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

GEORGETOWN
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GLOSSARY OF ACRONYMS AND ABBREVIATIONS

BERMINE	Berbice Mining Enterprise
BOD	Biological Oxygen Demand
CDC	Civil Defense Commission
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
ECTF	Edinburgh Centre for Tropical Forests
EMA	Environmental Management Agreement
EPA	Environmental Protection Agency
FMP	Forest Management Plan
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 Programme
NARI	National Agricultural Research Institute
NBAC	National Biodiversity Advisory Committee
NBAP	National Biodiversity Action Plan
NCB	National Coordinating Body
NCC	National Climate Committee
NEAP	National Environmental Action Plan
NFAP	National Forestry Action Plan
NFP	National Forest Plan
NGO	Non-Government Organisation
NREAC	Natural Resources and Environment Advisory Committee
NRMP	Natural Resources Management Project
PACD	Plan of Action to Combat Desertification
SFP	State Forest Permission
TSA	Timber Sales Agreement
UK DFID	United Kingdom Department for International Development
UNCCD	United Nations Convention to Combat Desertification
UNCED	United Nations Conference on Environment and Development
UNFCCC	United Nations Framework Convention on Climate Change
WCL	Woodcutting Leases
WWF-GFECP	World Wildlife Fund-Guianas Forests and Environment Conservation Project

EXECUTIVE SUMMARY

Desertification is the degradation of land caused primarily by human activities and 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 international community has long recognized that desertification is a serious threat to many countries of the World and in an effort to address this problem the Conference on Desertification in 1977 adopted a Plan of Action to Combat Desertification (PACD). In 1992, when the United Nations Conference on Environment and Development (UNCED) convened in Rio de Janeiro, Brazil, the question of how to deal with the issues of land degradation was on the agenda, since it was still of serious concern to most countries of the world. The Conference, therefore, requested the UN General Assembly to prepare by June 1994, a Convention to Combat Desertification. As a result the UNCCD came into force in December 1996. Guyana became a Party of the Convention upon its ratification on 24 September 1997.

The implementation of the UNCCD is coordinated by the National Climate Committee, functioning as the National Coordinating Body (NCB). It has responsibility for coordinating all activities relating to climate change, ozone depletion and desertification and is comprised of representatives of the main institutions dealing with these issues. The NCB operates under the purview of the Office of the President. The President of Guyana has the mandate for environmental issues including climate change and desertification. The Office of the Adviser to the President on Science, Technology and Environment is the National Focal Point and is responsible for coordinating the preparation of the National Report.

Guyana, richly endowed with natural resources, is dominated by its forests, mostly tropical moist evergreen rainforests, covering over 75% of the country's 215,000 square kilometers and which constitute a very significant resources not only for this country but also for the world. The forests constituting a part of the Amazon Basin, contain a wealth of biological diversity including several unique species and 144 recorded endangered wildlife species. The abundant natural resources include substantial mineral deposits notably bauxite, gold and diamonds. These timber and mineral resources existing within the interior of the country are highly extensive in nature, and to a great extent inaccessible because of undeveloped infrastructure.

In 1998, the Government of Guyana articulated and implemented the Economic Recovery Programme after a protracted economic decline in the 1970s and 1980s, accompanied by an intensification of poverty in society. The main strategy based on a major change in the economic policy was to create favorable investment opportunities for the private sector to utilize the country's natural resources. The new Government of 1992 embarked on a major expansion programme in the agriculture, forestry and mineral sectors and a rehabilitation of the infrastructure to support this programme, which has been pursued within the context of sustainable development and poverty eradication.

The increase in activities in the agricultural and natural resource sectors without effective regulatory and monitoring mechanisms, can lead to unsustainable practices such as over harvesting of timber resources or over utilization of components of biodiversity, which have long term destructive potential and can inevitably lead to land degradation. These activities also have implications for environmental management.

In 1994, the Government prepared an National Environmental Action Plan (NEAP) to identify the major environmental problems and to formulate appropriate policy measures to deal with these problems. The document identified the major environmental issues as coastal zone management, waste management and pollution control, natural resources management and mining. Land degradation has been identified with some of these environmental issues. The NEAP is currently being reviewed through a participatory process.

There are many institutions in the country that have some responsibility for environmental and natural resources management. In recognizing the need to have one single institution with responsibility for environmental management, the Government introduced a new legislation, the Environmental Protection Act No. 11 of 1996 to create the Environmental Protection Agency (EPA). The EPA has the legal mandate 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. Environmental Impact Assessment (EIA) conducted for all major projects have to be approved by the EPA.

Although, it is the general perception that land degradation is not a major environmental problem in Guyana, cognisance should be taken of land degradation activities and climate variability. It is, therefore, imperative for Guyana to share experiences on land degradation and mitigating the effects of drought with other countries. In this regard, the CCD can be seen as the most appropriate mechanism for the exchange and sharing of information.

Since land degradation is not a priority issue, strategies to address it should be integrated into those designed to address issues of biodiversity, wildlife management, climate change, and coastal zone and natural resources management. In an effort to address these issues the Government has been increasingly promoting participatory decision-making and a policy to conserve and sustainably utilize the country's natural resources in keeping with Guyana's commitment to international conventions, treaties and other relevant instruments. Policies, strategies, action programmes and laws are, therefore, being prepared and implemented for the sustainable utilization of natural resources and the maintenance of environmental quality, which can also support the implementation of the CCD.

The development of a draft National Development Strategy represents the highest level of national planning in the country. It is an integrated document outlining the national strategy and policy in a number of priority areas including agriculture, environment, forestry, fisheries, mining, tourism and the eradication of poverty. The Strategy serves as a framework for policy and planning in the respective sectors of the economy.

The National Strategy for the Conservation and Sustainable Use of Guyana's Biodiversity was completed in 1997 through a participatory process, and articulates the national policy and

strategy relating to the study, conservation and sustainable use of biodiversity. The National Biodiversity Action Plan (NBAP) is a product of the National Strategy proposing a total of thirty two projects and other activities under broad programme areas. The mobilization of financial and technical resources are critical to the implementation of the Action Plan. The EPA has also been given the legal mandate for the conservation and management of the country's biological diversity

In the forestry sector, the Guyana Forestry Commission has formulated a number of policies and plans to improve management and conservation of forest resources in order to contribute to sustainable development, optimum use of the land resources and conservation of biodiversity. The draft National Forest Plan of July 1998 takes into consideration the National Forest Policy of 1997, and proposes a range of activities under five broad programme areas including land use, forest management, research and information, forestry training and education, and forest administration and governance. Guidelines for the preparation of Forest Management Plans and a Code of Practice for Forest Operations have also been prepared by the Guyana Forestry Commission. The revised legislation governing forestry has been forwarded to the Cabinet Sub-Committee on Natural Resources and the Environment for reviewing before being presented to Cabinet.

A non-governmental organisation, the Forest Producers Association was formed by the forest industry to promote and develop the interests of the forest sector and to collaborate on activities such as training, information, public awareness and institutional development.

Forestry research focusing on sustainable forest management and the conservation of biodiversity are being undertaken by a number of institutions including the Tropenbos-Guyana Programme and the Iwokrama International Centre for Rainforest Conservation and Development.

In order to improve the management of Guyana's natural resources in a sustainable way, a Natural Resources Management Project (NRMP) commenced in 1994 under a Technical Cooperation Agreement between the Governments of Guyana and Germany.

The project is intended to support decision making on natural resources management by supplying reliable and accurate information to national institutions. The project will develop a database on natural resources, establish land use planning procedures, prepare policy guidelines and legislation for natural resources management and strengthening institutional capacity.

The main activity in the wildlife sector is harvesting for the export trade and local consumption as exotic meat. There has been no significant management of wildlife resources in the country. The Wildlife Division of the Office of the President which regulates the wildlife trade does not have the necessary capacity to function effectively. However, wildlife management and protection is now being initiated in the country. The World Wildlife Fund - Guianas Forests and Environmental Conservation Project (WWF-GFECP) is collaborating with the Marine Turtle Conservation Society of Guyana to study and monitor four species of marine turtles at Shell Beach in the Pomeroon. It is also funding a project on the development of a species management plan for wildlife trade in Guyana which is to be implemented by the EPA.

A draft fisheries Management and Development Plan for the period 1994-2004 has been prepared and is yet to be finalized. Fisheries resources utilization in Guyana is regulated under some four different pieces of legislation, all of which are outdated and inadequate. Revision of the existing legislation and finalization of the Fisheries Management and Development Plan will provide a strong basis for the management of fisheries resources.

In the mining sector, the major environmental impacts are pollution and land degradation. However, with the introduction of Environmental Impact Assessment (EIA), the initiation of public awareness programmes and regular monitoring by the Guyana Geology and Mines Commission and the Environmental Protection Agency, it is expected that environmental impacts will be minimized.

In the agriculture sector, the Ministry of Agriculture has a major responsibility in ensuring food security and efficient management of water resources for agricultural production. It has recently implemented the Land Administration Project which will effectively address the land tenure system in Guyana.

Financial resources required for the implementation of all sustainable development projects have been obtained from donor agencies, international financial institutions and through bilateral arrangements. The Government has also contributed significantly to these projects.

The NAP process will have to take into consideration relevant aspects of all the national policies and plans that focus on sustainable development and are related to the implementation of the CCD. The NCB will be responsible for coordinating the activities for the preparation and implementation of the National Action Programme (NAP). The NAP process will involve national awareness activities on land degradation and drought and collection of 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.

The elaboration and implementation of the NAP which would 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 and the United Nations Development Programme.

CHAPTER 1 GENERAL INTRODUCTION

1.1 Background on Guyana

1.1.1 Location

Guyana is a tropical country, situated on the northeastern coast of South America between 2 degrees to 9 degrees North Latitude, and 56^0 and 62^0 West Longitudes. It is bounded on the north by the Atlantic Ocean, on the east by Suriname, on the south and south-west by Brazil and on the west by Venezuela. It occupies a total landmass of approximately 215,000 km^2 and has a coastline that is about 434 km long and a continental extent of about 724 km. Guyana is one of the eight countries that share the vast Amazon Basin. About thirty-five percent of the country, the area approximately below 4^0 North Latitude, lies within the Amazon Basin.

1.1.2 Geography

Guyana has five natural geographic regions: the Coastal Plain, the Hilly Sand and Clay Region, the Highland Region, the Forested Region, and the Rupununi Savannah.

The Coastal Plain, varying in width from 77 km in the east to a mere 26 km in the western Essequibo Region, fringes the northeastern edge of the country. Topographically, this region is virtually flat, and comprising of heavy (Holocene-Pliocene age) fluvio marine clays, is prone to flood during the rainy season. A series of sand ridges (0.5m to 2.5m high and between 10m to 600m wide) running almost parallel to the coastline are the main variation, often impeding drainage to create pegasse swamps and, in the case of western Essequibo coast, lakes. All coastal rivers provide farmers with irrigation water. A complex system of drainage and irrigation canals allow the potentially fertile clays to be utilized for sugar cane and rice cultivation, cattle ranching, and coconut, vegetable and fruit production, which all add to the hub of economic activities supporting the ninety percent of the total population that inhabits this region. The three main urban centres (Georgetown, New Amsterdam and Linden) are found on the banks of the Demerara and Berbice Rivers and most commercial activities are concentrated there.

The Hilly Sand and Clay Region varies in height from 2m to 400m occupying the northeastern section of Guyana. Most of it is covered with dry evergreen climax vegetation. Of Pliocene – Pleistocence age, the unconsolidated material comprises 85 percent white quartz sand with pockets of brown and yellow sand. A savannah area 95 km from the coast near Orealla is mainly used for cattle ranching and citrus. This region is home to bauxite deposits which have been mined for most of this century creating major mining centres such as Linden, Kwakwani and Ituni. Elsewhere the population density is low.

The Highland Region consists of the Pakaraima Mountains forming a part of the extensive Guiana Highlands that cover an area of 1,300,000 km^2 in Guyana, Venezuela and Brazil. Varying in height from 500m to 2,777m at Mt. Roraima, this formation comprises of a series of plateaus and table-lands with sharp edges and precipitous escarpments. Plateaus are dissected by many streams and gullies creating deep gorges and waterfalls. Large tributaries of the Essequibo rise in this upland - the Cuyuni, Mazaruni and Potaro rivers all of which are associated with gold

and diamond deposits. The Potaro is well known for the world-famous Kaieteur Falls, which at 225m is the highest sheerdrop waterfall in the world.

The Forested Region spans the entire length of the country with elevation southwards from 90m to about 210m culminating in the Akarai Mountains. Geologically, the region forms a part of the Pre-Cambrian Brazillian Shield and it is the tropical rainforest region of Guyana, a continuation of the Amazon Forest.

The Rupununi Savannah and the Intermediate Savannah form the Savannah Region. The Intermediate Savannah, in the eastern part of the country, lies between the Coastal Plain and the Hilly Sand and Clay Region. The larger Interior or Rupununi Savannah is located in the southwest and divided into the North and South Savannahs that are separated by the Kanuku Mountains. The North Savannah is more hilly than the South Savannah and grassland characterize both areas. Cattle ranching and farming are two of the main activities in the Interior Savannah.

1.1.3 Climate

Guyana lies within the equatorial trough zone and the climate is influenced primarily by the seasonal north/south movement of the Inter Tropical Convergence Zone (ITCZ). The seasons and climate are determined mainly by the variations in rainfall patterns. There are four seasons, two wet and two dry, and on the Macro-scale Guyana can be described as having a Wet Climate with annual rainfall between 1500 mm to 3500 mm.

On the coast daily maximum temperatures average 29.6^0 C while daily minimum average 29.6^0 C. Temperatures vary with season and place.

1.1.4 Demography

Guyana's population is approximately 750,000 and comprises six main ethnic groups: East Indians, Africans, Amerindians, Chinese, Portuguese and Mixed. East Indians and Africans comprise the majority of the population. Compared to its present land area (275,000 km^2) the population density of Guyana is less than four persons per square kilometer of land area. Life expectancy at birth for the year 1995 was 64 years with males reaching 60 years and females reaching 67 years. The population growth rate for Guyana has been relatively low over a period of time and was 23.2 per thousand in 1999. The death rate continues to decrease due to improved health care facilities and public awareness of health issues. It was 7.1 per thousand in 1994 compared with 6.6 per thousand in 1999.

1.1.5 Economy

Guyana's economy is strongly based on agriculture (sugar and rice), mining and forestry. The agriculture sector is the most important to the economy, both in terms of foreign exchange generation and the number of persons employed. Mining (gold 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 1999 was US$746, up from US$528 in 1990.

1.2 The consultative process and preparation of the National Report

Guyana ratified the UN Convention to Combat Desertification on September 24, 1997 and subsequently established a National Focal Point within the Office of the President - the Office of the Adviser to the President on Science, Technology and Environment. A National Coordinator has been appointed to coordinate the preparation of the Guyana's first National Report on the implementation of the CCD.

Preparation of the report is part of the process of implementing the CCD. The main purpose of the report is to inform other Parties of the Convention about the situation in Guyana with regards to the measures taken to implement the CCD in the country.

The preparation of the report involved a one-week consultative process on land degradation and drought related issues with government, non-governmental 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 have been included in the National Report.

The national awareness seminars on land degradation planned for August, 1999 did not materialize and as such is envisaged to be held in late May or early June of this year, if funds are available.

The UNCCD Secretariat provided assistance in the preparation of the National Report by providing a consultant Mr. Philbert Brown of Jamaica.

CHAPTER 2 MAJOR ENVIRONMENTAL ISSUES AFFECTING GUYANA

The major environmental issues affecting Guyana can be grouped into four main categories: coastal zone management, natural resources management, mining and waste management and pollution control. The first three issues have relevance to land degradation and have been addressed by the National Environmental Action Plan. The drought of 1997/98 is also dealt with in this chapter. Drought is not a regular phenomenon in Guyana.

2.1 Coastal Zone Management

The coastal plain of Guyana occupies approximately 7% of the total land area of the country. The shore zone consists of coastal works, mud banks, a mangrove belt and sand flats, all of which serve to protect the coastal plain from flooding by the sea. Five major wetland ecosystems are distinguished in the coastal plain: the marine ecosystem of the sea coast, the estuarine ecosystems of the tidal wetlands of the river mouths, the riverain, palustrine and lacustrine ecosystems. Agriculture is the major economic activity accounting for more than about a quarter of the GDP and 35-40% of employment, and except for forestry, all the products (sugar cane, rice, other crops, livestock and fishing) come from the coastal area. Groundwater provides 90% of the potable water supply and is extracted mainly from coastal artisan basin.

2.1.1 Major coastal zone management issues

Coastal zone management issues center on coastal erosion and flooding. The coast lies below sea level and must be protected against sea water intrusion in order to support its extensive human settlement and Guyana's intensely concentrated economic base. The system of sea defenses constructed to protect the area from sea water flooding has not been maintained in many years. Sea-level rise and possible coastal subsidence add to the pressures on the sea defenses and inevitably, lead to greater coastal erosion and flooding. The shore zone which serves as the natural line of defence against coastal erosion, is subject to erosion from floating mud shoals in the Atlantic that originate in the Amazon and to the destruction of mangroves for fuel-wood and the tanning industry, and to some lesser extent removal of sand for construction. The water conservancies and drainage and irrigation works in the coastal plain, which have also suffered from lack of maintenance and are malfunctioning, cause periodic fresh water flooding. Flooding destroys the value of the country's physical capital, and agricultural lands remain out of production for at least a year once it is intruded by saline water. Floods also have serious public health consequences in the coastal areas.

Drainage and irrigation (D&I) systems in Guyana have profoundly altered the natural surface water regime and as such might be expected to have significant environmental impacts. No structured monitoring of D&I effects is conducted except in the MMA-ADA Project. The MMA is a large river control project which has resulted in higher levels of productivity for agriculture, especially rice, but there has been some adverse environmental impacts. The most serious is the accelerated growth of water hyacinth, which clogs the drains and waterways and further slows water movement resulting in siltation. The siltation is more pronounced at the mouth of the river with the formation of a large mud-bank that will require dredging. Other impacts of the MMA Project have included eutrophication, loss of trees and mangrove ecosystem.

2.2 Natural resources management

Guyana is richly endowed with natural resources, consisting of a fertile coastal plain, substantial water resources, abundant rain forests and mineral resources, and diverse flora and fauna, much of it endemic. Rain forest resources cover some 169,000 km^2 thus accounting for over 75% of the total land area. Within the last decade Guyana's abundant natural resources have been increasingly being targeted for exploitation by private investors.

In order to improve the management of Guyana's natural resources in a sustainable way, a Natural Resources Management Project (NRMP) commenced in 1994 under a Technical Cooperation Agreement between the Governments of Guyana and Germany.

The project is intended to support decision making on natural resources management by supplying reliable and accurate information to national institutions. The project will develop a database on natural resources, establish land use planning procedures, prepare policy guidelines and legislation for natural resources management and strenghtening institutional capacity.

2.2.1 Major natural resources management issues

2.2.1.1 Watersheds

Forest cover in the watersheds facilitates the infiltration of rainwater into the ground and thereby protects against flash flooding, inadequately charged aquifers, and erosion.

The watersheds in the coastal plain and in the sandy rolling lands that supply the conservancies have not been protected or managed for water production and some of the forest cover there has been lost to competing activities, such as bauxite mining, agriculture and harvesting of fuel-wood and poles. The forests nearest to urban centres and the coast, have been heavily exploited for fuel-wood by household and industrial users and have also suffered repeated wildfires from charcoal and agricultural production.

Most of the watercourses from the watersheds are also subject to competing demands for drinking water and as receptacles for domestic and industrial waste. As a consequence, much of the coastal plain's supply of potable and irrigation water may be polluted. Deforestation may also explain the more frequent and less predictable flooding of the coastal plain. While no clear picture emerges of the extent of the deforestation, potential development pressures could have serious consequences for these critical watersheds unless preventive measures are taken ahead of time.

2.2.1.2 Forestry

The total land area of Guyana is 215,000 km^2, of which 169,000 km^2 are forested, thus, more than 75 percent of the country's land resource is under forests (16.5 million hectares). The mangroves, marsh forests, dry evergreen forests, seasonal forests, lowland rainforests, and montane rainforests contain more than 8,000 tree and plant species. The forests are contiguous with the Amazon Basin and represent one of the least disturbed parts of the region. Most forest utilization has occurred within 100 km of the coast, major rivers or main roads. Utilization,

particularly timber harvesting, is low in intensity and generally results in little disturbance to the forest structure.

State forest comprises 13.58 million hectares, or 82% of the total forested area and 63% of the total land area of Guyana. Significant forested areas outside the State Forest boundary include the Pakaraima Mountains, Kaieteur National Park and Amerindian lands.

Forest concessions in the form of State Forest Permission, Woodcutting Leases and Timber Sales Agreement granting the right to cut and remove timber or other forest produce from State Forests have been awarded for 4.785 million hectares or 35 % of the forest estate.

State Forest Permission (SFP) is granted on an annual basis for an area up to 8,000 hectares. Permits are granted to individuals, artisans and community groups to encourage economic activity and development in hinterland areas.

Woodcutting Leases (WCL) grant exclusive rights to timber resources within an area less than 25,000 hectares for a period of three to ten years.

Timber Sales Agreement (TSA) grant exclusive rights to timber or other forest produce within an area more than 25,000 hectares for a period of twenty years or more.

In order to ensure that forest resources are used in a sustainable way GFC has been increasing its capacity to monitor forestry operations.

2.2.1.2.1 Environmental impacts of logging

The impacts vary with the size of the concession and the conditions attached to the logging permits, and each stage of the logging activity has a separate impact on land, soil and water. Because of lack of baseline data, the environmental impacts of logging activities can only be described in qualitative terms, since there was previously no reliable source as to the magnitude of the various impacts. This situation is currently being addressed by the Environmental Unit of the GFC on their regular and unscheduled visits to forest concessions. The following are perceived to be the main impacts from logging activities.

2.2.1.2.1.1 Exploitation of greenheart

Greenheart is a well-known Guyanese timber species and is of such intense commercial interest that foresters have a tendency not to harvest other species in those areas where the greenheart is most concentrated and of best quality. Previously, there was no conclusive evidence of over-harvesting of greenheart, but ongoing studies are revealing the true status of this species.

Efforts to commercialize other species in export markets to take the pressure off the potentially dwindling greenheart resource has met with some success. The largest concessionaire, Barama Company Limited, has established an integrated logging and plywood product system based on harvesting about twelve plywood species. The Barama operation represents a technological and commercial breakthrough for the utilization of large quantities of lesser known species and an

opportunity for more intensive, though sustainable, utilization of Guyana's forests. The company has contracted the Edinburgh Centre for Tropical Forests (ECTF) to undertake monitoring of its environmental impacts and research to benefit its operations.

2.2.1.2.1.2 Impacts on forest ecosystems

Harvesting and extraction operations inevitably cause some damage to the forest ecosystems. Watercourses and steep slopes are particularly vulnerable to the impact of logging activities and therefore must be restricted at those sites. Gaps are opened in the canopy which allow heat and light to penetrate to the forest floor; the sudden heat and light cause drastic changes in the micro-climate and as a consequence many seedlings die from shock. Large gaps become colonized by pioneer species and so the species composition of the forest will change over the long term.

Felling and skidding can cause damage to the trees which will make up the next harvest and may hinder or prevent new seedlings from emerging. Removal or destruction of too many trees can cause excessive loss of nutrients essential to the growth and regeneration of the forest. Animals important to seed dispersal are not safeguarded and protected buffer strips along watercourses are not always respected.

Forest roads have a major impact on forest fauna by creating a barrier to the movement of animals by dividing natural territories and disturbing drainage patterns. Forest roads were generally wider than required and inadequate attention has been given to erosion control and drainage.

The main impacts of forestry exploitation on rivers and streams are increased turbidity caused by soil erosion from logging, increased biological oxygen demand from the discharges of organic waste from sawmilling, and oil pollution from the discharge of petroleum products. The GFC is addressing these problems through the FMP. GFC has already issued regulations to protect rivers from the effects of logging wastes. Some concessionaires have been utilizing some of the waste as a source of energy.

Forestry exploitation, as practised in Guyana, does not tend to lay bare large expanses of soil or lead to serious soil erosion and land slides. For economic reason concessionaires avoid logging in excessively wet conditions, when the soil is most prone to erosion. The forestry research programme at the Barama concession includes studying the impact of forest operations on soil properties, with a specific focus on soil compaction, erosion and loss of fertility. Research findings are made available to the GFC which can then apply it to the entire forestry sector.

2.2.1.2.2 Management of the forests

The management of the forests of Guyana has not been sufficiently studied to generate a proven silviculture system. In-depth inventories are lacking as are data on growth either in the undisturbed natural forest or in logged-over areas. The Government is aware also that the scale of the forestry exploitation that is currently envisaged will need to be carefully designed, regulated and monitored, if Guyana is to avoid the plight of so many countries where the rain forest has been degraded and, even destroyed. Destruction of the rainforest could have climatic

effects and would destroy valuable biodiversity resources including medicinal plants, and will inevitably lead to land degradation. Furthermore, the forest provides a habitat for wildlife, is a potential source of income from eco-tourism and is becoming of international significance for scientific and tropical forestry research.

Guyana's forests have been exploited on a low-intensity level, with operations localized in the more accessible areas. Exploitation has been increasing in extent and intensity with the introduction of more log wood alternatives (plyboard, mechanical pole making), modern harvesting techniques and the development of new marketing opportunities. New regulations and guidelines will ensure that harvesting is carried out in accordance with the current scientific knowledge of the forest and the best forestry practice. The Government has therefore emphasized its interest in the promotion of sustainable management and conservation of forests in Guyana in keeping with the Convention on Biological Diversity and Agenda 21. In this regard, the Guyana Forestry Commission has prepared a National Forest Plan based on the National Forest Policy, a Code of Practice for Forest Operations, Guidelines for the Preparation of Forest Management Plans and other relevant regulations.

The Code of Practice for Forest Operations is a set of guidelines and requirements covering all aspects of timber harvesting in Guyana and concentrates on timber harvesting, regulations covering the utilization of non-timber forest products and the management of forest resources. One of the objectives of the Code of Practice is to provide a framework for the monitoring of forestry operations.

An Exploratory Permit grants the right to occupy an area of state forest for a period not exceeding three years for the purpose of carrying out operations for the discovery and evaluation of forest produce. An Exploratory Permit is granted before a WCL or TSA is issued. Exploratory operations are carried out to provide information necessary for the preparation of an investment proposal, environmental and social impact assessments and a forest management plan. The EIA identifies the likely adverse impacts of the operation at each stage of the logging activity and specifies the measures that will be taken to mitigate the impact. The FMP will also identify, in the inventory of the concession area, key ecosystems and habitats for protection. Harvesting intensity, methods and timing will be based on these findings.

The EPA has entered into a Memorandum of Understanding with the GFC that provides for cooperation in the assessment and monitoring of Environmental Impact Assessment (EIA). Before any operation can commence in a forest concession the company must submit an EIA for approval by the EPA and GFC.

Initiatives have also been taken to promote forest certification through an agreement with UNDP Global Programme on Forests (PROFOR) to establish a national certification body affiliated to an international body.

As a further expression in demonstrating its strong commitment to the conservation of tropical rain forest, the Government of Guyana in 1989 dedicated 360,000 hectares of its Amazon rain forest to the international community for a pilot research project to conserve biological diversity and to promote sustainable management and utilization of the Iwokrama Forest. Since then the Commonwealth Secretariat in collaboration with the Global Environment Facility commenced

financing the establishment of an International Centre to conduct research in the Iwokrama forest. This institution has evolved into the Iwokrama International Centre for Rain Forest Conservation and Development which is responsible for the conservation and sustainable management of the Iwokrama forest.

2.2.1.3 Wildlife

There is an abundance of wildlife resources mainly in the forests of Guyana of which a significant amount is harvested for the export trade and consumed as exotic meat. Export quotas, based on an empirical export formula have been devised by the government in conjunction with CITES.

There is no significant management of wildlife resources and the Wildlife Division of the Office of the President which regulates the wildlife trade does not have the necessary capacity to function effectively.

Trapping of the various species is done on a country-wide basis and principally by trappers who may or may not have knowledge of the concept of sustainable use of wildlife resources and who believe that the population of species exploited are large. However, information gathered indicate that there is over exploitation of wildlife.

Empirical data does not exist for effective species management and decision-making. The CITES Secretariat has indicated that unless detailed scientific wildlife surveys are done, and Guyana's wildlife export quota justified on the basis of concrete data, the Secretariat may be forced to suspend the trade from Guyana. This would have serious consequence for the country in general, and in particular, exporters, trappers and all others involved in the trade. Given the country's critical unemployment levels, extremely low per capita income and foreign exchange shortages, this would create significant problems at the national level. In addition, this could result in increased illegal wildlife trade through the border countries, further increasing wildlife species depletion.

Guyana has recently developed its National Biodiversity Action Plan which presents a comprehensive framework for addressing the need to indentify, monitor and sustainably use wildlife. This could only be achieved by strengthening agencies and groups involved in biodiversity management, implementation of research programmes, maintenance of national databases on biodiversity, and the development of national policies on wildlife, fisheries and other biodiversity.

A few projects have been initiated for the protection and conservation of wildlife. The Iwokrama International Centre for the Rain Forest Conservation and Development has implemented a wildlife management programme involving the Amerindian communities adjacent to the Iwokrama forest.

World Wildlife Fund-Guianas Forests and Environmental Conservation Project (WWF-GFECP) in collaboration with the Marine Turtle Conservation Society of Guyana have recently implemented a project focusing on monitoring and conservation of sea turtles in Guyana. The WWF-GFECP has provided a sum of US$30,000 for this project.

The sand and shell beaches between Moruka River mouth and Waini Point on the north-west coast are the nesting grounds for four species of marine turtles: the leatherback, the hawksbill, the olive ridley and the green turtle. Despite legislation to protect the turtles, intense exploitation of the turtle and their eggs for food has resulted in ever decreasing populations and a threat of their extinction.

The WWF-GFECP is also providing US$188,000 to fund a project on the development of a species management plan for wildlife trade in Guyana, which will be implemented by the EPA in collaboration with the National Biodiversity Advisory Committee and the Wildlife Division of Office of the President.

2.2.1.4 Fisheries

Provisions for the management of fisheries resources is inadequate in the absence of a fisheries policy and plan although there is in existence a Ministry of Fisheries, Other Crops and Livestock. A draft fisheries Management and Development Plan for the period 1994-2004 presents a fairly comprehensive overview of the fisheries sector but is yet to be finalized. Elements of this plan are reflected in the National Development Strategy. Factors which threaten the resource base, such as over harvesting of certain species of marine fisheries, the under-utilization of certain groups, as well as pollution due to mining and the use of chemicals and pesticides in the agriculture sector are identified as issues that demand attention.

2.2.1.5 Biological diversity

Guyana, being a part of the Amazon Region, is very rich in biological diversity. The Country Study of Biological Diversity of 1992 provides the only consolidated documentation of the country's biological diversity (Animals 2296 and Plants 6,136). Additional sets of data provided through several initiatives to inventories the country's biota have substantially updated the available information. Even with the limited knowledge of the country's biodiversity richness, it is safely suggested that this biodiversity has been reasonably well preserved. The country's small population, its low level of industrialization, and the technology applied in most sectors, are factors which would have contributed to the preservation of this biodiversity. However, with the recent increase in activities in the natural resources sectors and a corresponding rate of utilization of the biological resource base raises real possibilities of increased threat to biodiversity.

Guyana is a party of the Convention on Biological Diversity and has recently completed the National Biodiversity Action Plan. The EPA is the National Focal Point for the CBD. It is responsible for biodiversity and has a National Biodiversity Advisory Committee.

Guyana will have to mobilize considerable financial and technical resources to develop the capacity necessary to implement the Convention and the Action Plan as these resources are not available in the country.

A number of institutions and programmes focus on biodiversity research. The Smithsonian Institution which operates a Biological Diversity of the Guianas Programme, has a part based in Guyana. The University of Guyana is the local partner. This programme has resulted in the establishment of the Centre for the Study of Biological Diversity located on the University

Campus. The Smithsonian Institution has recently expanded its efforts to study the country's fauna.

The Flora of the Guianas Project which commenced in 1983 aims to document the flora of the three Guianas. Apart from the Smithsonian Institution there are eight other institutions: the New York Botanical Gardens, Kew Gardens, the National Museum of Paris, the National Museum of Berlin, Utrecht University, Anton de Kom University, ORSTROM, and the University of Guyana.

2.2.1.6 Protected areas

Guyana has only one protected area, the Kaiteur National Park with an area of 112,322 hectares or less than 0.8% of the forest estate. The proposed National Protected Areas System Project would contribute to ecosystem and biodiversity conservation, watershed protection and the country's cultural heritage. Project components include the design and identification of a Protected Areas System and selection of protected areas; supporting the management and development of two pilot areas; institutional strengthening and training; legislation and policy development, and the identification of long term sources of financing.

Such a project was developed with a donor agency, but has encountered problems of an external nature which threaten to delay or jeopardize its implementation. This is one of the projects proposed for implementation in the NBAP.

2.2.1.7 Ecotourism

Guyana, with an abundance of biological diversity, has vast potential for ecotourism. However, this will greatly depend on the proposed National System of Protected Areas as a pre-requisite for the development of an ecotourism industry. Environmental education and public awareness and the development of physical infrastructure are also essential components of such an industry. The services necessary for this industry are usually provided by the private sector with some incentives given by the government.

2.3 Mining

The exploitation of economic minerals in Guyana is currently limited to gold, bauxite, alluvial deposits of diamonds, and some silica sand.

Bauxite used to be the most important sub-sector in the mining industry in Guyana. However, gold production has been contributing more to the Gross Domestic Product than bauxite with a very significant level of production by Omai Gold Mines Limited.

Private sector mining in Guyana consists mostly of small operators exploiting mines tracts for gold and diamonds. Within the last decade, improvements in the policy regime for foreign investors and the establishment of a more realistic price for gold purchased by the Gold Board, have resulted in several agreements with large firms, including Omai Gold Mines Limited for, increased exploitation and in a higher level of declared gold production by small-scale miners.

In an effort to regulate small-scale mining, the Guyana Geology and Mines Commission (GGMC) has introduced Environmental Management Agreement (EMA) for medium-scale operations, which aims at promoting environmentally safe mining by minimizing all disturbances to the environment, and restoring the same, following the termination of mining. The EMA covers all aspects of mining, including the use of equipment, sedimentation control, vegetation removal, excavation holes, the storage and disposal of chemicals and fuel, and the handling and use of mercury.

Introduction of EMA and EIA could substantially reduce the negative environmental aspects of mining, providing that government agencies develop the capacity to monitor and regulate the operations.

Environmental Management in the mining sector has been strengthened with the formation of the CIDA – Guyana Environmental Capacity Development Mining Project (GENCAPD), which was initiated on 1 October 1998, with the signing of a Memorandum of Understanding between the governments of Guyana and Canada.

GENCAPD`s main objective is to strengthen environmental management capacities in the Guyana Geology and Mines Commission (GGMC), the Environmental Protection Agency and the Gold and Diamond Miners Association, with the main emphasis being placed on the GGMC. As a capacity building project, planned project activities focus on systems and human resource development .

An Action Plan for capacity building and regulatory development to address the potential environmental effects of placer mining in Guyana has been developed. Emphasis will be placed on evaluating the importance of environmental effects in the context of competing resource uses and sustainable development.

2.3.1 Environmental issues in the mining sector

Environment impacts vary for each of the mining sub-sectors depending on the scale of the gold and bauxite projects. The large bauxite projects were initiated without an EIA and, in general, have been operating without any constraints imposed by environmental regulation and inspection. The small-scale gold and diamond mining activities are also not subject to environmental controls. These gold and diamond mining operations concentrate on maximizing profits, without any concern for the amount of natural resources utilized in the process or the environmental effects caused by the activity. Data to quantify environmental impacts are lacking since there has been little or no monitoring.

However, with the establishment of the Environmental Protection Agency and the formation of an Environmental Division at the Guyana Geology and Mines Commission, it is expected that monitoring of environmental impacts will be greatly strengthened.

Environmental impacts in the bauxite mining areas of Linden and east Berbice includes mined out pits, excavated lakes and ponds, and silica sand dumps which have not been rehabilitated or revegetated.

2.3.2 Land degradation

Land degradation from the mining operations takes several forms. Around the bauxite mines, there are high levels of acidity in the waste dumps, residual lakes, and tailings dam, which could be releasing acid leachate into ground and river waters, and which prevent natural revegetation. The bauxite tailing dam at LINMINE needs to be stabilized and revegetated to prevent acid drainage into ground and river waters. In addition, during its operating life, the alumina refinery at LINMINE discharged approximately three million tonnes of red mud (the waste product from the pressurized vats) that contain large quantities of caustic soda, which is still stored in a tailing or settling pond adjacent to the refinery. No information is available about leachate from the stored red mud, but fear that contamination has occurred is realistic.

2.3.3 Water pollution and river degradation

Degradation of rivers and streams and pollution of surface and ground waters result from all the mining activities in Guyana. Because of the absence of environmental controls, the extent and severity of the pollution and degradation cannot be quantified, or even, always qualified.

2.4 Land degradation in Guyana

As was mentioned earlier, the major environmental problems which have implications for land degradation in Guyana are related to coastal zone management, natural resources management and mining. Consequently, the areas affected will be various parts of the Coastal Plain, deforested areas located on the Hilly Sand and Clay Region and the bauxite and gold mining areas. The Coastal Plain would include parts of Regions 1 – 6. The communities affected by mining are those located in the mining areas or in close proximity of the mining activities. It is important to mention that not all of the areas associated with environmental problems suffer from land degradation. However, if the issues are not addressed in a the near future, there exists the potential for the land resource to become degraded in the long term.

2.5 Public awareness and education

In Guyana today, the level of public awareness about general environmental issues is very low and the level of public awareness on desertification or land degradation is non-existent.

Although desertification is not a new word, people tend to quickly associate it with deserts, or vast expanses of brown sand with intense heat (from the sun) and African countries. “Land degradation” is not a well known concept but to equate it with “desertification” very often leaves people’s mind unclear as to the exact relationship between the two terms.

A national awareness programme on the implementation of the CCD and land degradation issues would have to be planned and implemented as part of the sensitization process. The EPA has the legal mandate for environmental education and awareness through the Environmental Protection Act of 1996, and it formally established an Education, Information and Training (EIT) Division. Therefore, it is envisaged that all public awareness relating to the CCD will be organized under the purview of the EPA.

The Ministry of Education has incorporated environmental education into the regular social studies programme of public school education. The University of Guyana provides a number of courses relating to the environment within the Faculties of Natural Sciences and Agriculture. Environmental Studies is a degree programmme whilst forestry is offered as a diploma and degree programme.

2.5.1 Role of non-governmental organizations

There are not many NGOs, including women and youth groups, operating in Guyana and they are involved in a number of issues including public awareness on topical issues and advocacy on environmental matters. Though limited in numbers, the local NGOs have been involved in monitoring of developers and investors, especially companies involved in the areas of forestry and mining.

2.6. Involvement of local communities

Forests are an integral part of Amerindian culture. Today approximately 40,000 Amerindians occupy and have legal title to some 1.4 million hectares of land, much of which is forested. Forest resources are important to Amerindians for food, medicines, building materials, fibres for textiles and weaving and tannins and dyes. Wildlife, fruit, seeds and nuts are also gathered for food. Medicines are obtained from more than 130 plants species. Some communities have undertaken commercial harvesting of the resource. The Guyana Forestry Commission provides communities with technical and commercial advice and is trying to introduce greater consultation between the large timber companies and local communities (mainly Amerindians) that live either within or adjacent to their license area.

The creation of a Ministry of Amerindian Affairs in 1992 has allowed for a better participatory role for indigenous peoples in national events. Most local communities participate in national development through an institution called Regional Democratic Councils within the Ministry of Regional Development.

2.7 Drought in Guyana

In the years 1997and 1998 the warmest global sea surface and air temperatures on record were associated with the strongest recorded El Nino. This influenced anomalous precipitation in many parts of the world with dire consequences including droughts, forest fires, floods, intense hurricanes in the Pacific and tornadoes in the United States. Guyana was among the countries severely affected by drought and forest fires that a state of emergency had to be declared on the 26 March 1998. Although the country suffers from prolonged periods of the dry season drought is not a regular phenomenon

The information provided by the Hydrometeorological Department indicates that the 1997/98 drought began as a meteorological drought. By the end of October 1997 there were grass fires indicating that physiological drought was in effect, at least in the well drained areas and by early February1998, following what can be considered a failure of the Secondary Wet Season, very low levels in rivers and water conservancies were being reported with saline intrusion approximately 48 to 64 km upstream of the coastal rivers. As a consequence, there was an acute

shortage of irrigation water for agriculture. In some areas, creeks and reservoirs had completely dried up, necessitating the importation of water for drinking purposes. The lack of water for the use of pressure pumps impeded gold and diamond mining. Evidently hydrological as well as societal and economic drought were additionally present.

By late February 1998, forest fires were being reported at Mabura indicating the spread and intensification of physiological drought to the more resilient forested areas. In March 1998 fires were reported in other forested areas and grasslands inclusive of locations in Regions 1 and 9. Root crops were severely damaged by the increased soil temperatures in Region 9. The increased evapotranspiration influenced by high temperatures, the fast draining soils and the rainfall deficit in the river catchments exacerbated the drought in this region. Fortunately, the sugar and rice industry maintained high production levels.

CHAPTER 3 PAST AND PRESENT PLANS AIMED AT COMBATING DESERTIFICATION AND DROUGHT

This chapter highlights the policies, plans and strategies formulated at the sectoral and national levels to address natural resources management, sustainable land use, mining and environmental management. These policies, plans and strategies have been developed within the context of sustainable development creating a framework conducive to the implementation of the CCD. They will also assist in the development of the National Action Programme.

3.1 National Development Strategy

The draft National Development Strategy represents the highest level of national planning. It is an integrated document outlining the national strategy and policy in a number of priority areas including agriculture, environment, forestry, fisheries, mining, tourism and the eradication of poverty. The Strategy has been formulated through an unusually national participatory effort and serve as a framework for policy and planning in the respective sectors of the economy.

3.2 National Environmental Action Plan

The National Environmental Action Plan (NEAP) of 1994 summarizes the national environment policy and focuses on coastal zone management, natural resources management including land resources, biodiversity, wildlife, forestry and ecotourism, waste management and pollution control, and mining. It also takes into consideration the role of public awareness and education in addressing environmental problems. The NEAP also identifies and recognizes the roles and functions of relevant stakeholders including private sector and non-governmental organizations in environmental management. The NEAP is currently under review through stakeholders participation and involvement.

The legal mandate for environmental protection resides with the Environmental Protection Agency 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 Act requires environmental impact assessment (EIA) to be prepared for projects that may significantly affect the environment. The Act states that an environmental permit is required for projects involving the extraction and utilization of natural resources.

The EPA is in the process of drafting a strategy for Integrated Coastal Zone Management (ICZM). ICZM is a continuous and dynamic process that aims at promoting sustainable use, development and protection of coastal and marine resource; overcoming disproportion in sectoral developments; overcoming legal and institutional fragmentation and enhancing economical development.

In an effort to fulfill its obligations under the Act, the Environmental Protection Agency is doing the following:

- Coordinating the activities of the Integrated Coastal Zone Management committee established since January 1999;
- Development of a draft strategy for Integrated Coastal Zone Management;
- Creation of a database of coastal resources to facilitate improved integrated coastal zone management;
- Coordination of the implementation of Component 3 - Inventory of Coastal Resources and Uses and Component 6 – Coastal Vulnerability and Risk Assessment of the Caribbean Planning for Adaptation to Climate Change (CPACC) project;
- Strengthening the institutional setup for ICZM;
- Create a dynamic public awareness campaign to bring about deeper and more meaningful appreciation of the vulnerability of the coastal zone to sea level rise and climate change.

3.3 National Biodiversity Strategy and Action Plan

The National Strategy for the Conservation and Sustainable Use of Guyana's Biological Diversity of 1997 articulates the national policy and strategy relating to the study, conservation and sustainable use of biodiversity. The legal mandate for biodiversity conservation and management resides with the EPA, conferred by the Environmental Protection Act of 1996. This agency is also the National Focal Point for the Convention on Biological Diversity.

The National Biodiversity Action Plan (NBAP) is a product of the national policy on biodiversity which laid the basis for the development of Actions to promote the national objectives relating to biodiversity through the identification of priorities and the enunciation of policies and strategies. The overall goal of the NBAP is to promote and achieve the conservation of Guyana's biodiversity to use its components in a sustainable way, and to encourage the fair and equitable sharing of benefits arising out of the use of Guyana's biodiversity. Overall responsibility for coordinating implementation of the Plan rests with the Environmental Protection Agency.

A total of thirty-two projects and other activities have been proposed in the Action Plan. Projects and other actions are linked as clusters under programme areas. The mobilization of financial and technical resources are critical to the implementation of the Action Plan.

3.4 Fisheries Management and Development Plan

Provisions for the management of fisheries resources is inadequate in the absence of a fisheries policy and plan although there is in existence a Ministry of Fisheries, Other Crops and Livestock
A draft Fisheries Management and Development Plan for the period 1994-2004 has been prepared and is yet to be finalized. Elements of this plan are reflected in the National Development Strategy.

Fisheries resources utilization in Guyana is regulated under some four different pieces of legislation, all of which are outdated and inadequate. Revision of the existing legislation and finalization of the Fisheries Management and Development Plan will provide a strong basis for the management of fisheries resources. An integrated management approach for the fisheries sector should be developed involving all the agencies with responsibility for fisheries and biodiversity.

3.5 National Forest Plan

The draft National Forest Plan (NFP) of July 1998 takes into consideration the National Forest Policy of 1997 and proposes a range of activities under five programme areas including land use, forest management, research and information, forestry training and education, and forest administration and governance. The overall objective of the National Forest Policy is the conservation, protection, management and utilization of the nation's forest resources, while ensuring that the productive capacity of the forests for both goods and services is maintained or enhanced.

A Code of Practice for Forest Operations and Guidelines for the Preparation of Forest Management Plans have already been prepared by the Guyana Forestry Commission in 1998 and 1999 respectively.

The EPA has entered into a Memorandum of Understanding with the GFC that provides for cooperation in the assessment and monitoring of Environmental Impact Assessment (EIA). Before any operation can commence in a forest concession the company must submit an EIA for approval by the EPA and GFC. Environmental and social impact assessment are required for the preparation of the forest management plan. The GFC has also established an Environmental Monitoring Unit to monitor all environmental matters pertaining to forestry.

The National Forestry Action Plan (NFAP) for 1990-2000 aimed to achieve the sustainable and efficient use of the forestry resources of Guyana for purpose of social and economic development through the development of projects. However, most of the projects identified were not implemented because of inadequate funding.

The forestry legislation of Guyana include the Forests Act of 1953 and the Guyana Forestry Commission Act of 1979 have been revised. The revision took into consideration sustainable forestry management, fee structures to reflect the value of various components of the forest and marketing requirements. The revised legislation has been forwarded to the Cabinet Sub-Committee on Natural Resources and the Environment for reviewing before being presented to Cabinet.

3.6 Land use planning

Land use planning plays an important role in the conservation and wise use of natural resources such as land resources by creating a suitable framework within which these uses can occur. The land use planning component of the NRMP which commenced in 1994 also had a provision for groundwork studies aimed at laying the foundation for the development of land use policy. A project was undertaken to produce a baseline document on land use that the Government can accept as an instrument that will inform land use policy for Guyana. As a result, a draft National Land Use Policy has been prepared and is being considered at Cabinet level.

It should be mentioned that Guyana has officially adopted the Methodology for Ecological-Economic Zoning (EEZ) proposed under the Treaty for Amazonian Cooperation. This methodology provides for a common methodology for land planning and use in the wider

Amazon region based on bio-physical (abiotic and biotic) and socio-economic variables. It aims to promote the integrated use of these variables into a method of planning based on units called "Integrated Terrain Units".

Land use methodologies adopted in Guyana should take into consideration the EEZ methodology, the Ecosystem Approach proposed by the NBAP, and the experiences and lessons derived from the on-going NRMP project.

Relevant land use instruments include the Town and Country Planning Act, the State Lands Act, the Forests Act, the Drainage and Irrigation Act, the Kaiteur National Park Act, and the Amerindian Act. Guyana has no specific land use legislation.

3.7 Combating drought

3.7.1 Early warning systems

The Government of Guyana, through the Hydrometeorological Department, should as a matter of priority develop early drought warning systems through the adoption of a regional approach with affected countries of the Caribbean region. Guyana can also work in close collaboration with countries of the Amazon Basin under the Treaty for Amazonian Cooperation, especially with regards to El Nino forecasting. Brazil and Peru have considerable expertise in drought forecasting in the region.

3.7.2 Civil Defense Commission

In accordance with cabinet decision of 2 June 1997, there was established in Guyana a permanent body, the Civil Defense Commission (CDC) dedicated to the establishment and maintenance of an effective disaster system in Guyana.

The CDC was inaugurated on August 16, 1997 and its proposed terms of reference, organizational structure and membership adopted. The Terms of Reference of the CDC are as follows:

- To identify disasters according to established criteria and classification;
- To produce plans for the management of National Disasters;
- To identify and implement mechanisms for disaster response and mitigation;
- To maintain a permanent body and to enhance the national capacity for disaster management services;
- To train human resources involved in disaster response mechanisms;
- To educate at all levels in the tenets of disaster responses.

Operational finances are acquired from three main sources: Government funds, contribution from local donors and from appeals to the international community.

CHAPTER 4 MECHANISM FOR COORDINATION OF 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 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 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 major agencies are the Environmental Protection Agency, Ministry of Agriculture, Guyana Geology and Mines Commission, Guyana Forestry Commission, Guyana Natural Resources Agency and the National Agricultural Research Institute. The President of Guyana has the mandate for environmental issues including climate change and desertification. The President has an Adviser with responsibility for science, technology, and the environment and who is also the Chairman of the Board of Directors of the EPA. The Adviser is also the Chairman of the Natural Resource and Environment Advisory Committee comprising members of public agencies, with specific responsibility for the environment and natural resource sector. There is also a Cabinet Sub-Committee on Natural Resources and Environment.

This configuration constitutes the legal and institutional framework for environment and natural resources management, policy formulation, decision-making, implementation and coordination. All the public agencies operating in the environment and natural resource sector (are located in the city of Georgetown) and operate within the broad framework of the NEAP to comprehensively address their local-specific environment and natural resource concerns. The National Action Plan to Combat Desertification will, therefore, be implemented within this broad-based institutional framework involving the Office of the President, the EPA and public agencies within the environment and natural resource sector. The EPA should have the responsibility for coordinating the implementation of the NAP to avoid some duplication of efforts since it already has the responsibility for implementing the National Biodiversity Action Plan.

4.2 National Coordinating Body

The National Climate Committee (NCC) operates within the Office of the President to oversee all activities relating to climate change, ozone depletion and desertification and reports to the NREAC through its chairman, the Chief Hydrometeorological Officer. The NCC comprises of some sixteen agencies which are relevant to climate change and desertification include, among others, the Environmental Protection Agency, Hydrometeorological Department, Guyana Forestry Commission, Guyana Natural Resources Agency and the Ministry of Agriculture. The NCC has been designated the National Coordinating Body (NCB) for the implementation of the CCD.

As the National Focal Point, the Office of the Adviser to the President on science, technology and environment has the coordinating function for the preparation of the first National Report on the implementation of the CCD.

The NCB is not a statutory body and does not have financial autonomy. Its functions and responsibility as they relate to land degradation and drought are primarily to give advice, guidance and oversee the planned activities relating to the elaboration and implementation of the NAP to Combat Desertification. Perhaps this responsibility would be managed more effectively by a Sub-Committee or a Task Force comprising members of the NCC, the private sector and non-governmental organizations, including community-based organizations and women and youth groups. The Sub-Committee or Task Force should operate under the purview of the EPA since this agency has the responsibility for environmental management, including land degradation and environmental education and information. The NCC meets regularly on a monthly basis at the Office of the President.

4.3 Participatory process for the preparation of the NAP

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

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, and 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 programme focusing on assisting the public on the purpose of the NAP, the CCD and issues related to land degradation so that stakeholders` contribution to the process will be more informed.

CHAPTER 5 INDENTIFICATION OF RESOURCES FOR THE IMPLEMENTATION OF THE CCD

5.1 Financial resources

Public agencies which are responsible for environmental and natural resources management, including activities to combat land degradation, include the Environmental Protection Agency, Ministry of Agriculture, Guyana Geology and Mines Commission, Guyana Forestry Commission, Guyana Natural Resources Agency and the National Agricultural Research Institute. The financial resources necessary for these agencies to implement their sustainable development programmes, including sustainable 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;
(c) public awareness and education programmes, 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

So far no external funding has been received by the government to directly support the implementation of the CCD. However, 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 commenced in 1995 and is being funded by the UK Department of International Development (UK DFID).

- Natural Resources Management Project (NRMP) commenced in 1994 under a Technical Cooperation Agreement between the Governments of Guyana and Germany. The German Government is providing a grant of US$4.5 million.

- Land Administration Project implemented by the Ministry of Agriculture and funded by the IADB and UK DFID.

- Rehabilitation of the East Demerara Water Conservancy Embankment and Structures is also being implemented by the Ministry of Agriculture and funded by the Government of Guyana and IADB.

- Canadian International Development Agency–Guyana Environmental Capacity Development Mining Project (GENCAPD) initiated on 1 October 1998, for implementation by the Guyana Geology and Mines Commission.

- World Wildlife Fund-Guianas Forests and Environmental Conservation Project (WWF-GFECP) in collaboration with the Marine Turtle Conservation Society of Guyana have recently implemented a project focusing on monitoring and conservation of sea turtles in Guyana. WWF-GFECP has provided a grant of US$30,000.

- WWF-GFECP is also providing US$188,000 to fund a project – Development of Species Management Plan for Wildlife Trade in Guyana, which will be implemented by the EPA in collaboration with the National Biodiversity Advisory Committee and the Wildlife Division of Office of the President.

- Integrated Coastal Zone Management Project is being implemented by the EPA and funded by the Inter-American Development Bank. A part of the project - Coastal Resources and Uses and Coastal Vulnerability and Risk Assessment of the Caribbean Planning for Adaptation to Climate Change (CPACC) is GEF funded and implemented in Caribbean countries by the OAS.

- The Iwokrama International Centre for Rain Forest Conservation and Development was legally established in 1996 to conserve biological diversity and to promote sustainable management and utilization of tropical rain forest through research programmes.

- The Tropenbos-Guyana Programme established in 1989 by the Tropenbos Foundation is a programme dedicated to forest research. The programme has a number of technical publications based on the research activities successfully undertaken.

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

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; biosafety; biosystematics; information, public awareness and training; intellectual property; conservation; biotechnology; climate change and climate modelling 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 EPA as the institution which may be responsible for the implementation of the NAP will have to increase its capacity to mobilize adequate resources, coordinate programme activities, facilitate the integration process and to monitor and evaluate progress. The relevant institutions at the national and sectoral levels will also have to strengthen their capacity to integrate programmes and activities into their planning process.

It has been recognized, that the NAP cannot be implemented without the financial and technical resources provided by the developed Country Parties and multilateral institutions. It is therefore necessary that the UNCCD Secretariat, the Global Mechanism with the assistance of the developed Country Parties provide the necessary 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 CCD will be informed by the planning process used for the preparation of the National Biodiversity Action Plan and activities already undertaken in relation to the UNFCCC so as to avoid any duplication of efforts. The NAP process will involve national awareness activities on land degradation and drought and collection of 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.

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 and Natural Resource and Environment Advisory Committees, the National Climate Committee and private sector representatives.

The entire process will be supported by a public awareness programme focusing on assisting the public on 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 programme will be mounted on television, radio and the press.

The preparation of the work plan by the NCB for the NAP process to be executed within a specific time frame will 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 programme.

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

(a) 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;

(b) Develop measures to improve the economic environment such as eradicating poverty and creating a better quality of life for the people;

(c) Rational use of water and soil resources;

(d) Formulation and application of emergency plans to deal with the effects of drought;

(e) Establishment of early warning systems for drought;

(f) Involvement of local authorities and NGOs, CBOs, women and youth groups to fully participate in the struggle against desertification and drought;

(g) Regional and International Cooperation: and

(h) Traditional knowledge.

The NCB or a Task Force will make the final decision on the kinds of programmes and activities to be included in the NAP or how they could be integrated into other Action Plans.

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, including biodiversity, 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 also not in confirmity with the government's commitment and obligations to international treaties and conventions. Consequently, the Government has been gradually but consistently creating an enabling environment for the implementation of the Convention on Biological Diversity, the UNFCCC and more recently the UNCCD.

An extensive National Biodiversity Action Plan was recently completed through a participatory process and is now awaiting the mobilization of adequate financial and technical resources for its implementation.

It is anticipated that the preparation and implementation of the NAP will greatly benefit from the precedent set by the NBAP planning process. The immediate requirement for the NAP process to commence is the mobilization of adequate financial resources from various sources.

The development of an information system on sustainable development activities within the agriculture, environment and natural resource sectors would greatly support the NAP planning process and should be addressed in the near future.

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