepreneurs by providing financial assistance.
- Increase skills training and re-training of workers through expansion of vocational programs.
- Assisting small operators in the logging industry to secure leases in order to earn a livelihood in a sustainable way.

- Providing subsidy for housing and electricity and lowering the cost of social services for low income groups.

Approximately \$2 billion (US\$1=G\$185 approx.) will be spent (starting 2002) on projects to be implemented under various funding schemes. On completion these projects will have an impact on improving the standard of living of the people, especially the poor. Between 2001 and 2002 US\$103 million will be spent on sixty-seven projects resulting in 3,449 jobs being created.

3.2 Land Administration

The Guyana Land Administration Support Program (GLASP) 2000-2002 is being implemented by the Guyana Lands and Surveys Commission (GLSC) which was legally established by Act No. 15 of 1999. The GLSC has three main functions: implementation of policy, management of public lands and provision of information. The purpose of GLASP Phase II is to implement an appropriate land tenure policy and establish an efficient and equitable administration of public land in Guyana.

Activities/Proposed Actions

1. Accelerate the processing of applications for agriculture, eco-tourism, industrial and commercial developments.
2. A revised Standard Agriculture Lease has been developed to extend duration to fifty years;
3. A draft Land Surveyors Profession Bill and Regulations have been completed.
4. Human resource development and institutional strengthening for the development and installation of a modern land information system, in order to improve land tenure information and to support land tenure regularization.
5. Policy studies are being undertaken to assist GLSC to be more customer oriented. A National Land Use Policy has been formulated.
6. Claims have been registered in three Land Development Schemes but no titles have been issued.

Significant progress has been made to streamline bureaucratic processes in lease issuance and to improve land tenure information maintained by the GLSC with assistance from the British Government and the Inter-American Development Bank, as part of the Government Land Administration Support Program.

3.3 Water Resources

On the coastal plain water for domestic, industrial and commercial uses are extracted mainly from 'A' and 'B' sand aquifers and surface sources (and purified), such as the East Demerara Water conservancy, and distributed through a network of pipelines. In the hinterland, water is obtained mainly from fresh water sources such as rivers and creeks. Recently a number of windmill driven and hand-pump operated wells have been put in operation.

The Guyana Water Authority (GUYWA) which falls under the purview of the Ministry of Housing and Water has responsibility for the supply of potable water for most of Guyana. The Georgetown

Water and Sewage Commission is responsible for water supply in Georgetown from ground and surface sources. Additionally, surface water mainly for agriculture and mining is sourced from fresh water rivers, creeks and conservancies. There are four man-made conservancies along the coastal plains: Boeraserie, East Demerara, Tapakuma and Mahaica/Mahicony/Abary. Water for agriculture is supplied through a system of irrigation canals linking to the conservancies.

Activities/Proposed Actions

- Rehabilitation works will be on an ongoing basis and the expansion program will continue. These include laying of new pipe lines, installing new pumps, construction of new water treatment plants and drilling of new wells.
- A single water utility will be created – Guyana Water, with the merging of GUYWA, Georgetown Sewage and Water Commission (GS and WC), Linden Water and Sugar Industry Labour Welfare Committee (SILWFC). Legislation has already been tabled in Parliament for enactment.
- Implementation of Stage 1 of Program II of the IDB Remedial Maintenance Program which involves three major water schemes. Works include water treatment plants, water distribution systems, and the refurbishment of three over head water tanks.
- GUYWA will continue to monitor water quality and also work with other agencies through the ICZM project to determine the water quality (especially for salinity) and volume of ground water resources of the coastal aquifers.

Priority attention will be given to rehabilitation and maintenance of water infrastructure. The Ministry of Housing and Water in collaboration with the water agency will prepare a multi-year comprehensive rehabilitation and maintenance program, for which an increased budgetary allocation will be granted.

3.4 Human Settlements

A Housing Policy was articulated by the Ministry of Housing in 1997. However, several policy statements made subsequently have broadened the scope of the policy. The Ministry of Housing and Water, as the name implies, has responsibility for the housing and water sectors.

Background: Squatter settlements have been developing all over the country due to the huge demand for housing and poor socio-economic conditions. Migration has resulted in higher population densities in Georgetown and its environs causing extended households which have become overcrowded. The government in recognition of the need for more and better housing embarked on a vigorous program to establish housing schemes in the various regions of the country, focusing more on Region 4.

The Government's Housing Policy is implemented through the Central Housing and Planning Authority which has the power to acquire and allocate lands, design and survey, and develop housing schemes on its own or in partnership.

Activities/Proposed Actions

- Legislation has been effected to provide easy access to housing finance with lower interest rates. “Letters of Assurance” are issued by the ministry to obtain loans for construction of houses.
- Squatter Settlements are being regularized, where possible, to attain the status of housing schemes. Sixty-two schemes are being regularized across the country and the process will continue.
- Massive Infrastructural works have been initiated and are in progress in both housing schemes and squatter settlements. International financing for infrastructural development has been obtained: the Inter-American Development Bank is providing US\$30 million, World Bank US\$1 million (for water distribution to squatter settlements) and the European Union is contributing US\$3.6 million.
- Over one hundred Community Groups have been formed to work with the ministry to build sustainable settlements.
- A subsidy mechanism has been developed to target the neediest, who will continue to pay the equivalent of about US\$300 for a house lot with longer repayment periods.
- Preparation of a draft Policy Paper on Land Distribution.

3.5 Health

The Ministry of Health has responsibility for the health sector. The short term goals of the Ministry are:

- Finalize the National Health Plan;
- Develop and enforce regulations in the sector for both, public and private institutions;
- Human resources development;
- Capacity building and improving management systems and health care delivery; and
- Construct and rehabilitate health facilities.

3.6 Education

Government’s goals for education are to reduce illiteracy rates, attain universal primary education, increase secondary school enrolment, and improve the quality and relevance of education for all Guyanese, especially children.

To achieve these goals, the Ministry of Education will focus on:

- Reforming the curriculum and introducing information technology;
- Improving access to secondary schools and physical facilities to reduce overcrowding;
- Improving the quality of teachers and complementing teacher’s salaries with non-monetary incentives;;
- Targeting functional illiteracy among out-of-school youth and continue to provide support to the poor;
- Strengthening the Ministry of Education; and

- Capital expenditure would continue to be allocated for the building and maintenance of the education infrastructure including rehabilitation of all the multilateral schools.

3.7 Tourism

In tourism, Guyana will continue to draw heavily on its natural resources to develop specialized markets in areas of eco-tourism, adventure tourism, and cultural and heritage tourism.

Initiatives in 2002 include:

- Establishment of the Tourism Authority;
- Development of a tourism website critical to the marketing and promotion strategies and revamping of the incentives regime;
- Development of sub - sector strategies for accommodation and air access; and
- Development of a Hospitality School in order to equip service providers in the industry.

Last year, the Ministry of Trade and Tourism invested some US\$4.2 million in this sector, while another US\$1.8 million is planned for this year.

3.8 Science and Technology

The draft Science and Technology Policy has identified a number of national priority areas in which science and technology inputs would be required to make a substantial impact. These areas include mineral development, forestry, manufacturing, information technology, telecommunication, agriculture, research and development, technology transfer, environment, design engineering and engineering consultancy, standardization, education and training, health and nutrition. Programs to be pursued in these areas are also proposed in the policy document.

The Institute of Applied Science and Technology (IAST) will perform the coordinating function for the implementation of the policy when it is finalized. It will work in close collaboration with various agencies in the development of indigenous technology and facilitate the transfer of appropriate technology.

3.9 Energy

The formulation of the National Energy Policy (NEP) of Guyana was coordinated by the National Energy Authority. The objectives of the National Energy Policy (1994-2004) are to: (i) provide stable, reliable and economic supply of energy; (ii) reduce dependency on imported fuel; (iii) promote where possible the increased utilization of domestic resources; and (iv) ensure energy is used in an environmentally sound and sustainable manner.

The Moco Moco hydropower station (2x 250 KW units) in Lethem, Region 9, was commissioned in 2000. Work on two other facilities, Amalia Falls (3x 35 MW units) and Turtruba will commence later this year with a US\$10.4 budget.

3.10 Disaster Management

The Civil Defense Commission was inaugurated in August 1997 and is mandated to develop, implement and maintain a National Disaster Preparedness and Prevention Program, incorporating other agencies and citizens into a National Disaster Response Mechanism, to prevent or mitigate the impact of all kinds of disasters, and to provide rescue, evacuation, shelter, relief and rehabilitation.

El Nino Emergency Assistance Project: The El Nino/La Nina phenomena have had tremendous adverse impacts on the Guyanese economy through severe droughts during 1996/97 and severe flooding during 1997/98 – 2000. The Government of Guyana with support from the World Bank subsequently put in place initiatives to mitigate the impacts of these phenomena. The activities of the El Nino Emergency Assistance Project involved four Government agencies which are: Hydrometeorological Services, National Drainage and Irrigation Board, Georgetown Sewage and Water Commission and the Guyana Water Authority.

Activities/Proposed Actions

1. Improving the drainage of land available for farming through the rehabilitation of structures and the procurement of gravel pumps;
2. Improving the availability of potable water in certain areas in Georgetown and other regions by installing new water distribution systems and wells;
3. Flood protection of low-lying areas of the city of Georgetown through the procurement and installation of five mobile dewatering pumps;
4. Development of a database of persons with disaster management skills which is continuously updated;
5. The National Policy on Disaster Management needs revision;
6. Capacity building through training in disaster management, as well as some hazard and sector specific training. Training is also scheduled for 2002 which includes the Humanitarian Assistance Program 2002 to be executed by the United States Southern Command; and
7. Government will enact civil defense legislation, strengthen CDC management structures at local government level and develop national disaster public awareness programs.

A national policy and priorities have not been defined as yet. A National Disaster Plan exists but needs updating. However, hazard specific plans are in place for aircraft accidents, civil unrest, and maintenance of essential services.

CHAPTER 4 MECHANISMS FOR COORDINATING IMPLEMENTATION OF THE CCD

4.1 Legal and Institutional Framework

The Environmental Protection Agency established by the EPA Act of 1996, is a body corporate governed by a Board of Directors for the management, conservation, protection and improvement of the environment, the assessment of the impact of economic development on the environment and the sustainable management of natural resources. In addition, there are a number of agencies which have specific responsibility for environmental and natural resources management, including activities to combat land degradation. The EPA works in close collaboration with these agencies at the Inter-agency level.

These agencies comprise the Natural Resources and Environment Advisory Committee (NREAC) which includes: Ministry of Agriculture; Environmental Protection Agency; Guyana Geology and Mines Commission; Guyana Forestry Commission; Guyana National Energy Authority; Institute of Applied Science and Technology; Hydrometeorological Service; Georgetown Sewage and Water Commission; Ministry of Amerindian Affairs; Fisheries Department (of the Ministry of Fisheries, Other Crops and Livestock); Guyana Natural Resources Agency; and the Lands and Surveys Commission. The Minister of Agriculture is the Chairman of the NREAC and who is also a member of cabinet and the Cabinet Sub-committee on Natural Resources and Environment.

This configuration constitutes the institutional framework for environmental and natural resources management, policy formulation, decision-making, implementation and coordination. All the public agencies operating in the environment and natural resource sector and operate within the broad framework of the NEAP to comprehensively address their local, regional, or national environment and natural resources concerns.

The Laws of Guyana as presently configured to address environmental problems are fragmented and not holistic. A number of laws and regulations address specific aspects of environmental administration and management (for example, mining, forestry, petroleum, wildlife, and fisheries). However, the EPA Act contains some provisions for inter-agency collaboration to address environmental problems.

The National Action Plan to Combat Desertification will, therefore, be implemented within this broad-based institutional framework involving the NREAC, the EPA and public agencies within the environment and natural resources sector. The Guyana Lands and Surveys Commission may have the responsibility for coordinating the implementation of the NAP since it already has the responsibility for land administration.

4.2 National Coordinating Body

The National Climate Committee (NCC) oversees all activities relating to climate change, ozone depletion and land degradation and reports to the Natural Resource and Environment Advisory Committee through its chairman, the Chief Hydrometeorological Officer, who is a member of the NREAC.

The NCC comprises of some sixteen agencies which are relevant to climate change and land degradation. These include: the Environmental Protection Agency; Hydrometeorological Service; Institute of Applied Science and Technology; Guyana Forestry Commission; Guyana Manufacturers Association; Private Sector Commission; Guyana Energy Authority; Ministry of Trade, Tourism and Industry; Ministry of Finance; Guyana Water Authority; Ministry of Health; Ministry of Agriculture; Ministry of Foreign Affairs; and University of Guyana. The NCC has been designated the National Coordinating Body (NCB) for the implementation of the CCD.

The Hydrometeorological Service of the Ministry of Agriculture has been mandated to be the National Focal Point, and have the coordinating function for the preparation of this second national report on the implementation of the CCD.

The NCC (or the NCB) is not a statutory body and does not have financial autonomy. Its functions and responsibility as they relate to land degradation and climate change are primarily to give advice, guidance and oversee the planned activities relating to the elaboration and implementation of the NAP to combat land degradation. Perhaps this responsibility would be managed more effectively by a Sub-Committee or a Task Force comprising members of the NCC. The NCC meets regularly (on a monthly basis) at the Office of the President.

4.3 Preparation of the National Action Plan

Guyana ratified the Convention on Biological Diversity on 29 August 1994 and prepared the National Biodiversity Action Plan (NBAP) which was developed through a participatory process of stakeholder consultation and involvement.

Guyana has not yet embarked on the preparation of the National Action Plan. However, it is envisaged that the planning process for the elaboration and implementation of the NAP will be fully informed by the NBAP process and will be similar in nature. In this regard, various agencies with responsibility for environment and natural resources management at the national, sectoral and regional levels, affected stakeholders and other interested parties at the local and community levels, will be involved in the process. The elaboration and implementation of the NAP will, therefore, be a fully participatory process as outlined in the CCD.

The participatory approach that will be used in the process of preparing the NAP has its advantages. It strengthens the planning process and solicits information and knowledge from the various stakeholders. A further advantage is that it supports understanding and acceptance, and promotes a sense of ownership by the total stakeholder group, which would encourage a strong commitment from them to be involved in relevant actions identified in the NAP. Understanding and commitment are particularly important for the successful implementation of the NAP at the various levels.

The entire process will be supported by a public awareness program focusing on assisting the public to understand the purpose of the NAP, the CCD and issues relating to land degradation so that stakeholder's contribution to the process will be more informed.

CHAPTER 5 IDENTIFICATION OF RESOURCES FOR THE IMPLEMENTATION OF THE CONVENTION TO COMBAT DESERTIFICATION

5.1 Financial Resources

The financial resources necessary for government agencies to implement their sustainable development programs, including development of land resources, are usually provided by the government through the national budget. Other sources of funding include loans and grants from international financial institutions and bilateral arrangements.

5.1.1 Environmental Trust Fund

The Environmental Protection Act of 1996 established an Environmental Trust Fund which shall be used to fund the operations of the EPA and for purposes authorized under the Act and includes:

- (a) protecting the environment and conserving natural resources;
- (b) incentive measures for reducing environmental pollution; and
- (c) public awareness and education programs to enhance the understanding of environmental protection and natural resources management issues in Guyana.

The resources of the fund consists of sums provided by parliament, foreign states, international organizations, multilateral or bilateral lending agencies, private individuals, foundations, corporations or other entities, loan funds, penalties and other sources as prescribed by the Act.

5.1.2 External Funds

External funds have been received by a number of institutions for the implementation of projects which are aimed at sustainable development of that specific sector and, therefore, contributing to the national development process. These include the following:

- **Guyana Forestry Commission Support Project Phase II:** This commenced in 1998 and is being funded by the UK Department for International Development (UK DFID). Project cost is £3,411,000.
- **Natural Resources Management Project:** NRMP commenced in 1994 under a Technical Cooperation Agreement between the Governments of Guyana and Germany. The German Government has provided an initial grant of US\$4.5 million. This project concludes at the end of this year.
- **Guyana Land Administration Support Program:** GLASP is implemented by the Ministry of Agriculture and funded by the Inter-American Development Bank (IADB), financed under the Agriculture Sector Loan Program to the value of US\$34 million, supported by US\$7.5 million technical cooperation and feasibility work, and the UK DFID is providing US\$5.08 million. Rehabilitation of drainage and irrigation infrastructure is part of this program.

- **Rehabilitation of the East Demerara Water Conservancy Embankment and Structures:** This program has been implemented by the Ministry of Agriculture and funded by the Government of Guyana and IADB. This project is continuing with a Government subvention of \$390 million.
- **Guyana Environmental Capacity Development Mining Project:** GENCAPD was initiated in 1998 for implementation by the Guyana Geology and Mines Commission and is funded by the Canadian International Development Agency.
- **Marine Turtle Conservation:** World Wildlife Fund-Guianas Forests and Environmental Conservation Project (WWF-GFECF) in collaboration with the Marine Turtle Conservation Society of Guyana have implemented a project in 2000 focusing on monitoring and conservation of sea turtles in Guyana. WWF-GFECF has provided a grant of US\$30,000.
- **National Wildlife Survey:** WWF-GFECF has provided US\$188,000 to fund the Scientific Wildlife Surveys of Guyana, which has been implemented by the EPA (Wildlife Unit).
- **Integrated Coastal Zone Management Project:** This project is being implemented by the EPA and funded by the Caribbean Development Bank in the sum of US\$230,000.
- **Iwokrama International Centre for Rain Forest Conservation and Development:** This Centre has been legally established in 1996 to conserve biological diversity and to promote sustainable management and utilization of tropical rain forest through research programs which are on-going.
- **El Nino/La Nina Emergency Assistance Project:** Implementation of projects to mitigate the impacts of El Nino/La Nina with the financial support of the World Bank. The Bank provided US\$13.09 million.
- **Tropenbos-Guyana Program:** This Program established in 1989 by the Tropenbos Foundation was dedicated to forest research. It concluded at the end of 2000. (A number of technical publications based on the research activities successfully undertaken are available).
- **Freshwater Aquaculture Farm:** The largest freshwater aquaculture demonstration farm and training centre in the Caribbean is currently being established to further promote freshwater aquaculture development by providing on site training of farmers. This project is being funded by CIDA, FAO and the Government of Guyana.
- **Telefood Special Fund:** The Food and Agriculture Organization (FAO) of the United Nations established the Telefood Special Fund in 1997 is to improve the ability of rural communities to access sufficient food through small, income generating, food production projects in developing countries. Three types of projects can be funded: Small Animal Production, Small Crop Production and Fish Production.

- **Restructuring the Sugar Industry:** The project on restructuring and modernization of the Guyana Sugar Corporation is estimated to cost about US\$110 million for constructing a new factory in Region 6 and increasing sugar cane cultivation.
- **Gold Mining and Contamination Project:** This project on gold mining and mercury contamination to determine mercury levels in the lower Potaro Basin and its immediate environs has already commenced. Soil and water samples have been taken for laboratory testing. It is a joint project by the Guyana Geology and Mines Commission and the Institute of Applied Science and Technology.
- **Water Projects:** Implementation of Stage 1 of Program II of the Guyana Water Authority Remedial Maintenance Program which involves three major water schemes. Works include water treatment plants and water distribution systems, laying of transmission lines and the refurbishment of three over head water tanks. These projects will cost over \$2 billion, and they are financed by the Caribbean Development Bank and the Inter-American Development Bank.
- **Infrastructural Development for Housing Schemes:** International financing for infrastructural development in housing schemes and squatter settlements has been obtained: the IDB is providing US\$30 million, World Bank US\$1 million (for water distribution to squatter settlements) and the European Union is giving US\$3.6 million.
- **Poverty Reduction Program:** Some G\$2 billion will be spent on projects to be implemented under the Social Impact Amelioration Program, Basic Needs Trust Fund, Linden Economic Advancement Project, the Poverty Fund, and the Poor Rural Community Project. An additional sum of US\$103 million has been invested in sixty-seven projects resulting in 3,449 new jobs being created (2001-2002).

The implementation of projects and related activities of the NAP, which require a substantial amount of financial and technical resources, would necessitate that the Government seek assistance from international financial institutions including the Global Environment Facility, the Global Mechanism, the United Nations Development Program and Developed Country Parties.

5.2 Human Resources

In Guyana, there is a scarcity of persons trained and skilled in many areas to address relevant problems and to perform planning, management and research. Human resources weaknesses occur in the following sectoral and thematic areas: agriculture; forestry; fisheries; environment; biodiversity; information, public awareness and training; intellectual property; conservation; biotechnology; climate change and climate modeling and related fields. In addition, there are some “new” areas emerging in relation to the international conventions which demand special training and expertise, and which would also have to be developed or acquired by Guyana.

The human resources capacity necessary to address all the relevant issues of land degradation simply does not exist in the country. In this context, human resources development and institutional

strengthening would rank as priority issues to be addressed in Guyana. However, since government does not have the additional financial resources to address these issues, international assistance will have to be mobilized.

The newly formed Guyana Land and Surveys Commission (GLSC) may be given the responsibility for land degradation matters. GLSC would therefore be involved in the coordination of the preparation and implementation of the NAP, and may have to increase its capacity to mobilize adequate resources, coordinate program activities, facilitate the integration process, and monitor and evaluate progress. The relevant institutions at the national and sectoral levels will also have to strengthen their capacity to integrate programs and activities into their planning process.

It has been recognized, that the NAP cannot be implemented without adequate financial and technical resources. It is therefore necessary that the UNCCD Secretariat, the Global Mechanism with the assistance of the Developed Country Parties assist by providing some of the necessary financial resources to realize the implementation of the NAP.

CHAPTER 6 PLANNED ACTIVITIES TO IMPLEMENT THE CCD

It was mentioned earlier that Guyana will be preparing its NAP sometime in the near future depending on the availability of adequate financial resources. The elaboration and implementation of the NAP will be informed by the planning process used for the preparation and implementation of the other action plans and activities already undertaken. The NAP process will involve national awareness activities on land degradation and collection of any additional information on the utilization and management of natural resources, including land resources, especially by women and youths. Projects considered relevant by local stakeholders and the use of traditional knowledge to combat land degradation will also be taken into account.

The elaboration and implementation of the NAP will therefore be a fully participatory process as outlined in the CCD. In this regard, regional workshops will be held in various locations in the country to sensitize the public on the CCD and land degradation issues. These workshops will also provide opportunities for stakeholders to raise issues relevant to land degradation and the implementation process for the NAP. A national workshop will be held at the end of the elaboration of NAP to present the Plan and requirements for its implementation.

Meetings will also be organized with public sector agencies involved in combating land degradation, the National Biodiversity Advisory Committee; the Natural Resource and Environment Advisory Committees; the National Climate Committee and private sector representatives.

The entire process will be supported by a public awareness program focusing on assisting the public to understand the purpose of the NAP, the CCD and issues related to land degradation so that stakeholders' contribution to the process will be more informed. The program will be mounted on television, radio and the press. Brochures and other handouts will also be prepared.

The preparation of the work plan by the NCB for the NAP process to be executed within a specific time frame will, therefore, constitute the foregoing broad areas of activities. Consideration will also be given to administrative support and logistics for workshop execution, the consultation process and the preparation and execution of the public awareness program.

The areas that would be planned for the NAP in keeping with Article 4 of the Regional Annex for Latin America and the Caribbean include the following:

- increasing capacities, public awareness, education and training, scientific and technological cooperation, mobilizing financial resources and development of financial mechanisms to fund the implementation of the Convention;
- Develop measures to improve the economic environment such as alleviating poverty and creating a better quality of life for the people (the PRSP will greatly assist here) ;
- Sustainable management of all natural resources, especially the rational management of watersheds;
- Achieving food security and sustainable development and management of agricultural, livestock-rearing, forestry and multipurpose activities;

- Developing, managing and efficiently using diverse sources of energy, including the promotion of alternative sources of energy;
- Conservation and sustainable use of biodiversity in accordance with the provisions of the Convention on Biological Diversity;
- Strengthening institutional and legal frameworks permitting application of the Convention;
- Traditional knowledge; and
- Regional and International Cooperation.

The NCB or a Task Force will make the final decision on the kinds of programs and activities to be included in the NAP, taking into consideration the existence of other action plans, policies and strategies.

CHAPTER 7 CONCLUSION

The national report on the implementation of the CCD presents a synopsis of environmental and natural resources management issues confronting Guyana and the formulation of national policies, strategies and plans for the conservation and sustainable utilization of natural resources and maintaining environmental standards. During the process of policy formulation, it has been recognized that there exists deficiencies in the legislative and institutional framework for the sustainable development of the natural resource sector, and that they are not always in conformity with the government's commitment and obligations to international treaties and conventions. In this regard, the Government has been gradually but consistently creating an enabling environment for their implementation.

A comprehensive National Biodiversity Action Plan was completed through a participatory process and is being implemented through the mobilization of adequate financial and technical resources. It is anticipated that the preparation and implementation of the NAP will greatly benefit from the precedent set by the NBAP planning and implementation process. The immediate requirement for the NAP process to commence is the mobilization of adequate financial resources from various sources.

Development of a database on sustainable development activities within the agriculture, environment and natural resource sectors would greatly support the NAP planning and implementation process and, therefore, should be addressed in the near future. Perhaps Guyana can benefit from the development of Environmental and Desertification Information Systems undertaken by the UNCCD. The implementation of the Convention will strongly support Government's efforts in combating land degradation.

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