Biodiversity and Tropical Forest Conservation, Protection and Management in Guyana

submitted to

USAID/Guyana

by

Jean Brennan

Christy Johnson

Safia Aggarwal

July 2003

Table of Content **Page**

Preface
Acknowledgements
Acronyms
Executive Summary and Recommendations

Section I. Country Profile
A. BIOPHYSICAL RESOURCES……..……..1
(1) Geographic Location
(2) Natural Regions of Guyana
(a) The Low Coastal Plain, (b) The Hilly Sand Clay Belt, (c) The Forested and Highland Region, (d) The Interior Savannas
(3) The Guiana Shield
(4) Geological Formations
(5) Vegetation Types
(6) Climate
(7) Regional Significance (Biological Diversity)
B. HUMAN RESOURCES……4
(1) The People of Guyana
(a) Cultural/Ethnic Groups, (b) Language
(2) Social Services
(a) Health Care, (b) Education (General)
(3) Environmental Services
(a) Environmental Education, (b) Environmental Research, (c) Non-Governmental Environmental Organizations (d) International Donors, Multilateral Banks, and United Nations Programs
C. NATURAL RESOURCES……..12
(1) National Economy
(2) Agricultural Resources
(3) Mineral Resources
(4) Forest Resources and Benefits of Forest Landscaper
(5) Marine and Aquatic Resources

Section II. Democratic Framework & Environmental Protection
A. GUYANA'S LEGAL SYSTEM…….18
(1) Overview
(a) Ministries, (b) Parliament, (c) Justice System
(2) Administration
(3) Relevant Environmental Legislation
B. ENVIRONMENTAL POLICIES AND INSTITUTIONS……23
(1) National Environmental Policies and Implementing Institutions
(a) Institutional capacity, (b) Legislative Adequacy
(2) Regarding International Environmental Treaties and Conventions
(a) CITES, (b) CBD, (c) UNFCCC

Section III. Issues and Opportunities……...35

A. THE TRANSPORTATION NETWORD AND "THE ROAD"…….36
(1) What Is Being Proposed and Why?
(2) Who Receives the Benefits and Who Bears the Costs?
(a) Economic Benefits Associated with Roads, Economics Costs Associated with Roads, (c) Social Benefits Associated with Roads, (d) Social Costs Associated with Roads, (e) Environmental Benefits, (f) Environmental Costs
(3) Recommendations
B. FORESTRY SECTOR IN GUYANA…….…….50
(1) Guyana's Forest Resources
(2) Commercial Timber Production Forests
(a) Harvesting Agreements/Permits, (b) Timber Yields. (c) Illegal Logging
(3) Certification of Timber Products
(4) Non-Commercial Forests
(5) Non-Timber Resource Base (Non-Timber Forest Products: NTFPs)
(6) Recommendations Related to the Forestry Sector
C. TOURISM SECTOR AND PROTECTED AREAS……66
(1) Tourism as Part of the National Development Strategy
(2) Why and What Kind of Tourism?
(3) Identifying the Market and the Audience
(4) Ecotourism Differs from Other Segments of the Tourism Industry
(a) Local Economies, (b) Cultural Sustainability and Exchange
(5) Necessary Tourism Draw – A System of Protected Areas for Guyana
(6) What's Needed to Develop Guyana's Ecotourism Potential?
(a) At the National Level, (b) At the Sector Level – Specifically Ecotourism, (c) Promoting Nature Tour Operators and Ecolodges, (d) Protected Area Management and Planning
(7) Recommendations Related to the Tourism Sector

Literature Cited ……..84

Appendix I. Author Profile ……87

Appendix II. Interview Schedule and Contacts ……88

Appendix III. Interview Guidelines……90

Appendix IV. Natural Resource-related Legislation ...……..92

Appendix V. List of Protected Species……...98

Appendix VI. Forest Certification Overview……110

List of Figures

Figure	Description	Page
1.1	Map of Guyana	1
1.2	Map of the Guianas	2
1.3	Geology of Guiana Shield	2
1.4	Kaieteur Escarpment	3
1.5	Centre for the Study of Biological Diversity	7
2.1	National Coat of Arms	18
2.2	Council Regions	19
2.3	Legislative Framework Related to the Management and Access to Natural Resources in Guyana	22
2.4	Relationship of Implementing NRM Institutions and the Legislative Bodies with Oversight Responsibilities (see text for legends)	23
3.1	"The Road" linking Georgetown to Lethem and offering Brazil access to Guyana's coastal ports and harbors	37
3.2	Amerindian homestead and young woman	41
3.3	Road Effect on Forest Edge	43
3.4	Wildlife Use of Roads	44
3.5	Series of photos of small-scale surface mining	46
3.6	Selective Logging and Drought Effects	47
3.7	Expanded Deforestation Feedback	47
3.8	Cane Furniture Made From Non-Timber Forest Products	63
3.9	Hand-crafted Figurines Sculpted from Latex Collected from Bullet Trees.	63
3.10	Manicole palm in Nature	64
3.11	Exported Heart-of-Palm	64
3.12	Map of State Forests, Protected Areas and Proposed Protected Amerindian Lands	74

List of Boxes

Box No.	Description	Page
1.1	Programs and Projects Studying the Flora of the Guianas	8
1.2	Guyana Mineral Reserves	14
2.1	Regional Profile of Guyana	20
2.2	Guyana's Environmental Policy and Legislative History	21
2.3	National Environmental Plans and Development Strategies	24
3.1	Vision of Completed Transportation Infrastructure	37
3.2	Description of the Georgetown-Lethem Road	38
3.3	Classification of Guyana's Natural Forests	48
3.4	Overview of Iwokrama Forest and International Research Centre	53
3.5	Guyana's National Forest Policy Statement (1997)	54
3.6	Guyana's Forest Operations Code of Practice/Forest Management Plans and Guidelines	57
3.7	The Ituni Small Loggers Association (ISLA)	61
3.8	History of the Forest Timber Industry in Guyana	61
3.9	Trends to Support Certification – International Demand	62
3.10	History of Guyana's Tourism Sector	66
3.11	Strengths and Weaknesses in Developing the Tourism Sector in Guyana	67
3.12	Types of Tourists Likely to be Attracted to Guyana's Unique Tourism	68
3.13	Market Profile of Nature Tourist	69
3.14	Definitions of "Ecotourism"	70
3.15	Anticipated Benefits from Ecotourism in Development	70
3.16	Risks to Communities: Potential Negative Socioeconomic and Cultural Impacts	72
3.17	Currently Recognized Tourist Destinations of Natural or Scenic Beauty	73
3.18	The Iwokrama Experience – Demonstrating that it's Feasible	77
3.19	Principles of Ecotourism	79
3.20	Nature Tour Operator Guidelines	78
3.21	Characteristics of "Green" Hotels	79
3.22	Design and Operation of an Ecolodge	80
3.23	Donor Support toward Promoting Ecotourism Development	81

List of Tables

Table	Description	Page
3.1	Principal Commercial Timber Species	55
3.2	Guyana's Land Use Pattern	55
3.3	Allocation of the State Forest for Commercial Use	56
3.4	Raw Wood Exports: Values from Guyana and Percentage of its Volume of the Tropical America Int'l Tropical Timber Producers Markets	58

Preface

In development of a new Country Strategy (FY 2004-2008), USAID\Guyana is required to carry out a background assessment to ensure that its new plan is concordant with the conservation of the country's biological diversity and forest resources. This assessment is mandated under Sections 118 and 119 of the Foreign Assistance Act (FAA) that require:

> ***Section 118****- Each country development strategy statement or other country plan prepared by the Agency for International Development shall include an analysis of-- (1) the actions necessary in that country to achieve conservation and sustainable management of tropical forests, and (2) the extent to which the actions proposed for support by the Agency meet the needs thus identified;*
>
> ***Section 119****- Each country development strategy statement or other country plan prepared by the Agency for International Development shall include an analysis of-- (1) the actions necessary in that country to conserve biological diversity, and (2) the extent to which the actions proposed for support by the Agency meet the needs thus identified.*

At the request of USAID\Guyana, Drs. Christy Johnson and Teri Allendorf carried out an initial assessment in July/Aug 2002 to help prioritize environmental and natural resource-related needs in Guyana and to help identify the role(s) that USAID could play in addressing those needs. Later, Drs. Jean Brennan and Safia Aggarwal returned to Guyana to carry out a more detailed analysis of biodiversity and tropical forests required as a part of strategic planning by the FAA Sections 118 and 119. This report is the result of these combined efforts. Background information on the authors appear in Appendix I of this report.

The recommendations and information in this report are based on meetings; review of key documents provided by the Mission and the groups interviewed; and background material available on the internet. Numerous groups and individuals representing the government, non-governmental organizations, the forestry, mining, and tourism industries, Amerindian communities, other donors, and research organizations were contacted. Several people in Washington, D.C. who are knowledgeable about Guyana were also interviewed. A list of those people interviewed appear in Appendix II and the interview outlined used in the follow-up country visit are found in Appendix III. This assessment is a synthesis of the information available on the biological and forest resources in Guyana and the current status of these resources and the recognized pressures impacting them.

Acknowledgements

The authors wish to acknowledge the support and personal interest of U.S. Ambassador Godard and USAID Mission Director Dr. Mike Sarhan, and for the tremendous help provided by the USAID staff in Guyana (Dr. Charles Cutshall, Ms. Dhanmattie Sohai, Mr. Daniel Wallace, Mr. Winston Harlequin, Ms. Chloe Noble, Mr. William Slater and to Ms. Rita Mohabir and Mr. Graves for logistical support.) We would also like to thank all those we interviewed: the staff working with USAID/Guyana as implementing partners (Chemonics staff: Tom Whitney, Dave Gibson; Carter Center staff: Melanie Reimer); Agency, Commission and Ministry staff of the Government of Guyana (EPA: Bal Persaud, Indarjit Ramdass; GFC: James Singh; GGMC: Robeson Benn, Karen Livan; Ministry of Amerindian Affairs: Minister Carolyn Rodrigues; Ministry of Tourism, Industry, and Commerce: Minister M. Nadir; Minister of Agriculture: Minister Chandarpal); members of the Environmental NGOs working in Guyana (CI: Joe Singh, Clayton Hall; WWF: Darron Collins, Stephan Kelleher, Patrick Williams; GMTCS: Annette Arjoon); members of the International Donor Organizations and Multilateral Banking staff (DFID: Greg Briffa; GTZ: Ben ter Welle; CIDA: Murray Kam, Anna Illes; WB: Loretta Sprissler); researchers (SI: Carol Kelloff; CSBD: Philip Da Silva), private industry representatives (FPA: John Willems, Toni Williams; GGDMA: Edward Shields); social organization representatives (APA staff; GOIP: Christine Lowe);the US Peace Corps Director (Earl Brown, Jr.); and Margaret Sarhan of the U.S. Embassy/CLO in Georgetown for helping track down reference materials.

We also wish to extend our sincere thanks to the staff of Iwokrama (Drs. Graham Watkins and Kathryn Monk) who not only participated in multiple interviews, but also corresponded with us and shared numerous reports and detailed assessments that were used extensively in preparing this report. GFC Commissioner James Singh was shared numerous reports and background documents that were most helpful in preparing this report.

Finally, we also wish to acknowledge and to thank Dr. Teri Allendorf of Natural Resources Management staff who participated in the initial field assessment; to Ms. Sonya Heller of the Latin America and Caribbean Bureau for her help in providing background country and Mission documents; and to Ms. CJ Rushin-Bell, through her commitment to support USAID Missions granted the necessary staff time to produce this report.

Acronyms

APA – Amerindian Peoples Association
CBD – Convention on Biological Diversity
CCD – Convention to Combat Desertification
CDIE – Center for Development Information and Evaluation
BDG – Biological Diversity of the Guianas
CI – Conservation International
CIDA – Canadian International Development Agency
CITES – Convention on International Trade in Endangered Species
CPCE – Cyril Potter College of Education
CSBD – Centre for the Study of Biological Diversity
DDT – dichloro-dephenyl-trichloroethane (insecticide)
DFID – (British) Department for International Development
EIA – Environmental Impact Assessment
EGAT – Economic Growth and Trade
EPA – Environmental Protection Agency
FSC – Forest Stewardship Council
FTC – Forestry Training Center
FPA – F
GDP - Gross Domestic Product
GEAP – Guyana Education Access Project
GEF – Global Environment Facility
GENCAP - Guyana Environmental Capacity Development
GFC – Guyana Forestry Commission
GGDMA – Guyana Gold and Diamond Miners Association
GGMC – Guyana Geology and Mines Commission
GMTCS – Guyana Marine Turtle Conservation Society
GNIFC – Guyana National Initiative of Forest Certification
GNP – Gross National Product
GoG – Government of Guyana
GOIP – Guyana Organization of Indigenous Peoples
HIPC – Heavily Indebted Poorer Countries
HIV/AIDS –human immunodeficiency virus/acquired immune deficiency syndrome
ICZM – Integrated Coastal Zone Management
IDB – Inter-American Development Bank
IPAM – Instituto de Pesquisa Ambiental da Amazônia
IRD – Institut de Recherche pour le Developpement (formerly ORSTROM)
ITTC – International Tropical Timber Council
ITTO – International Tropical Timber Organization
IUCN – International Union for the Conservation of Nature
NAC – National Amerindian Council
NASA – U.S. National Atmospheric Science and Administration
NBAC – National Biodiversity Advisory Committee
NBAP – National Biodiversity Action Plan
NEPA – National Environmental Protection Act
NDS – National Development Strategy
NGO – Non-governmental Organization
NPAS – National Protected Area System
NPV – Net Present Value
NTFP – non-timber forest product
PROFOR – UNDP Program on Forests
SFM – sustainable forest management
TFF – Tropical Forest Foundation
UNDP – United Nations Development Programme
UNFCCC – United Nations Framework Convention on Climate Change
USAID – United States Agency for International Development
USDA – U. S. Department of Agriculture
WB – World Bank
WWF – World Wildlife Fund

Executive Summary

Introduction

The following report, *"Biodiversity and Tropical Forest Conservation, Protection and Management in Guyana"* is an environmental analyses prepared for the purpose of assisting in the development of the USAID/Guyana Mission's new 2004-2008 Country Strategy (as required by Sections 118(e) and 119(d) of the Foreign Assistance Act). The goal the analysis was to identify the threats to the conservation of Guyana's tropical forests and biological diversity, and to examine the extent to which the proposed Mission strategy and activities address the threats.

The USAID Mission staff and technical consultants have identified several key factors that define the development 'landscape' in terms of the challenges facing the country. Specifically, despite its abundance of natural resources inland and fertile agricultural lands along the coast, Guyana remains one of the poorest countries in the Western Hemisphere due, in part, to political conflict[1], violence[2], mass migration of many of its intellectual and skilled citizen to economic opportunities outside the country, and high incidence of poverty in the rural interior, which is significantly isolated from the more developed coastal areas by poor communication and transportation infrastructure.

In many ways Guyana is two separate countries: one exists on a small narrow strip of coastal plain, made up of roughly 10% of the area, while housing roughly 90% of the population. This coastal Guyana has a similar culture as the English-speaking Caribbean, as well as similar environmental issues – solid waste challenges, inadequate water supply and sanitation, pesticide and fertilizer runoff from agriculture. The other Guyana, the interior Guyana covers more than 90% of the country's overall area and has only 10% of the population. The interior is also known as the "hinterlands" and culturally and environmentally it has more in common with Brazil and Venezuela than with coastal Guyana and the Caribbean. It is primarily made up of scattered Amerindian (indigenous) communities that struggle with issues related to land tenure (indigenous claims and conflict from invading colonists from neighboring countries), and socio-economic, environmental, and human health impacts associated with mineral and forest resources exploitation. Largely because of its low population density, low level of development, and the resultant relative lack of threats to biodiversity, Guyana presents a significant opportunity for environmental conservation and pursuing this opportunity need not

---

[1] **Regarding political conflict:** Guyana faces many challenges to the consolidation of its democracy, most notably the political impasse among parties and the politicization of race and ethnicity that seem to pervade all aspects of Guyana's political system. The Mission has proposed an approach to addressing these problems through a combination of support for inclusiveness, conflict resolution and transparency. In particular, given the lack of dialogue between the two major political parties at the national level, the Mission plans to encourage local-level citizen participation and work with civil society groups.

[2] **Regarding violence:** Violence and crime in Guyana are deterring economic growth and investment, as well as increasing citizens' lack of confidence in the government's ability to provide basic services and security. The Mission has proposed the idea of community-oriented policing to change police performance and the role of police to be "help agents" for citizens. The LAC Bureau has cautioned, however, that as the mission considers developing a community-based pilot program, that it incorporates community policing activities into a broader community-based program.

conflict with Guyana's needs for development. In fact, Guyana's best chance may be to address its economic and social needs by developing and managing its natural resources in a sustainable, equitable manner. However, Guyana is urgently in need of a strengthened and more involved civil society and, as it develops its natural-based economic and trade potential, greater environmental protection and multi-stakeholder participation in resource utilization and design of much needed infrastructure.

The USAID/Guyana Mission has proposed a strategy focusing on consolidation of democracy and good governance, reduction of the risk of HIV/AIDS transmission, and improvement in the economic policy environment to foster and expand trade. Although the new Country Strategy will not include a self-standing environment program there are tremendous opportunities to address environmental needs within the context of the economic growth and democracy programs, and to provide strong synergy to the population health/HIV-AIDS program. Indeed, given Guyana's critical need for greater civil society participation and economic growth, and the fact that much of the growth will likely be fueled by the country's vast natural resources, a collaborative approach among the program elements may be the most effective approach it achieve the Mission's strategic objectives.

The recommendations below identify programmatic design elements within Mission program objectives that also address environmental objectives within the political and socio-economic landscape reality[3]. Although the recommendations appear under a specific issue title, for example "The Road," they can be applied more broadly to various programmatic activities. The recommendations are presented as opportunities that the Mission may wish to consider in defining the country strategy and activities that would provide environmental benefits while also serving and the Democracy, Economic Growth, and HIV/AIDS programmatic objectives. The items listed offer particular promise for cross-sector and cross-programmatic collaboration.

(1) The Road Development and Transportation Network

Guyana's National Development Strategy (NDS) has identified the improvement and expansion of the country's road network and infrastructure into the interior to be a matter of the highest national priority. As such, the Government of Guyana (GoG) hopes to expand and improve the road from the capital port city of Georgetown to the town of Lethem on the border with Brazil. This overland transportation corridor will facilitate the trade and transport of forest, mineral, and agricultural products to the markets and will allow neighboring Brazil to gain access to Guyana's ports for export. Improving the Georgetown-Lethem road ("The Road") is essential to Guyana's future development.

The Road will bisect the country transversely as it cut across Guyana's heavily forested interior. This area has been relatively undisturbed because of its inaccessibility and low

[3] **Recommendations** are based on in-country interviews and background document review including the Guyana's National Development Strategy, USAID contracted assessments (democracy and conflict vulnerability), and materials obtained from environmental and natural resource agencies in Guyana, university and research organizations, non-governmental environmental and social organizations, and donor organizations, as well as materials published on the internet (world wide web).

population densities. As a result, the majority of Guyana's forest interior remains under natural vegetation and much of Guyana's natural wealth and forest biological diversity remain as a result of this "passive protection.". However, improving The Road without putting adequate controls in place will likely lead to environmental degradation associated with unsustainable or destructive resource extraction; the loss of revenue from diamonds, gold, and timber taken into Brazil; increases in illegal drug trafficking and instability associated with the erosion of safety and security; and, as currently isolated communities are increasingly exposed to diseases including HIV/AIDS, the spread of disease as these isolated pockets serve to 'seed' the country and facilitate its spread and the potential loss of Guyana's indigenous peoples and their cultural identify as communities are increasing exposed to disease due to inadequate health care delivery, monitoring, and education.

The NDS recognizes that all development must attempt to prevent environmental degradation, to avoid the need for expensive remedial measures after damage has been done. One of the most important tests of preventing degradation will be the development of the Georgetown to Lethem road. The timing and financing of improving and paving the entire road is unclear, but a contract has already been let to improve some of the worst segments of the current road, and construction of a bridge over the river between Brazil and Guyana has begun. Ideally, road building would be preceded by the formulation of an integrated development plan. The Road is an excellent point of entrée as recent democracy and conflict assessments have noted because the most effective programmatic strategies in overcoming the problems of ethnic politics and exclusion is to focus on issues of local governance and practical concerns that cut across ethnic differences. From a program planning perspective, The Road serves as an excellent strategic planning tool, one that could literally map the location of program activities to address the needs concerning environmental planning; delivering environmental and human health education and services; and linking communities to market opportunities.

General Cross-Sector Recommendations and Opportunities

Assist the Government of Guyana

- *Promote National Planning:* Under its democracy strategic objective, USAID could encourage the GoG to undertake a proactive approach by initiating such planning and to engage all key stakeholders in it design.
- *Support the National Development Strategy:* Through its economic growth strategy, USAID could encourage and assist the GoG to design an economic plan along the road corridor that would maintain an adequate and equitably distributed share of the revenues, so that the system of roads are effectively planned and managed for the benefits of a broad stakeholder base without transferring unsustainable costs on to the immediate forest environment and civil society.
- *Address the Spread of HIV/AIDS:* Working with GoG health care sector, USAID can help to identify and integrate into the road design, strategic locations to minimize and manage environmental and health impacts associated with

increased corridor access by providing health monitoring and outreach centers under its strategy to address the spread of HIV/AID.

- *Strengthen Government Institutions:* In support of GoG efforts to decentralize key government functions, the USAID Mission could support the development and staffing of field-based offices key natural resource management and regulatory agencies that would also serve to enhance their effectiveness in resource management and protection, outreach and training local communities, and to enlist their help in monitoring and enforcement. The Mission could also support Ranger Training programs (currently available through the Iwokrama Forest Research Centre) which serve as paraprofessionals to support the natural resource agencies, by taking on a limited role as park, forest, and wildlife guards.

Engage Civil Society

- *Strengthen Local Organizations and Groups:* Through the delivery of health education activities under its HIV/AIDS program, the Mission could strengthen local organizations and community groups to provide a structured basis for stakeholder participation in management decisions and information exchange on a regular basis on issues ranging from environmental and human health to the interpretation of land and natural resource policy and legislation. Guyana's Environment Clubs, with Clubs located throughout much of the country, is a youth-group sponsored under the Environmental Protection Agency that could serve as an effective and efficient target audience under the Missions HIV/AIDS/STI Youth Project. Its power has already been demonstrated in a recent example in which the local Clubs requested the help of a U.S. Peace Corp Volunteer working in the interior to facilitate a discuss on issues of human health (specifically HIV/AIDS education) and environmental concern and the production of supporting educational materials. Mission programs could support the development of broad educational materials and programs in Makushi and English to help encourage local understanding and allow wider program dissemination and impact. The Projects approach to train peer counselors would be greatly enhanced by linking human health and environmental concerns into the outreach message. The Environment Clubs (and peer educators) could also server as an avenue to promote civic education under the Mission's democracy objective.

- *Promote the Participation of Under-represented Communities:* Under its democracy and economic growth strategies, USAID could seek opportunities to support the participation of under-represented communities (especially Amerindians), in road-related activities and opportunities such as the creation of partnerships or co-management agreements to maintain the road; revenue-sharing from user-fees; and enterprise development such as promoting tourism and handicraft industries. Mechanisms to increase the cooperation and collaboration among communities and between communities, government agencies, and national and international institutions can also be supported that will thereby secure local livelihoods and to ensure forest and biodiversity conservation.

- *Empower Community-based Groups:* Conservation in Guyana is limited in part, by the lack of human resources. Under the democracy objective, to support the outreach efforts of the key resource agencies or non-governmental organizations to train local community groups to manage natural resource in a sustainable manner, to monitor the environment and wild populations, and, as granted by the managing authority, to help patrol and enforce environmental and wildlife protection regulations pertain to resources within lands communities own or areas under usufruct agreements. With the country's continuous loss of educated professionals (the "brain drain") it is a more effective strategy to invest in those members of society with the greatest tie to the land and least likely to abandon their country: people with strong cultural traditions and sense of community are such members. And, as the road links Georgetown to Lethem (and to Brazil) local communities will be increasingly threatened by influx of people moving into their traditional usage areas with could cause conflict and instability in the southern region. USAID's democracy program can address this treat through strengthening community groups and providing training to foster their sense of empowerment and to give them a voice in the country's economic and social development.
- *Reach the Greater Audience:* The vastness of the country's interior, and the limited resources of the USAID programs necessitate "getting more bang for the buck" and support of radio programming through Wildlife and Environment Clubs is one way to achieve this objective. Mission support under all of its programs can help support projects to help install solar-powered radio sets in remote communities, and to provide equipment and program content to reach all members of society in an effort to disseminate information about environmental issues, human health, pending legislation and legal debates, as well as to introduce business and marketing information.

Engage the Private Sector

- *Assist the Association of Regional Chambers of Commerce (ARCC):* The Road provides a clear linear guide to strengthen the investment of the private sector that can work through regional businesses associations and workers. The USAID Mission has long supported this sub-sector and can promote stronger linkages and interaction between ARCC and community groups under the new democracy and economic growth activities.
- *Promoting Community-Private Partnerships:* Developing strong partnerships is one way to reduce over-harvesting pressures (hunting, fishing, timber) and habitat degradation by providing alternative livelihoods for local people. The USAID Mission could promote these initiatives under its economic growth and trade strategy by promoting social and environmentally sustainable businesses and attracting investors. Communities will need support in terms of training opportunities in management and administration, and market development. The most serious constraint to the development of businesses ventures has been the lack of adequate roads which raised the production costs for goods. There are several potential alternatives to the uncontrolled and damaging resource use

currently practiced by small-scale operations. These alternatives include sustainable timber harvest (see Forestry section below), bioprospecting, ecotourism, and producing non-timber forest products.

Section II.
Recommendations Related to Policy, Legislation, and Institutional Support

Recommendations associated with institutional capacity

1. As noted in the National Biodiversity Action Plan (1999) there is a need for the GoG the develop the necessary wildlife management mechanisms which includes the development of institutional capacity for wildlife management; establishing post-graduate training in wildlife management; and fostering an integrated approach to wildlife management enforcement and monitoring through partnerships at the local level.
2. Environmental institutions should promote a corporate culture that recognize and engage all relevant stakeholders through an open, consultative and participatory process, as they carry out their regulatory and management functions. (Such stakeholders would include, but are not limited to: individuals, institutions, local communities, and social groups; timber concessionaires and sawmill operators as well as small-scale chainsaw timber harvesters; wildlife traders in Georgetown as well as wildlife trappers and hunters in the interior; local and international NGOs; organized church, school and environmental groups; teachers and academic and university researchers; and nature-based tourism industry representatives and other relevant members of the private sector.) The purpose of consultative and participatory processes should facilitate the transfer information and knowledge in both directions.
3. In recognition of the fact that education programs are fundamental to developing the capacity of stakeholders to make informed inputs into legislative changes and also for implementation of the legislation, all line agencies should integrate an education and outreach function. In this context, education programs need to focus not just on local people and implementing government agencies, but also on policy and law makers, and those use rely on natural resources such as wildlife managers, timber and mining operators, and those in the tourism and service sectors.

Recommendations associated with adequacy of environmental legislation

1. Revise antiquated legislation and draft new needed legislation to address:

- The inadequacy of the legislation must address its deficiencies due to limited scientific and inventory data, partial existence of a structured and integrates legal framework, limited institutional cohesiveness, and potential threats from commercial hunting and fishing.
- The issue of ownership rights of different stakeholders, need to be clearly defined. For example, Sections 12-14 of the Guyana Forests Act (1953) clearly indicates

that the State owns all forest produce from State Forests. Section 6 of the Mining Act (1989) states that the "all the minerals within the lands of Guyana shall vest in the State." The Fisheries Act (1973) does not make clear statements about ownership of fisheries resources. The ownership of the wildlife and fish resources of Guyana by the State perhaps needs clarification in legislation. The ownership of wildlife and fish resources on private lands and on lands owned by Amerindian communities will also need clarification.

- The management rights need to be clearly defined. For example, the Amerindian Act (1977) transfers to Councils the "rights, titles and interests" of the State to the Councils excepting rivers and minerals. These kinds of transfers of rights of ownership and management need to be clearly described in new legislation. In section 27 the exception in respect of Amerindians refers to "traditional pursuits" which is vague and practically impossible to enforce.
- The mechanism for multi-stakeholder participation in the development of management plans is needed, including the formation and functioning of management and scientific authorities, and a clear statement of the roles of stakeholders in the development and implementation of management plans.
- New wildlife legislation should address all aspects of human-wildlife interactions in a human ecosystem context including subsistence and commercial uses of wildlife; wildlife control; the protection and rehabilitation of wildlife and their habitats, research on wildlife, and the social, cultural and economic sustainability of wildlife uses.

2. Form a Ministry of Environment. A potential solution to the complicated national institutional structures (policies, laws, and agencies) for managing wildlife and other natural resources could be resolved through the formation of a Ministry of the Environment through the combination of the present agencies (GFC. GGMC, Fisheries Department, EPA, Wildlife Division) into one Ministry. Subsequent clear separation of the monitoring-regulatory and line management functions within the Ministry would be necessary. And extension officers and rangers from the Ministry would then implement across the sectors including mining, forestry, wildlife, tourism and fisheries.

Recommendations associated with meeting country's commitment under CITES

The weaknesses identified under the discussion of institutional capacity related to wildlife management responsibility apply in the county's efforts to meet its commitment under CITES. As noted under the discussion of institutional capacity, the wildlife management responsibilities and capabilities in Guyana are lacking and there is a critical need to support the technical capacity of the country's Scientific Authority as it is important to note that CITES listings relate strongly to wildlife involved in International Trade, rather than animals that may be threatened as a result of other causes.

Recommendations associated with meeting country's commitment under the CBD

1. The Government of Guyana is encouraged to implement needed domestic policies and legislation to help achieve the goals of the convention related to the requirement for in situ conservation through protected area and ecosystem protection; integration of indigenous communities into its national decision-making and protection of biodiversity; and sustainable use of natural resources.
2. Guyana is not currently a member of the RAMSAR Wetland Convention which provides habitat protection to unique and often fragile wetlands and thus protects the plants, fish and wildlife dependant on this unique ecosystem. Such protection is needed to ensure the survival of several species of in-land fish including the endangered arapaima (one of the World's largest fish), the giant otter, and several endangered species of freshwater turtles and tortoises.

Recommendations associated with meeting country's commitment under the UNFCC

The GoG has taken steps that will help the country fulfill its commitment under the Framework Convention which should be encouraged and supported as described below.

1. Under the commitment of the Convention, a country must prepare an inventory of greenhouse gases, conduct an assessment of potential impacts of climate change in Guyana, analyze potential measures to abate the increase in greenhouse gas emissions and to adapt to climate change; prepare a national action plan to address climate and its adverse impacts, and prepare the first national communication of Guyana at the Conference of Parties. In 1998, the Government of Guyana and the UNDP developed a project to assist Guyana to comply with UNFCCC. The World Bank GEF support will fund the Project with a cash contribution of US$196,730. The status of this work is not currently known but efforts should be taken to conduct the necessary inventory and assessments.
2. The role of the National Climate Committee of Guyana (NCC) is to provide policy guidance and direction on actions in relation to projects in Guyana and on measures to adapt to the consequences of the climate-related environmental problems. The Committee's guidance and recommendations will require both policy and legislative support and are best developed through a multi-stakeholder participatory consultative process.
3. The GoG can encourage research into Climate Change related issues to help mitigate the effects of climate change. For example, Iwokrama, with assistance from the U.S. National Atmospheric Science and Administration (NASA) and the U.S. Department of Agriculture (USDA), is contributing towards mitigating climate change by engaging in research looking at the role of tropical forest in carbon sequestration. As a result, Iwokrama produced a study on the quantification of the short-term carbon stock responses to reduced impact logging and conventional logging practice in Guyana. Iwokrama also engaged in a spatial and temporal study of total biomass and carbon content (standing biomass, leaf litter, soil organic matter) of several key forest types within the Iwokrama Forest.

Iwokrama intends to develop an understanding and estimates of the function of tropical forest to store carbon that could inform economic consideration of this forest value.[4]

Section III.
Recommendations Related to Road Development, Forestry and Tourism

Recommendations associated with the (Georgetown-Lethem) Road Development

1. The key is to govern expansion so that most forests remain standing and well managed, while addressing concerns for economic development. Many of the key elements are in place but need to be supported as follows.
   - The majority of the people living in the interior are Amerindians. As the communities who will be most directly impacted by the proposed road network, yet are most closely tied to the hinterland by culture, tradition, and subsistence use. The Amerindian and communities within the Guyana's interior should be utilized as the logical conduit for change.
   - These communities are eager for education and health care services and the road, which could greatly facilitate the delivery of such basic social services, should be planned within that context.
   - Formation of community-based youth groups, such as those established in the form of Environment Clubs with the help of the Iwokrama Research Centre and the Environmental Protection Agency, should be promoted as they can serve as a forum for direct educational outreach and information exchange on issues related to the environment or on issues of social concern. For example, these local organizations can respond to requests from the members to facilitate discussions on issues of social concern such as HIV-AIDS information and prevention.
   - Local representation and decision-making at the Village Council level generally works well in the interior, with democratically elected representatives who are widely perceived as truly representative of local interests. Village Councils thus provide a strong institutional foundation that should be relied upon to build and strengthen local governance.
2. Every effort should be made to take advantage of various stakeholders' strengths, while minimizing institutional weaknesses would be to coordinate, to the maximum extent possible and across a wide array of stakeholders in carrying out: (a) patrolling and enforcement, (b) maintenance and repair, (c) environmental and social impact monitoring, (d) impact amelioration and mitigation, and (e) information access and public awareness building. These activities could be promoted through various mechanisms including co-management or partnership agreements. As noted in the analysis presented by Iwokrama, "a key element of either approach would be to identify incentives within the agreement(s) for the

[4] http://www.iwokrama.org/carbonsequestration.html

involvement of key groups, including Amerindians, road users such as truckers, and others. Incentives could take the form of targeted employment opportunities, equipment transfer and loan facility development and access, exchange of technical assistance, reduced or waived user-fees, and conservation contracts (2000b)."

3. Striving for the sustainable use of Guyana's resources may be the country's best chance to achieve the desired forest and biodiversity conservation and to secure both social and biological benefits for Guyana's current and future generations. Key to achieving this goal will be the careful planning and management of the proposed system of roads that will cut across the country's forested interior. To be successful in the long run, investments in economic growth for the interior of Guyana must help communities make transition from serving as the suppliers of raw materials to producing consumer products. Local government and civil society in small urban areas should be encouraged to gain the institutional capacity and ability to direct the process of rural development. If the road expansion is accompanied by matching investment in schools, health care, technical assistance for producers, environmental conservation, and resolution of indigenous land claim disputes, the effects of road paving on local development would be tangible, and would be more likely to lead to sustained and equitable growth.

Recommendations related to the Forestry Sector

A recently completed analysis conducted by the ITTC (2003) concluded that, despite the low profitability of the Guyana's forest industry and the vastness of the area under natural forest cover, there remains substantial potential for the sector to contribute to the economic growth and sustainable development of the country.

1. In order for the Forestry Sector to realize its potential to contribute to the country's economic growth, the following recommendations should be followed.
   - The industry must undergo a major overhaul, including the need to upgrade equipment requiring both technical and institutional support;
   - The GoG and industry should jointly support marketing efforts, and the industry should strengthen its industry associations in order to increase access and sharing of market information;
   - Non-timber forest products can make a significant contribution to both the growth and diversification of the industry and serve as a conduit to enable the flow of benefits back to the local people, thus the industry should promote horizontal or value added enterprises and the creation of employment opportunities, rather than through the pursuit of high volume and vertical integration; and
   - (As noted in the ITTC study) earlier market studies recommending that Guyana compete in the general market failed to recognize the severe lack of capital, weak infrastructure, and limited volumes of merchantable timber

within the forests of Guyana, thus it is recommended that the industry specialize and pursue niche markets (ITTC 2003).

2. The industry representatives and professional associations need to work with the GoG to effect changes to ensure the development of much needed infrastructure. Specifically,
   - Guyana will need to develop its deepwater port access if it hopes to increase exports to certified markets;
   - Recent power disruptions must also be eliminated if sawmills are to operate more cost-effectively. The production side of the industry should explore co-generation power alternatives that utilize wood waste to fuel off-grid power generation to run the mills. In many cases such "co-gen" power stations can also serve as an additional source of revenue as excess power can be sold to surrounding communities and businesses. (Several examples are currently operating in both Bolivia and Brazil.)
   - The need to support the expansion of the road network into the interior has already been recognized by the GoG but industry can help spur political will and action. This will help reduce transportation costs in moving products to the coast for export. Road expansion could also help move certified timber into Brazil, supplying the large timber companies are already selling to the certified markets, but severely constrained due to lack of supply to meet the market demands. Whether or not the Government of Brazil or local environmental groups would permit this would need to be explored.
3. Promoting a multiple-use approach to commercial utilization areas should be encouraged. Harvesting of NTFPs, as well as creation of protected areas that support wildlife to support ecotourism are also viable economic options, especially in areas that remain idle (undisturbed) between cutting cycles.
4. Efforts to support the National Initiative on Forest Certification's efforts to develop national certification standards for Guyana should be expanded. While forest certification does not offer all of the answers to modernize and rationalize tropical forestry, it can be a powerful tool to gain preferential access to the international market, while achieving social and environmental goals.
5. As the Forestry Sector grows, great care should be taken in guiding its development in a manner that address and mitigate the principle threats to the long-term sustainability of Guyana's forests, the maintenance of its biological diversity, and ability to provide critical environmental services. Specifically, growth in the industry must address the threats associated with
   - granting large timber concessions to foreign logging companies based on short-term contracts (and by extension short-term investments that promote maximizing profits by stripping forest resources);
   - the inability of natural resource agencies, primarily the GFC, to adequately monitor logging operations (and by extension the inability of the government to capture lost revenue such as from small-scale chainsaw and illegal logging activities); and

- the government's failure to recognize the rights of indigenous peoples (and by extension secure land ownership and access rights to protect against illegal entry or encroachment on forest lands.)

Recommendations related to the Tourism Sector

Guyana, with its extensive forests, exotic species, and plentiful rivers and waterfalls, has tremendous potential as a destination for adventure, cultural, and ecotourists. USAID can help promote nature tourism in a way that maximizes its contribution to both the economies and the ecologies of developing countries. USAID can help promote nature tourism in a way that maximizes its contribution to both the economies and the ecologies of developing countries in the following ways:

1. At the most basic level, USAID's economic growth program could work with the tourism industry to undertake a market analysis of the potential for adventure, cultural, and ecotourism.
2. More ambitiously, USAID could play a significant role in assisting the government, industry, and potential community enterprises in linking tourism into a broader vision for the equitable economic growth and environmentally sound development of the hinterland. A development plan for the Georgetown to Lethem road corridor could serve as a pilot for a nation-wide approach.
3. USAID's economic growth programs could work with the newly formed semi-autonomous Tourism Authority, with representatives from government and industry.
4. As identified through earlier reviews of USAID ecotourism support, the Mission in Guyana can evaluate possible opportunities to help support the following activities:
   - Identify and mobilize funding for potential private nature tourism investments. (Ecotourism enterprises, like most business ventures, need operating capital. USAID and other donors can help identify promising funding sources.)
   - Formulate fiscal policies to promote nature tourism and to maximize its economic and environmental benefits. (USAID can encourage public policies (such as visitor fees, regulations for tourism operations, and investment incentives and land-use zones for tourist facilities) that promote environmentally sound tourism as well as community involvement in providing services and products such as guides, lodging, transport, and crafts.)
   - Encourage international exchange of information and know-how about nature tourism opportunities and operations. (USAID can foster participation by developing-country public agencies and private service providers in international nature tourism associations that can help them, through technical and management training, to meet the needs and interests of international and domestic nature tourists.)

- Monitor and certify the performance of ecotourism act ivies (USAID can support emerging international movements aimed at promoting 'green tourism'. Green tourism takes ecotourism a step farther, promoting environmentally responsible tourist operations that conserve energy, recycle waste, and instruct staff and tourists on proper behavior in parks and protected areas.)
- Fund research on ecotourism's developmental and environmental impact (Information is needed to demonstrate to decision-makers the economic contributions nature tourism can make. Better understanding of the impact of ecotourism (such as in resort development) is needed to regulate and enforce against environmentally damaging investments.

Section I. Country Profile

A. BIOPHYSICAL RESOURCES

(1) Geographic Location

Guyana is a country of 214,970 sq. km. (~86,000 sq. mi. –roughly the size of the United Kingdom), located on the northern coast of South America, with 459 km (275 mi.) of Atlantic Ocean coastline to the north and bounded by Brazil to the south and south-west, Suriname to the east, and Venezuela to the west and north-west (Figure 1.1).

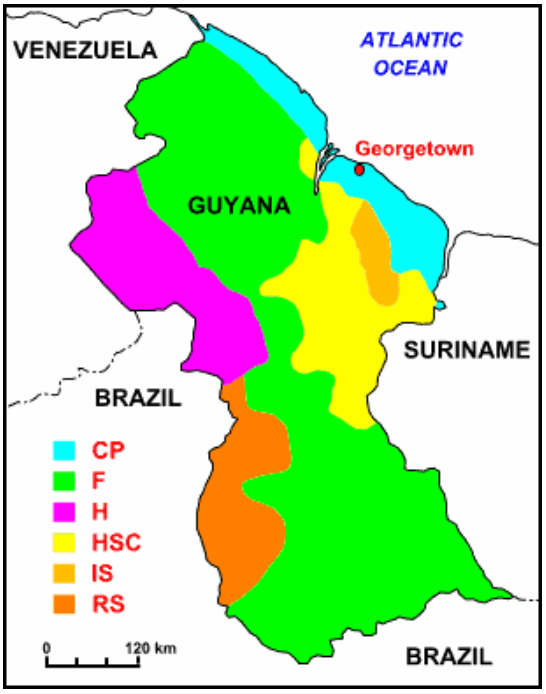


Figure 1.1 Map of Guyana
[(http://www.guyananguide.com)]

(2) Natural Regions of Guyana

Guyana can be divided into four natural or geographic regions:

(a) The Low Coastal Plain (CP)

This is a low coastal plain varying in width from 16 km. (10 mi.) in the west, to 64 km. (40 mi.) in the east. Much of the coastal area is below sea level by as much as 2 meters (~6 ft.) at high tide and is protected from the sea by an elaborate system of dams and seawalls in order to allow development of the rich alluvial soils deposited from the Amazon by ocean currents. Although the coastal belt makes up less than 6 percent of the country, most of Guyana's administrative, agricultural, industrial and residential activities are concentrated here. Roughly 90% of the population lives in this zone.

(b) The Hilly Sand Clay Belt (HSC)

This region extends across the country immediately south of the coastal plain. It is an undulating expanse of white and brown sands increasing in width from west to east. The area is covered with scrub lands and hardwood forests with hills rising up to 122 m (~400 ft.) The region covers over 14% of the country and contains extensive deposits of bauxite with proven reserves estimated at around 300 million tons. The hilly sand and clay belt is sparsely populated, with a major population center of Linden, a town of 26,000 people.

(c) The Forested (F) *and Highland* (H) *Region*

This region covers about two-thirds (65%) of the area of the country, and consists of four mountain ranges - the Imataka in the northwest, the Pakaraima in the west, the Kanuku in the southeast and the Akarai in the south. The highest point in Guyana at 2,835 meters

(~9,900 ft.) is Mount Roraima which marks the point in the Pakaraima range where the boundaries of Guyana, Venezuela and Brazil converge. The highlands are composed mainly of ancient pre-Cambrian rocks and are mineral rich, including gold and diamonds which have been exploited for over a hundred years. Most of the country's mineral and timber resources are found in the region.

(d) The Interior Savannas (RS and IS)

The two savannah areas in interior Guyana – the Rupununi Savannas (RS) and the intermediate savannas (IS) – are vegetated mostly by grasses, scrub, and low trees. The Rupununi cover about 15,500 sq. km. (~6,000 sq. mi.) in the southwestern part of the country, and are divided into the North and South Savannahs by the Kanuku mountain range. The intermediate savannas, covering approximately 5,180 sq. km. (~2,000 sq. mi.), lie about 90 km. (~60 mi.) from the mouth of the Berbice River. Cattle ranching and farming are two of the main activities in the Interior Savannah. The savannah is primarily populated by indigenous peoples, most of who live in remote villages, and the city of Lethem, in the Rupununi, is the only sizable savanna town.

(3) The Guiana Shield

Three countries (Guyana, Suriname, and French Guiana) make up an area known collectively as "The Guianas" (Figure 1.2). The Guianas lie atop an ancient Precambrian land mass (4 billion – 590 million years old), a geological formation known as the Guiana Shield which extends into Venezuela, south and east of the Orinoco River, and into small parts of Colombia and the Brazilian Amazon (Figure 1.3). A unique floral assemblage has evolved on the Shield, representing one of the largest expanses of undisturbed tropical rainforest in the world. This area is part of one of four remaining relatively undisturbed forested regions (Congo, Papua New Guinea, and the Amazon are the other areas) in the world.

Figure 1.2 Map of the Guianas
[http://www.mnh.si.edu/biodiversity/bdg/introplant.html]

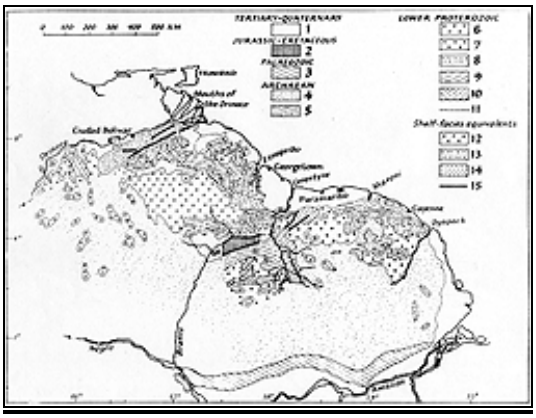


Figure 1.3 Geology of Guiana Shield
[http://www.mnh.si.edu/biodiversity/bdg/introplant.html]

(4) Geological Formations

The highest peaks of the Guianas are found in western Guyana in the Roraima Formation, made up of Mt. Roraima (2,772 m. or 9,095 ft.), Mt. Ayanganna (2,134 m. or 7,000 ft.), and Mt. Wokumung (2,042 m. or 6,699 ft.)

Figure 1.4 Kaieteur Escarpment
(from US Embassy, Georgetown, CLO)

In central Guyana, the forces of erosion have carved out vertical-walled flat-topped peaks (Figure 1.4). Their formations are so unusual, and their flora and fauna so unique (many are endemic having evolved on relative isolation imposed by the vertical walls) that the region has became the inspiration for science fiction and adventure stories (e.g. the 1912 *The Lost World* by Doyle).

(5) Vegetation Types

The Guianas have a remarkable diversity of organisms and their rich flora and fauna remain largely unexplored and unexploited. They constitute one of the few tropical areas worldwide that still has the majority of its forests intact. Estimates vary, but clearly only a small percentage of the Guianas has been deforested. Six categories of vegetation type have been described for Guyana: (1) rain forest; (2) seasonal forest; (3) dry evergreen forest; (4) montane forest; (5) marsh forest (includes savannas); and (6) swamp forest (includes mangrove and herbaceous swamp types). Guyana has retained nearly seventy-five percent of its landmass in natural vegetation due to its low population density and relatively low rate of land conversion.

(6) Climate

The climate in Guyana is warm tropical, with two marked rainy seasons during the year – one long, from approximately April to August, and one shorter, from approximately November to January. The amount and seasonality of rainfall varies throughout the country, from an annual average of 2,300 mm (92 in.) along the coast to as high as 3,000 mm (120 in.) in the forested regions and as low as 1,600 mm (64 in.) in the savanna, where most of the rainfall occurs between May and August. The temperature varies between $16^{\circ C}$ and $34^{\circ C}$, with the mountainous regions experiencing the lowest temperatures. Guyana is not affected by hurricanes, tornadoes, earthquakes, or volcanoes. Although the rains are sometimes delayed, prolonged or severe drought is relatively rare.

(7) Regional Significance (Biological Diversity)

Guyana's known floral and faunal diversity includes over 6,000 species of plants, 700 species of birds, 200 species of mammals, 700 species of fish, and 200 species of reptiles and amphibians. The country's relatively rich biological diversity and high endemism are due a unique combination of factors related to its location (at the edge of the biologically rich Amazon basin, lying atop the geologically old and stable Guiana Shield, and adjacent to the marine and coastal environment of the Caribbean/Atlantic seaboard) and its historically low incidence and intensity of conversion of natural habitats.

As noted above, Guyana is part of the distinctive Guiana Shield floristic province, which covers an area of roughly 1 million sq. km. (400,00 sq. mi.). Estimates of the province's species have ranged from 6,000 to more than 8,000, of which approximately 50% are believed to be endemic to the Guiana Shield (Maguire, 1970). While Guyana is one of the smaller countries of the wider Amazon region, it contributes significantly to the biodiversity of that region, both in terms of the number of species and number of endemics (both shared across the Guiana Shield and unique to Guyana). The country's contribution to regional biodiversity lies in its preservation of species, many of which, though not endemic to the country, are endemic to the region. Regionally endemic flora found in Guyana include herbaceous plants (*Victoria amazonica* lily, *Arapaima gigas*, *Pteroneura brasiliensis*, and *Priodontes giganteus),* orchids (an estimated 20% of 500 orchids occurring in the country are endemic to Guyana), and trees (95% of the range of greenheart *(Chlorocardium rodiei*), a prime timber species, is in Guyana). Other notable endemic tree species include purpleheart *(Peltogyne venosa*), mora *(Mora excelsa*), and warama *(Swartzia leiocalycina*) (Prance, 1982). Guyana's Shell Beach is also the nesting site for 4 of the world's 8 marine turtles, including the endangered leatherback turtle (*Dermochelys coriacea*).

B. HUMAN RESOURCES

(1) The People of Guyana

(a) Cultural/Ethnic Groups

Roughly 90% of Guyana's 700,000 people are made up of two ethnic groups: Indo-Guyanese (48-50%[1]) and Afro-Guyanese (33-36%). The majority of these two ethnic groups live on the coastal plain -- the narrow fertile strip of agricultural lands along the coastline that represents approximately 6% of Guyana's landmass. Population density in the coastal region is more than 115 persons per sq. km. (380 per sq. mi.). This density is in sharp contrast to the vast, sparsely populated interior of Guyana. The primary inhabitants of the interior are Amerindian (indigenous) peoples, who live in remote, rural villages and represent approximately 7-8% of the Guyanese population. The overall population density for Guyana as a whole of less than four persons per sq. km. (1.5 per sq. mi.).

The Amerindian inland population of includes communities from nine tribes: the Arawaks, Warraus, Caribs, Wapisianas, Arecunas, Akawaios, Makushis, Patamonas, and Wai-Wais. Amerindian communities inhabit both forested and savanna regions and depend on subsistence farming, hunting, and fishing for their livelihoods. In addition, in the savannah region, some Amerindians work as Vacqueiros (cowboys) on ranches. Often Amerindians living in the rain forest are involved seasonally in gold and diamond mining and boat building.

[1] Note: the last official census was conducted in 1991 and thus no current figures are available and estimates and vary by source. The range of numbers cited is therefore represented in this document.

(b) Language

English is the official language of Guyana. However, the majority of Amerindians in the interior or "hinterland" of the country continues to speak one or more of the nine recognized tribal dialects. Communities living along the borders with Brazil or Venezuela may also speak some Portuguese or Spanish. Among coastal communities, creolese, a sort of patois (patwah) based on English with various borrowings from Dutch, Indian, African, and Amerindian languages, is also widely used and understood.

(2) Social Services

(a) Health Care

Health conditions in Guyana deteriorated during the 1980s and the health situation now may be the worst in the English-speaking Caribbean. The State maintains hospitals at Bartica, Georgetown, Lethem, Linden, New Amsterdam and Suddie and also operates several smaller clinics, countrywide.

Malaria: Malaria is one of the leading causes of morbidity. The incidence has climbed from 263 cases in 1960, to 3202 in 1970, and reached 39,580 by 1992. Some of the highly endemic areas coincide with areas of gold, diamonds, and timber exploitation.

Tuberculosis: The incidence of tuberculosis (TB) has also increased, going from 17.3 cases per 100,000 in 1991 to 31 per 100,000 in 1993[2].

HIV/AIDS: Guyana has a high incidence of human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) and the epidemic has spread beyond specific high-risk groups into the general population. Current estimates place the disease incidence at between 3.5-5.5% of the general adult population. However, the Ministry of Health estimates that actual HIV prevalence is as high as 5-7%. Levels among workers in the Mining Industry have been reported to be as high as 6%. The prevalence of the disease in commercial sex workers is increasing, from 25% reported HIV positive in 1989 to 45% in 1997. Guyana has the second highest levels of the disease in the Caribbean (Haiti ranks first). Three-quarters of reported cases occur in people between ages 19 and 35, of which approximately 80% result from heterosexual transmission. The Amerindian communities, which make up 7-8% of the population and inhabit the remote areas of the country's interior, are thought to be more vulnerable then the general population as they are least likely to have access to adequate health care prevention or treatment. It is generally acknowledged that the impact of the HIV/AIDS epidemic is one the most difficult challenges to social and economic development.

(b) Education (General)

The Guyana Education system is administered and supervised by the Ministry of Education. There are four levels of education: Pre-School (Nursery), Primary

[2] : http://www.guyanaguide.com/overview.html

(Elementary School) Level, Secondary (High School) Level, and University. With funding provided by the United Kingdom Department for International Development (DFID), the Ministry of Education also attempts to provide equal access to all Guyanese children and young people to quality education through increased access to secondary education in the more remote towns of Linden and Corriverton under the Guyana Education Access Project (GEAP). There are also Vocational and Technical training courses offered by institutions such as the Carnegie School of Home Economics, Guyana School of Agriculture, Government Technical Institute and Linden Technical Institute. In addition, the Cyril Potter College of Education (CPCE) offers a two-year training program for pre-primary and primary school teachers.

Adult literacy in Guyana has been estimated at 98% (1998 United Nations' Human Development Report) however this is considered an over-estimation. Despite the uncertainty in the exact figure, adult literacy is unquestionably high in comparison to other developing countries and other countries in the region.

(3) Environmental Services

(a) Environmental Education and Training

Numerous agencies are actively involved in environmental education, involving educational programs at all levels. The Nature School, attached to the Guyana Zoological Gardens (the National Zoo), for example conducts education programs in biodiversity conservation for primary and secondary school students and the public. The University of Guyana offers programs at the University level.

The University of Guyana has established an Environmental Studies Unit that offers a four-year undergraduate program. The University also plans to develop a two-year postgraduate program in environmental studies. In forestry, the University offers a two-year diploma program and a four-year degree program. In addition, the Guyana Forestry Commission sponsors a one-year certificate in Forestry at the Guyana School of Agriculture. The Biology department at the University of Guyana offers a degree course in biology and a Masters course in forest biology. Other University of Guyana faculties also offer several environmentally related courses.

Professional and technical training has also been available both within Guyana and to Guyanese professions to attend training within the region. In recent years, specialized technical forestry training in reduced-impact logging techniques has been available to professional foresters and staff of the Guyana Forestry Commission, through the financial support by the International Tropical Timber Organization (ITTO), the Tropical Forest Foundation (TFF), and the U.K. Department for International Development (DFID). Private corporate sponsored contributed equipment for use in this training. TFF plans to initiate a permanent training program in Guyana to provide hands-on training in reduced-impact logging practices for staff of timber companies, government agencies, and members of forest communities living in the country's interior. Training took place at the Barama Co. Ltd. site but plans are to establish a more permanent Forestry Training Center (FTC) in the near future and to offer six, 2-week courses per year, with twelve

participants in each course. The Guyana FTC is patterned after the successful training center in Brazil, the Fundação Floresta Tropical.

The Iwokrama Research Centre, which offers a forest field station within the 371,000 hectare (1 million acres) Iwokrama Forest within Central Guyana has also sponsored and conducted numerous training courses and workshops for multiple stakeholders on a range of issues including: Social Forestry, Environmental Policy and Legislation, Geographic Information Systems, and Sustainable Forest Management.

(b) Environmental Research

Several national and international research institutions are working in Guyana.

The Centre for the Study of Biological Diversity (CSBD) was founder in 1992, as a result of a partnership between the University of Guyana and the Smithsonian Institution's Biodiversity Division of the Guianas Program. Housed at the University Campus near the capital city of Georgetown, CSBD has sponsored several para-taxonomist courses and is actively involved in public awareness seminars on conservation (Figure 1.5).

CSDB also offers small grants annually which are targeted specifically at Guyana Nationals. These awards are intended to provide support to individuals or groups for research on environmentally related topics. Research focus has primarily on plant taxonomy. Scientists from the American Museum and the British Royal Ornithological Society have maintained long-term collaborations and many serve as adjunct members of CSBD.

Figure 1.5 Centre for the Study of Biological Diversity, Guyana.
[http://www.mnh.si.edubiodiversitybdgcsbd.html]

The Iwokrama Research Centre is an autonomous international training and research center responsible for the management of the Iwokrama Forest with the goal of showing how tropical forests can provide economic, social, and cultural benefits while conserving biodiversity. The Centre's research program, conducted through studies by the research staff and students, has focused on questions relating to developing models for the sustainable use and conservation of tropical rain forests with the objective to demonstrate the feasibility of sustainable use and management of these forests. Under its 2003-2007 management plan, the Centre will work within three thematic areas: (1) conservation and use of forests and biodiversity (the emphasis will be the management of all forest resources from an integrated perspective considering the landscape, social, physical, and biological linkages between the Iwokrama Forest and adjacent lands); (2) business development (by partnering with businesses that hold high standards of environmental stewardship as part of their core business strategy and are committed to developing equity partnerships with both their employees and with the local communities living in or near the Iwokrama Forest); and (3) human resource development (with a focus on helping

stakeholders develop their ability to benefit from the tropical rain forest and address some of the complex human resource issues related to sustainable resource management, with an emphasis on working with members of surrounding Amerindian communities.)

Tropenbos: Until recently, the Netherlands-based Tropenbos Foundation funded an international tropical forest research programme which conducted extensive research in Guyana on issues of forest management and basic forest ecology. Many of key findings regarding the sustainable use of Guyana's forests resulted from research initiated under the Tropenbos programme.

Other International Research Organizations have carried out long-term taxonomic, ecological, and conservation research (see Box 1.1).

Box 1.1 Programs and Projects Studying the Flora of the Guianas

Biological Diversity of the Guianas (BDG) - Smithsonian Institution. The BDG started in 1983 and now operates from the "Centre for the Study of Biological Diversity" on the campus of the University of Guyana. The BDG program seeks to document and study the flora and fauna of the Guianas. Activities include collecting specimens to be housed at the Centre and training students and staff of the University as well as producing checklists, flora treatments, inventories, vegetation maps, and other publications such as a listing of the plants and animals of Kaieteur Falls National Park in Guyana.

Herbarium of Cayenne - IRD. (Institut de Recherche pour le Développement, formerly known as ORSTOM) The general herbarium was founded in 1965 by R. A. A. Oldeman to succeed the savanna (grass)collection established by J. Hoock between 1955 and 1965. From the beginning, the activity of the laboratory focused on the floristic and ecological studies of the forests of French Guiana. Activities in Cayenne include collecting specimens in remote areas of the country, especially inselbergs, and producing treatments for flora projects. In 1988, a checklist of the Flowering Plants and Pteridophytes of French Guiana was published (Cremers et al. 1988). The herbarium of some 60,000 specimens is stored electronically (completed in 1988) in the data bank AUBLET.

Flora of the Guianas. An international consortium of nine botanical institutions formed in 1983 to produce a written account of the plants of the Guianas. The Flora project has its editorial center at the University of Utrecht, The Netherlands. Some of the contributors to this checklist are also participating in the Flora of the Guianas project; however, this checklist is not part of the Flora nor is it associated with it in any way.

Flora of Central French Guiana. A joint project by the New York Botanical Garden and ORSTOM (now known as IRD) to produce a flora of 50,000 hectares of rainforest near Saül, French Guiana.

World Wildlife Fund. WWF collaborated with the University of Guyana and the Smithsonian's Biological Diversity of the Guianas Program to build a Centre for the Study of Biological Diversity on the University Campus.

Conservation International. CI operates a "Guianas Regional Program" (consisting of Surinam and Guyana) to assist these countries in conservation matters and to conduct ethnobotanical studies.

[Source: http://www.mnh.si.edu/biodiversity/bdg/introplant.html]

(c) Non-Governmental Environmental Organizations

Conservation International (CI) is a US, Washington-based conservation organization with national offices world-wide. CI has also been working at the request of the Government to develop Guyana's National Protected Area System. Currently, CI-

Guyana is engaged in activities centered on biologically rich and relatively undisturbed forests in the southern region of Guyana, and in the Kanuku Mountain region of the southwest of the country. Both of these regions have been identified as critical areas for the establishment of Protected Areas by the Government of Guyana (GoG).

In the Kanuku Mountain area, CI is working to help establish the area as a National Park. Staff have concentrated their efforts on working with Amerindian communities in the region, building support for the Protected Area, and engaging them in community resource evaluation with the purpose of using them to designate the boundary of the propose Protected Area.

In southern Guyana, CI is working to establish a "Conservation Concession" in southern Guyana. (A conservation concession refers to a contractual agreement in which the government grants limited rights to the land in exchange for payment for conserving the timber and other biological resources (in the case of timber concessions the payment is often based on the volume of timber or area harvested, but in the case of a conservation concession the payment is calculated in lieu of harvesting – to protect the resources rather than utilize them.). It is a new conservation financing mechanism being tested by CI in several countries.) In 2002, CI signed a 30-year agreement with GoG for concessional rights to 80,000 ha. CI is paying the GoG an area tax equivalent to what they would receive from a commercial logging company ($0.15/acre/year), in addition to an amount in lieu of a production royalty. CI also has established a fund (of $10,000 per year) to benefit three communities near the concession (CI, pers. comm. S.Aggarwal)

CI has been criticism by other environmental groups and funding organizations as being too top-down in their approach – referring to the perception that Amerindian communities were not adequately consulted or involved in the decision making for the design and implementation of the Protected Areas.

World Wildlife Fund (WWF) – Guianas: WWF is an international conservation organization with offices in many countries around the world. In the Guianas (Guyana, Suriname and French Guiana), WWF has program activities in four thematic areas: forest conservation, freshwater ecosystem protection, coastal biodiversity protection, and endangered species conservation.

Within the forest conservation theme, WWF is: working with the private sector and promoting sustainable timber harvesting; providing support to Guyana Forestry Commission for technical assistance and capacity building; facilitating the legal establishment of the Guyana National Initiative of Forest Certification (GNIFC); and, through grants, supporting efforts by private companies to achieve Forest Stewardship Council (FSC) Forest Management Certification and FSC Chain of Custody Certification for manufacturing operations. WWF is also working to extend Kaiteur National Park, and to develop ecotourism opportunities that engage local communities.

Under the endangered species conservation theme, WWF has addressed wildlife management, with a particular focus on wildlife trade enforcement and improving the legal framework and management system between Guyana and Suriname.

Guyana Marine Turtle Conservation Society (GMTCS): GMTCS is a local conservation NGO that concentrates its efforts on habitat management, particularly for the protection of marine turtle species. GMTCS also addresses livelihood issues for local communities. The GoG has given GMTCS the mandate to lead an effort to establish Shell Beach as a National Protected Area. GMTCS receives support from WWF-Guianas and serves as its lead implementing partner in the Shell Beach area. GMTCS has undertaken direct conservation efforts, education and awareness towards protection of marine turtles, research on social and ecological, community empowerment and economic alternatives for communities.

Environmental Clubs: are school and community clubs made up of volunteer memberships affiliated with Guyana's Environmental Protection Agency (EPA). Currently, there are 60 environmental clubs and another 20 clubs have requested formal affiliation. The Environmental Clubs are located among the populated coastal area of Guyana as well as within areas of the interior. Most of these clubs are affiliated with a grade school. The Clubs work primarily in areas of environmental awareness, in part through projects under the "Green Fund", an initiative of the Government of Guyana, U.N. Development Programme, and the EPA's Education, Awareness, and Capacity Building Program.

As noted in a review by the Iwokrama Research Centre, "the capacity of these environmental clubs vary considerably; however, some of these clubs may have considerable potential to engage in activities other than education and awareness raising. For instance, the Volunteer club members, including Amerindians of the Macushi tribe in the western Rupununni district, took stock of fish and animals at local ponds, raised their sights as active bird watchers and discussed their findings in the clubhouse they built. Volunteers at the Rewa Junior Wildlife and Conservation Club, put their local knowledge to work in a community-led eco-tourism plan. By designing and cutting a nature trail for tourists up a nearby mountain, the club helps communities to generate additional income through activities such as sport fishing and hiking. Other clubs carried out a range of activities, including art and essay competitions, litter fines in schools, clean-up campaigns and talks on the environment. In June 2002, the EPA hosted a World Environmental Day where a National Committee awarded seven clubs with certificates acknowledging their voluntary work for the environment.[3]"

(d) International Donors, Multilateral Banks, and United Nations Programs

International Donors: The United States (USAID) and the United Kingdom (DFID) are Guyana's first and second largest bilateral partners, followed by Canada (CIDA), with excellent donor coordination among these various AID agencies. Over the past five years, DFID and CIDA support has substantially increased the capacity of the Guyana Forestry Commission, allowing it to decentralize and vastly increase its on-the-ground monitoring capability.

---

[3] http://www.unv.org/infobase/anrep/2001/greening.htm; http://www.landofsixpeoples.com/news02/gynewsjs.htm

DFID provides technical assistance mainly in the education, forestry, and water sectors, and also funds a targeted program aimed at: improving the administration of justice; upgrading management skills in the police and prison services; and strengthening the Lands and Surveys Department in land administration and management.

CIDA funding is primarily aimed at strengthening NGOs, while the European Union generally funds infrastructure and economic growth activities. CIDA has funded the Guyana Environmental Capacity Development (GENCAP) project which has sponsored demonstration sessions and providing technical support to promote improved mining practices in an effort to address the impacts of mining activities which has had adverse impact on several Amerindian communities in Guyana (Lethier et al., 2002)

Multilateral Banks - World Bank (WB): With the assistance of the World Bank's Global Environment Facility (GEF), the Government of Guyana took the initiative to develop a project for a Protected Areas System for Guyana. The project, at a cost of US$10 million, was aimed at assisting the establishment of a representative system of Protected Areas that would conserve globally important biodiversity (EPA, 2000). The project, however, ran into difficulties regarding issues of Amerindian land rights and how they should be addressed as part of the project. This resulted in a stalemate between the Government and the Bank. (See protected areas section in Section III for discussion).

In October 2002, GoG and the WB/GEF signed an Agreement for a US$ 7.5 million project to support the development of Guyana's National Protected Area System (NPAS) (WB pers. comm. S. Aggarwal). Conservation International, with USAID/Washington (EGAT Bureau) funding, has laid the foundation for the Kanuku Mountains to be considered as the first site to be established under this GoG/WB project.

Multilateral Banks – The Inter-American Development Bank (IDB) is the largest multilateral donor in Guyana. It provides loans for infrastructure, civil service reform, health reform and telecommunications.

United Nations (UN) Programs – The UN Development Programme (UNDP) has provided technical assistance since 1952 to collaborative work undertaken by the Government in several thematic areas: Democratic Governance, Poverty Reduction, Crisis Prevention and Recovery (disaster reduction programs), Energy and Environment, Information and Communications Technology, and HIV/AIDS.

The UN Program has collaborated to varying degrees with many of the key environmental agencies, both governmental and non-governmental (e.g., EPA, the Office of the Prime Minister on energy related matters, Iwokrama Research Centre, CI, and the GMTCS.) The programmatic priorities and expected outcomes in environment have been agreed to in a joint Government of Guyana/UNDP document: Capacity Building for the Management of Natural Resources and the Environment (2002 -2005).

With respect to biodiversity conservation, UNDP has been closely involved in the establishment of the Iwokrama International Centre through the implementation of a GEF Training Project which was recently concluded. In May, 2002, UNDP signed a Memorandum of Understanding with Iwokrama to facilitate an exchange of services and resources for substantive policy advice, strategic and financial planning and management of biodiversity and other environmental programmes. Along with WWF, UNDP is currently providing technical and financial support for consultations among the various stakeholder groups for the development of Shell Beach as a protected area.

The UNDP recently concluded its program related to sustainable forest management known as PROFOR (Program on Forests). PROFOR worked to promote sustainable forest management (SFM) and related public and private sector partnerships at the country level in order to support sustainable livelihoods. The program was designed to strengthen national forest programs and forest partnership agreements as instruments for promoting SFM. It also worked to develop innovative financing for SFM, with a specific focus on promoting public-private partnerships. PROFOR also provided strong support for the development of national standards for forest certification in Guyana. The PROFOR funding expired in December 2001 (GFC and UNDP/PROFOR, no date).

C. NATURAL RESOURCES

(1) National Economy

In 1998, Guyana's Gross Domestic Product (GDP) declined 1.3% after seven consecutive years of positive growth, which had averaged 7.0 percent. The estimated per capita Gross National Product (GNP) for 1998 was US$770. Since the late 1990s, Guyana has been granted debt relief under the Highly Indebted Poorer Countries (HIPC) Debt Initiative. One of the recent debt-relief packages under HIPC will reduce Guyana's external debt by US$256 million in Net Present Value (NPV).

The economy of Guyana is primarily natural resource-based, relying on the fertile agricultural land along the coast and diversified mineral deposits and extensive tropical forests inland. However, despite its tremendous natural resources, Guyana is one of the poorest countries in the Western Hemisphere. The agriculture sector is the most important to the economy, both in terms of the generation of foreign exchange and the number of persons employed. Mining and forestry also contribute significantly to GDP which has continued to grow over the last decade. The GDP for 2001 was G$5,455 million (~US$28 million)[4], of which agriculture (including livestock and fisheries) contributed to approximately 30%. Export earnings from the mining (gold and bauxite) were 39.1% in 2000. Forestry sector export earning were 26.9% in that same year and are rising (Livan, 2002).

[4] http://www.sdnp.org.gy/minagri/statistics/grossdomesticproduct/contributionofagritogdp.htm

(2) Agricultural Resources

Agriculture accounts for about 30 percent of Guyana's GDP. The Coastal Plain, with its fertile soil, is the main region of agricultural activity. Most of the land is devoted to rice and sugar-cane cultivation. Rice and sugar are produced primarily for export and are also consumed locally. The famous El Dorado and XM rums are made from molasses which is derived from locally-grown sugarcane.

Small-scale farming provides a significant portion of all locally-consumed fruits (banana, carambola or five finger, grapefruit, mango, orange, papaya, pear, pineapple and watermelon), ground provisions (cassava, dasheen, eddo, plantain, sweet potato, tannia and yam), vegetables and greens (bora or stringbean, boulanger or eggplant or bygan, cabbage, callaloo or bhagee, cucumber, ochro or okra, pumpkin, squash and tomato), and spices and seasoning (eschallot or shallot, ginger, thyme and wirri-wirri pepper).

The dairy and domestic animal protein industries are active in Guyana. Cattle and other livestock (goat, pig and sheep) are reared both in the Coastal Plain and in the Intermediate and Rupununi Savannas, where it ranching is the main agricultural activity. Milk, fish and poultry are important components of the Guyanese diet and are produced locally, as well as being imported.

Environmental Issues: Agro-Chemical Runoff Pollution
Agriculture-related pollution has a notable impact on the coastland. The introduction and widespread use of DDT (dichloro-dephenyl-trichloroethane, powerful insecticide) several decades ago and found to have caused a reduction in the population of certain birds, such as the carrion crow (*Corvus corone*) and the coopers hawk (*Accipiter cooperii*). Intensive agricultural practices require the use of fertilizers and pesticides, the excess of which is carried by runoff or by leaching into waterways, causing contamination of water in canals and drains. As a direct result, people often consume contaminated freshwater fish.

Environmental Issues: Agricultural Expansion and Ecological Disruption
Large scale conversion of lands for the purpose of agricultural development have varied according to purpose, including diverting water for irrigation, and draining some lands while flooding others, depending on the aim, but often natural lands, wildlife, and ecosystem function are disrupted. Agricultural activities before 1996 at least were rarely subjected to an Environmental Impact Assessment, and had untold impacts. Today many large-scale land conversion schemes are subject to environmental regulations requiring such assessments. These requirements are not always followed and the enforcement of the regulations are lacking.

(3) Mineral Resources

Guyana is rich in minerals, most notably gold, diamonds, and bauxite (Box 1.2). Both gold and diamond mining are carried out at a range of scales – from low-tech miners who pan for gold along rivers and streams, to more established operations that use land or water dredges. Several large, international, gold mining companies operate large open pit mines in the interior, including the largest open pit gold mine in Latin America. In

addition, bauxite extraction is carried out on a fairly large scale in the area around Linden.

Box 1.2 Guyana Mineral Reserves

- Gold and diamonds occur in placer deposits and gold is presently mined in situ at Omai in the Essequibo region.
- Low-grade manganese deposits at Matthew's Ridge, in the Northwest District, were mined from 1960 to 1968. Metal sulphides have been reported, although economic deposits have not been found.
- High-grade gibbsitic bauxite are found in the Coastal Plain region where quartz sand suitable for glass manufacture also occurs.
- Recent seismic surveys on the continental shelf off Guyana have identified potential hydrocarbon reservoirs. Another potential area for oil and gas occurrences is the Takutu Basin in the Rupununi District.

[Source: http://www.guyanaguide.com/overview.html]

Environmental Issues: Mining

Many of the methods of extraction commonly used in Guyana have significant negative impacts on the natural environment. Vegetation is often removed to make the earth accessible, following which the top soil layers are stripped to reach the sought-after mineral. The vegetation clearing alone can contribute to species loss and sediment erosion which can, in turn, cause heavy siltation of waterways, affecting aquatic life and blocking downstream channels. Fuel and machine oils and poor sanitation frequently contaminate the soil and water. In addition, cyanide and mercury used to process gold are frequently the cause of chemical contamination of both soil and water. There has been at least one case in which high levels of mercury were found in an Amerindian community located near a mining operation. Finally, the standing pools of water created by mining serve as havens for mosquito breeding and have been linked to malaria outbreaks.

(4) Forest Resources and Benefits of Forest Landscape

(a) Forestry: Guyana's tropical forest, covering approximately 75% of the country (169,000 sq. km. or 6,760 sq. mi.), offers significant natural resources. Wood products include several species of commercially valuable timber including greenheart (*Chlorocardium rodiei*) and purpleheart (*Peltogyne venosa*), which are logged primarily for export as roundwood. Another 10-16 species are harvested and used in plywood production which is also exported and several others are used domestically in construction and furniture markets. In Guyana's forestry sector, which includes both logging and sawmill operations, many of the largest concessions are held by foreign companies, particularly those from Asia (Malaysia). Many Guyanese forestry operations support an "informal industry" that moves illegal harvested timber into the market, thereby undercutting the market for legally harvested timber and removing any economic incentives for investment in the long-term and sustainable use of the forest resources.

Environmental Issues: Forestry

The traditional Guyanese approach to logging is to enter a stand multiple times over several years, extracting progressively less valuable timber each time. Studies by the Tropenbos-Guyana Programme have shown that, while it remains abundant, one of Guyana's most valuable species, greenheart (*Chlorocardium rodiei*), is slow to regenerate following this type of logging. When logging activities are not effectively managed, results can include the loss of plant and animal species and the erosion of topsoil, which can in turn cause stream siltation, channel blockage and eventual flooding. Siltation also decreases habitat quality for the aquatic plant and animal life. Even carefully managed logging activities can have adverse environmental effects due to the need for skid trails, access roads, and tree felling.

Mangrove forests: Guyana's mangrove forests extend along the Atlantic Coast, between the Corentyne River to the Waini River, at the interface between the terrestrial and marine ecosystems. Three major species of mangroves are found in Guyana: *Rhizophora mangle*, *Avicennia germinans*, and *Laguncularia racemosa.* They form mangrove swamps along the coastline that serve as natural breading grounds for brackish water shrimp (*Paneau spp*.) and finfish species (Scianidae and Aridae families). Coastal mangrove forests also play an important role in stabilizing the shoreline by controlling erosion from waves, and help protect the sea wall or embankment. Guyana's mangrove forests are being threatened due to illegal and over harvesting, and their status is further exacerbated by habitat degradation due to contamination from solid and other wastes (NBAP, 1999).

(b) Commercial Wildlife Trade: The international trade in wildlife is an economically important use of wildlife in Guyana. Approximately 180,196 individual animals, of 108 species, are exported from Guyana annually.

Environmental Issues: Commercial Trade in Wildlife and Wildlife Products

While most wildlife use in remote Amazonian areas may currently be sustainable, increasing human population, greater road access, and the development of commercial markets for wildlife are likely to change this situation. Long lived, slow growing species such as tapirs, primates, birds, macaws and parrots, caiman, the giant Arapaima fish, and turtles, are already experiencing population declines indicative of the precarious future of Amazonian wildlife.

(c) Non-timber Forest Products (NTFPs): Several non-timber forest products have been harvested for both subsistence and commercial purposes. The Iwokrama Research Centre has been the leader in exploring potential products and markets for NTFPs that are being exploited for their woody properties (used in building and furniture productions) or for their fruit, fibers, latex, resins, and oils they produce or for their pharmacological and medicinal properties. Gathering of non-timber forest products is a very important part of indigenous peoples' cultural and traditional practices, and remains an important component of rural livelihoods.

Environmental Issues: Non-Timber Forest Products

Management protocols, such as regeneration rates and estimates of sustainable harvesting practices and yields, are lacking for most non-woody plant material. Forest products from woody tree species and vines also need to be protected under commercial forestry (timber) harvesting operations; standards for NTFPs need to be adopted under Guyana's Code of Practice in order to promote regeneration following the logging of these non-timber species or, in the case of lianas and vines, of their host trees.

For example, Heart-of-Palm (manicole palm) is one of the major non-timber forest products currently being harvested in Guyana. Manicole palm grows within the forest interior of Guyana and is often harvested for commercial purposes by indigenous people and sold to local middlemen who market to foreign buyers. Because the reproductive portion of the palm, the so-called "heart" of the palm, is the part of the plant that is collected; harvest has an impact on the plant's reproductive and regeneration rates. There is growing concern about this practice because the palm species is now rare and has been listed as "threatened" on the IUCN red list. Rural communities in Region 1 are heavily dependent on the collection and sale of manicole from riverine swamps to supply the export market to France. However as palms are increasingly depleted, harvesters are forced to travel greater distances, often leaving their families for long periods of time and disrupting the family structure. The Ministry of Amerindian Affairs is working to develop needed replanting protocols in an effort to promote a more sustainable harvesting practice (Arnold et al., 2002).

(d) Watershed and Downstream Benefits – Hydropower: Despite its many rivers and waterfalls, Guyana gets the vast majority of its energy from fossil fuels – 98.8 percent of total energy according to a 1999 estimate.

Environmental Issues: Hydropower as an Alternative Energy Source

A few hydropower projects have been completed, and others are in the works, but as of 1999, only 1.1% of the country's energy came from hydropower. Major contract disputes between the Government and the recently privatized public utilities have resulted in the unreliable production and delivery of power to much of the country. Disruption has severely crippled some industries and recently driven a major timber company to fold[5].

(5) Marine and Aquatic Resources

Fishing, both industrial and artisanal, provides the major source of animal protein in the diet of the Guyanese people. Most of Guyana's fishing activities are concentrated in the relatively shallow waters on the continental shelf which provide fish (gillbacker (*Arius parkeri*), queriman (*Charcarhinus plumbeus*) and snapper (various species)) and shrimp (prawns (*Penaeus* species) and seabob (*Xiphopenaeus kroyeri*)) for both export and local consumption. Seafood exports grew from US$45.3 million in 1998 to US$50.1 million in 1999.

[5] In March 2003, the Toolsie Persaud Ltd (TPL) cease operations, in part, because of the increase in electricity charges. The company also cited the sluggish economy, competition from independent chainsaw operators and a change in preference for building materials among consumers to force its closure.

Freshwater fisheries produce bangamary (*Macrodon ancylodon*), hassar (*Hassar notospilus*), houri (*Hoplias malabaricus*), lukanani (*Cichla oceliaris*), patwa (*Cichlasoma bimaculatum*) and sunfish (*Crenicichla saxatilis*), taken from canals, creeks, rivers, lakes, reservoirs, and the shallow flood plains of the Rupununi Savanna during the rainy season.

Environmental Issues: Fisheries

There is little good information regarding the status of Guyana's fish stocks, and species surveys have not even been completed for many parts of the hinterland. However, there are indications that over-fishing along the coast may be reducing the catch of marine species[6].

Environmental Issues: Coastal Zone Management

Guyana's coastal zone supports over 90% of the population. Threats to the environment in the coastal zone are intimately linked to activities associated with human settlement and, in particular, to population concentration and economic activity. Coastal sources of environmental problems include: generation and inadequate management of solid, liquid, gaseous, chemical, heat, and other wastes; replacement of natural vegetation by built structures leading to increased runoff and flooding; and sand mining and other activities that aggravate coastal erosion. Demands on the coastal land include housing, industry, roads, commercial and recreational uses. In urban areas, multiple houses are packed into one-house lots, and illegally constructed homes function without the necessary connections to sewer systems, electricity, and water supplies. Georgetown's infrastructure, including roads, sewer systems, water and electricity supplies, and solid waste management facilities, is wholly inadequate for its current population density of approximately 40 people per hectare (100 people per acre).

Solid Waste Management: Problems associated with solid waste disposal plague all Guyanese settlements, from large urban areas like the capital, Georgetown, to the more remote, less developed, and less populous areas of Guyana's rural interior or "hinterland." Indigenous communities of the hinterlands maintain less concentrated and more widely dispersed settlements; however, even in these remote locations consumption of non-traditional products is increasing. As settlements grow and people's preferences shift to increased consumption of canned and packaged goods, the quantities of garbage also grow. Solid waste problems are already growing in bigger villages which take in more manufactured goods, host marketplaces, and serve as a meeting point for many hinterland dwellers and visitors. Today, both urban and rural settlements are challenged with a greater volume of waste than in the past, when little was thrown away and packaging materials were either non-existent or biodegradeable. Rural communities are finding this issue to be extremely challenging, as they often lack enough resources and expertise to address its complexity.

[6] http://www.guyana.org/NDS/chap31.htm#1contents_B

Section II. Democratic Framework & Environmental Protection

A. GUYANA'S LEGAL SYSTEM

(1) Overview

Politically, Guyana is a Republic within the Commonwealth, made up of three braches of government: the ***executive***, ***legislative***, and ***judicial***. In the executive branch, the President is not directly elected, but rather is designated leader by the party that receives largest number of votes for the assembly. The President then appoints prime minister and other ministers. The Parliamentary-style legislative branch consists of the National Assembly, which includes 53 members chosen on the basis of proportional representation from national lists named by the political parties and an additional 12 members elected by regional councils. The judicial branch is made up of the Court of Appeal, headed by the Chancellor of the judiciary; the High Court, presided over by the Chief Justice. The positions of both Chancellor and Chief Justice are appointed by the president. The following assessments of the various branches of government (Executive Branch Ministries, Parliament, and Justice System) are taken from current reviews (Smith et al., 2002a; 200b.)

Figure 2.1 National Coat of Arms
http://www.guyana.org/

(a) Ministries

The Ministries are weak due to chronic problems of inadequate staffing levels. In addition, the technical competency of government institutions has declined due to a continued high rate of emigration, or so-called "brain-drain," that Guyana has experienced in recent years. More educated workers continue to leave low paying government jobs to seek better jobs internationally.

(b) Parliament

Guyana's Parliament does not have a tradition of standing committees, technical staff, rule-driven debate, consultation, sharing of information, or playing an oversight role. At present, due to the breakdown of party dialogue and the limited implementation of reforms, Parliament is, to a large extent, dysfunctional. This has inhibited the establishment of Standing Committees. The political history of Guyana is one with little experience in power sharing, compromise, loyal opposition, or reasoned public debate on policy. Party politics take precedence over governance, and party members vote along

ethnic lines. As a result, members of parliament are subject to the party hierarchy rather than accountable to local constituencies of voters.

(c) Justice System

Guyana's judiciary is not sufficiently independent, although the Judicial Branch may be more independent of the executive branch than Parliament has been. A proposed new Judicial Service Commission has not yet been established, and the judiciary is not self-regulating financially – a situation that also undercuts its independence.

The administration of justice is plagued by a significant backlog of unheard cases going back six years or more. The courts are severely understaffed, and judges are underpaid. A full complement of judges in the High Court would be 11 judges, but there are presently only seven. At the level of magistrates, only 12 of 21 slots have been filled.

The justice system and other interested observers (Bar Association, defense lawyers, donors in the justice sector, etc) have recognized corruption and mismanagement at the Magistrate level as a problem. Such issues are attributed to low pay, poor work conditions, and poor quality training for Magistrates. In addition, policing is generally perceived as corrupt in Guyana. Police investigations do not make reliable use of forensic methods, but rely instead on confessions. There have been numerous allegations of extra-judicial killings. The ongoing issues with law enforcement have been a bone of contention in inter-party struggles, civil unrest, and have fed a war of words. With respect to the civil courts, contracts can be virtually unenforceable and most small and medium size businesses depend upon informal networks rather than formal contracts to guarantee predictable access to capital, resources, and services.

(2) Administration

Administratively, the country is divided into 10 regions, each headed by a chairman who presides over a regional democratic council (Fig.2.2, Box 2.1). Local communities are administered by village or city councils.

Regional Democratic Council

Each region has its own administrative or local government unit, called a Regional Democratic Council. These independent administrative bodies perform functions delegated by central government.

1. Barima-Waini,
2. Pomeroon-Supenaam,
3. Essequibo Islands-West Demerara,
4. Demerara-Mahaica,
5. Mahaica-Berbice,
6. East Berbice-Corentyne,
7. Cuyuni-Mazaruni,
8. Potaro-Siparuni,
9. Upper Takutu-Upper Essequibo,
10. Upper Demerar-Upper Berbice.

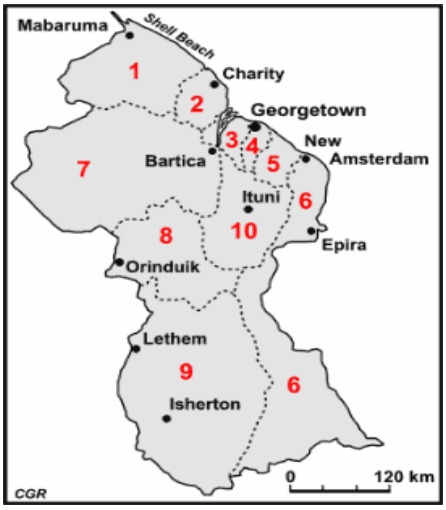


Figure 2.2 Regions [http://www.guyanaguide.com/]

Box 2.1 Regional Profile of Guyana

Barima-Waini (Region 1)
- predominantly forested highland, bordered at the north by a narrow strip of low coastal plain
- population of ~18,590, living mainly in Amerindian settlements
- main economic activity is logging; Guyana's largest logging operation, the Barama Company, transports timber harvested here to Demerara to be processed into plywood
- mining for gold and diamond occurs in forested areas using dredges of various sizes
- coastal beaches include Shell Beach, the only nesting site used by four of the world's eight species of sea turtles (March to July)

Pomeroon-Supenaam (Region 2)
- characterized by forested highland and low coastal plain; also a small area of the hilly sand and clay natural region
- population of ~42,769, living in Amerindian settlements and more established villages concentrated along the coast
- rice fields dominate the region, producing for local use and export; fields are irrigated by water from the Tapakuma Project, which linked the Tapakuma, Reliance, and Capoey lakes
- other agricultural and natural resource activities include small-scale production of coconut, beef and dairy cattle, and timber

Essequibo Islands-West Demerara (Region 3)
- characterized by low coastland, hilly sand and clay natural region, and a small forested highland areas; includes islands in the Essequibo River (Leguan, Wakenaam, Western mainland Demerara);
- population of ~91,328, living in villages, many along the coast
- main economic activity is rice farming
- smaller scale activities include sugar cane and coconut cultivation and beef and dairy farming
- thousands of hectares of land were reclaimed for farming by the Boerasirie Extension Project

Demerara-Mahaica (Region 4)
- predominantly low coastal plain, with some hilly sand and clay region inland; region extends from east of the Demerara River to the western bank of the Mahaica River
- population of ~297,162, living in concentrated cities and towns along the coast, including the capital city of Georgetown (population 56,095)
- economic activities include numerous sugar estates, as well as coconut estates and small-scale cattle rearing in for beef and diary; national administrative and commercial activities are concentrated in this region

Mahaica-Berbice (Region 5)
- primarily low coastal plain with intermediate savannah inland; extends from east of the Mahaica River to the west bank of the Berbice River
- population of ~ 49,498; includes Amerindians population in inland settlements whose livelihoods depend on the crafting of nibbi furniture, tibisiri baskets and other craft items
- main economic activity is ice production, followed by sugar and coconut cultivation and cattle ranching for beef and dairy
- great dams were erected across the headwaters of the Mahaica, Mahaicony and Abary Creeks to prevent the flooding of the farmlands during the wet seasons

[From: The Ten Administrative Regions (Renée Franklin-Peroune) [From Holidays, 1995, vol.3, p. 20-23, Source: [http://www.guyanaguide.com/]

East Berbice-Corentyne (Region 6)
- includes coastal plain, intermediate savannah, hilly and sandy clay natural region, and forested highland
- population of ~142,839, many live in three three towns: New Amsterdam, Rose Hall and Corriverton
- main economic activities include rice production, sugarcane-cultivation, and cattle ranching for beef and dairy on the intermediate savannah
- logging is conducted on a small scale; seasonal and montane forests yield a variety of timber
- region includes a government land development scheme located on a former large swamp, Black Bush Polder, in which people were granted land for houses rice farms

Cuyuni-Mazaruni (Region 7)
- characterized by forested highlands and a small area of hilly sand and clay natural region
- population of ~15,342
- main economic activity is mining for gold and diamonds
- known for the majestic Pakaraima mountain range (Mount Roraima and Mount Ayanganna)
- the Upper Mazaruni Hydroelectric Scheme, a hydroelectric plant planned, but not yet been built
- 8 Amerindian settlements in the Pakaraimas which grow crops to supply settlements and gold & diamond mines in the region

Potaro-Siparuni (Region 8)
- predominantly forested highland with a small area of hilly sand and clay natural region
- known for Kaieteur and Orinduik Falls which are favorite tourist attractions (the former is one of the highest single-drop waterfalls in the world)
- population of ~5,737,
- main economic activity is gold and diamond mining and forestry
- mining activities are destroying the rivers; especially the Essequibo and Konawaruk Rivers
- part of the the Iwokrama Rainforest Project is located in this region

Upper Takutu-Upper Essequibo (Region 9)
- consists of forested highlands (Kanuku and Kamoa highlands) and the vast Rupununi savannahs**;** forested Kanuku Mountains divide the region in two (north savanna ~2,000 sq. miles; south ~ 2,500 sq. miles)
- population of ~15,087, living in scattered Amerindian villages and settlements
- grassy savannas make Rupununi ideal for beef cattle production (most sold in Brazil)
- semiprecious stones are mined among the foothills of the Kamoa and Marundi Mountains
- seventeen Amerindian villages produce a variety of crafts which are sold mainly to Brazil
- region known of its wildlife populations of Giant River Otter, Arapaima, and black Cayman

Upper Demerar-Upper Berbice (Region 10)
- inland region, largest hilly sand and clay area; principal bauxite deposits are found here
- pop. ~39,106, most work for bauxite companies (extracted bauxite is exported to make aluminum)
- small portion of the Iwokrama Rainforest Project is located in this region
- cattle-rearing and forestry are done on very small scales

(3) Relevant Environmental Legislation

Concern for the environment and a national commitment to serve as wise stewards is captured in the country's earliest legislation, the 1980 Constitution of the Cooperative Republic of Guyana. The Constitution states that "*(e)very citizen has a duty to participate in activities designed to improve the environment and protect the health of the nation (Article 25)"* and that "*(i)n the interests of the present and future generations, the State will protect and make rational use of its land, mineral and water resources, as well as its fauna and flora, and will take all appropriate measures to conserve and improve the environment (Article 36)."*

Since the founding days of the democracy, the Government of Guyana has passed numerous Acts (see Box 2.2) that collectively address the country's major environmental issues. Much of this legislation is currently under revision, however, due to both a lack of multi-stakeholder consultation in developing the original legislation, and a lack of coordination between different Acts that has resulted in overlapping responsibility for a number of natural resource issues. On the ground, this lack has translated into a failure to establish clear areas of jurisdiction for implementing agencies and conflict related to ownership and usufruct rights. Existing legislation, including environmental legislation, often does not adequately address the issue of indigenous peoples' rights and ancestral claims, especially as it relates to land tenure and natural resource use rights.

Box 2.2 Guyana's Environmental Policy and Legislative History

Colonial History
16th Century – Dutch Settlement
1763 Slave revolt led by Cuffy
1796 Britain become *de facto* ruler
1834 Afro-slavery abolished, indentured laborers brought from India, Portugal and China
1851 Colonies consolidated and becomes "British Guiana"
1919. Wild Birds Protection Act
1930. Kaieteur National Park Act
1953. Forests Act
1953. Amerindian Act
1957. Fisheries Act

Cooperative Republic of Guyana
1966. Guyana (formerly British Guiana) gains independence from Britain
1970. Becomes a republic (Cooperative Republic of Guyana)
1973. Fisheries Act
1977. Amerindian Act
1980. Constitution of the Cooperative Republic of Guyana
1988. National Biodiversity Strategy
1991. Mining Act
1994. National Environmental Action Plan
1996. Iwokrama International Centre for Rain Forest Conservation and Development Act
1996. Environmental Protection Act
1997. National Strategy for the Conservation and Sustainable Use of Guyana's Biodiversity
2000. National Biodiversity Action Plan
2000. National Development Strategy
2001. National Environmental Action Plan (2001-2005)
2002. Pesticides and Toxic Chemical Control Act

Legislation directly related to the conservation of forests and biodiversity, and the government Ministry, Commission, or Board charged with the implementation of that legislation include: the Wild Birds Protection Act, Amerindian Act, Forest Act, Fisheries Act, Mining Act, and the Environmental Protection Act, and the Pesticides and Toxic Chemical Control Act (Appendix IV). Figure 2.3 shows the legislative framework (the relevant Acts and line agency charged with its implementation) that are related to natural resource management. Figure 2.4 shows the relationships between implementing institutions and the lines of authority between the legislative branches of the government and the implementing agencies. (Solid lines indicate direct lines of reporting. Dashed lines indicate actual lines of authority and decision-making. Dotted line indicates the lines of reporting and decision-making as defined in the legislation but in practice represents nominal oversight of the implementing agency.)

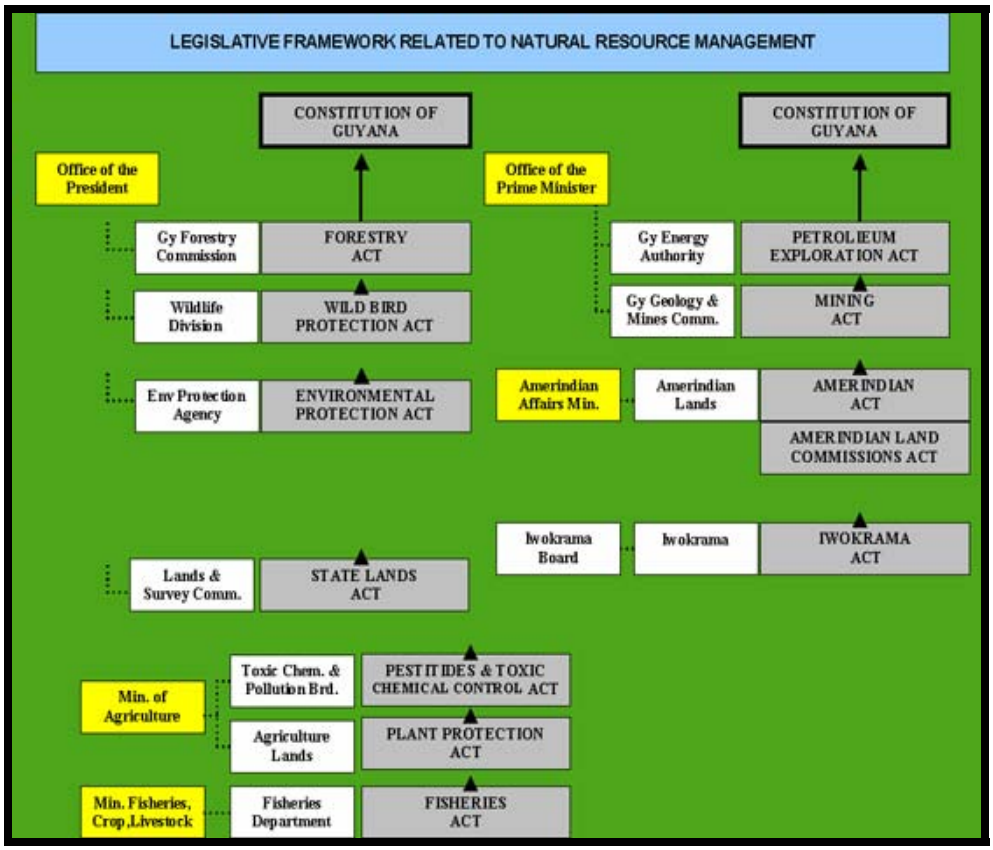


Figure 2.3 Legislative Framework Related to the Management and Access to Natural Resources in Guyana (adapted from Iwokrama, 2002a)

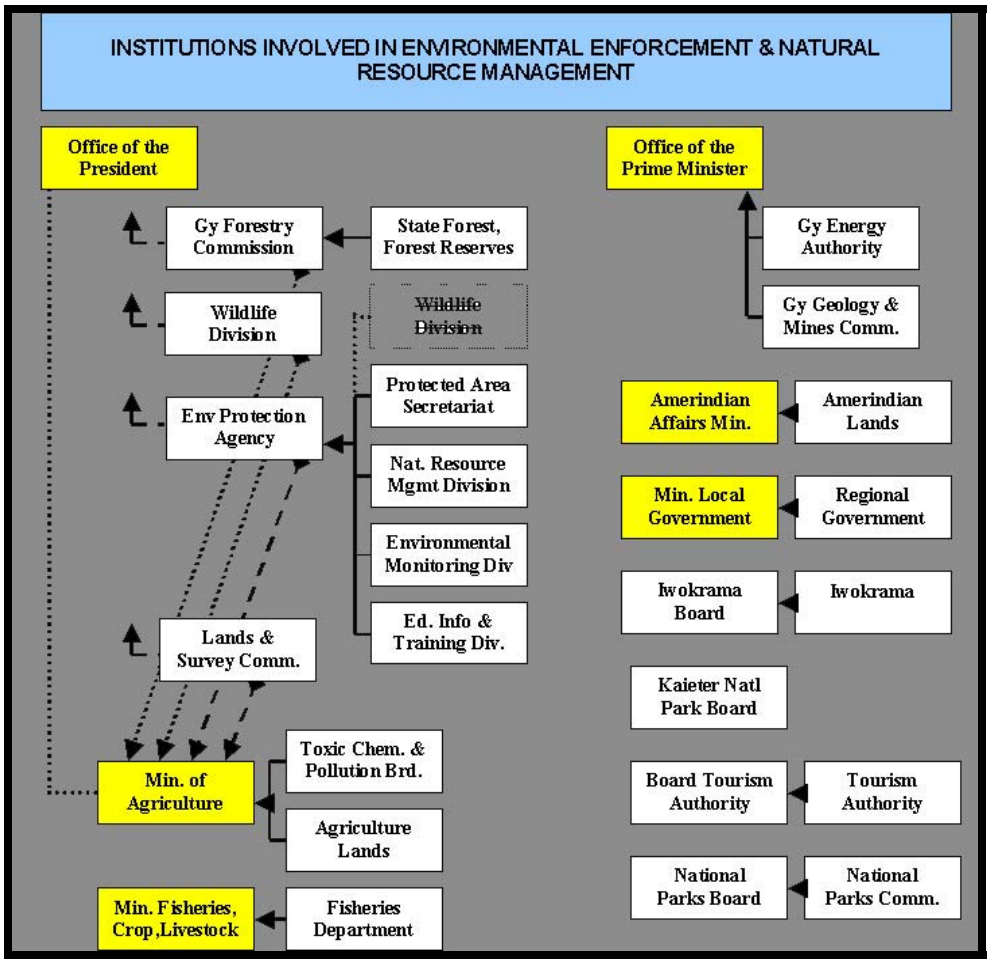


Figure 2.4 Relationship of Implementing NRM Institutions and the Legislative Bodies with Oversight Responsibilities (see text for legends) (see text for legend).

B. ENVIRONMENTAL POLICIES AND INSTITUTIONS

(1) National Environmental Policies and Implementing Institutions

The recognition of the interdependency of good stewardship of natural resources and sustained socio- and economic-development has been clearly stated in the following statement. "*Guyana unequivocally declares her commitment to Sustainable Development including Sustainable Human Development as the major pillars of our country's socio-economic programme. This integrates economic, environmental and social values during planning, and distributes benefits equitably across socio-economic strata and gender upon implementation. It also ensures that opportunity for continued development remains undiminished for future generations* (NEAP, 2001)."

In fact, over the past decade, the Government of Guyana has articulated its commitment to conservation of it rich natural resources and protection of biodiversity through numerous policy documents including the National Environmental Action Plans (1994 and 2001) National Strategy for the Conservation and Sustainable Use of Guyana's

Biodiversity (1997), National Biodiversity Strategy (1988), National Biodiversity Action Plan (2000), and the National Development Strategy (2000) (see Box 2.3).

Box 2.3 National Environmental Plans and Development Strategies

National Environmental Action Plan (NEAP), 2001-2005
The NEAP addresses wildlife and sustainable use of natural resources. It identifies the main environmental protection goals as: preventing or controlling pollution of land, air and water; preserving and conserving natural habitats and fragile ecosystems; and ensuring sustainability of natural resources for economic development (EPA, no date). Under the thematic approaches to environmental protection, the document identifies global issues of biodiversity conservation, climate change, and land degradation and ozone depletion. It describes a wide range of sectoral programs, and the various means of implementation of these programs. Under conservation and management of biodiversity, NEAP discusses the establishment of the National Biodiversity Advisory Committee (NBAC), which now has the oversight for conservation practices of the country's biological resources. The NEAP places high importance on integrated coastal zone management in relation to the threat of climate change and rising sea levels. The Plan also acknowledges degradation and the need for protection of natural habitats and marine resources due to various human activities.

The National Biodiversity Action Plan (NBAP)
The NBAP has been identified by the Government of Guyana as the overall strategic framework for issues related to protected areas. Approved by the Cabinet of Ministers in 1999, the NBAP promotes both the conservation and responsible use of biodiversity and biological resources. Strategic principles of the NBAP include the incorporation of biodiversity conservation into the national agenda of all developmental planning activities. The plan places high importance on using a participatory approach and on the need for collaboration and commitment from all stakeholders. The NBAP also stresses taking a precautionary approach in addressing threats to biological diversity. In 1999, a National Workshop on the implementation of the NBAP sought to arrive at a consensus on five priority areas for biodiversity conservation. The five areas identified were: Shell Beach, Orinduik, Mount Roraima, Kanuku Mountains, Southern Guyana Region.

The National Biodiversity Strategy
The 1997 "National Strategy for the Conservation and Sustainable Use of Guyana's Biological Diversity" contains Guyana's current policy on biological diversity. It was an initial step to define the national position on biodiversity and it sets out a number of general objectives (citing Hoefnagel, 2001). The Strategy articulates that conservation and sustainable management of biodiversity represent an investment that can yield substantial benefits for indigenous people, local communities, and the population as a whole. It states that biological diversity and its components have value for agricultural, genetic, social, economic, scientific, ecological, cultural and aesthetic purposes. It suggests that measures be taken to study and use genes, species, habitats and ecosystems in an equitable and sustainable manner, to protect them from domestic and foreign predatory activities, to avoid waste or misuse of biodiversity, and to provide opportunities for sustainable management of biodiversity. It emphasizes the need for a cross-sectoral and multidisciplinary approach to the management and conservation of biodiversity. Finally, it emphasizes the need to increase awareness and appreciation of the values and benefits of conservation and sustainable use of biodiversity among all stakeholders.

The National Forest Plan (NFP)
The NFP, developed in 1998, proposes a range of activities under five programmatic areas: land use, forest management, research and information, and forestry training and education. The Plan provides specifically for liaison between the GFC and the National Biodiversity Advisory Committee (NBAC) in relation to both use and management of biodiversity in the forestry sector and the development of guidelines for best practices on intellectual property rights in the sector.

National Forest Action Plan
The NFAP is designed to optimize the contribution of forestry sector to the socio-economic sector in harmony with environmental considerations and the need to conserve the tropical forest ecosystem. The Government of Guyana officially proposed a Protected Areas System in the 1989 National Forestry Action Plan (NFAP).

Integrated Coastal Zone Management Action Plan (ICZM)
The main objectives of the ICZM are: to promote sustainable development of coastal resources; to facilitate research and training in Integrated Coastal Zone Management and increase public awareness of associated issues; to improve coastal data compilation, management, and sharing; to provide guidelines towards alleviating adverse impacts on the coastal zone; and to strengthen the capacity of key national institutions to execute effective Coastal Zone Management programs (EPA, 2000). The EPA serves as the overall coordinating body in the implementation of these activities.

Fisheries Management and Development Plan, 1994-2004
A draft fisheries Management and Development Plan for the period 1994-2004 presents a fairly comprehensive overview of the fisheries sector but has yet to be finalized. Elements of this plan are reflected in the National Development Strategy. The Plan identifies threats to the fisheries sector that include: over harvesting of certain species of marine fisheries, under-utilization of other groups, and pollution due to mining and agricultural use of chemicals and pesticides (EPA, 1999).

National Development Strategy (NDS)
The NDS represents the highest level of national planning, laying out priorities for Guyana's economic and social development. It is an integrated document outlining the national strategy and policy in a number of areas, including: agriculture, environment, forestry, fisheries, mining, and tourism. Ideally, the NDS serves as a frame of reference for policy and planning in the respective sectors. Although, the NDS does not treat biodiversity among the subject areas, it does acknowledge the Government of Guyana's commitment to conservation and protection of elected forest areas with high species diversity as genetic reservoirs for the future. It identifies the need to allocate Guyana's outstanding natural areas for recreational purposes, and to preserve the country's historical and cultural heritage (NDS, 1997).

Adequacy: The various policy documents listed above have provided reviews of Guyana's environmental portfolio in terms of institutional capacity and legislative adequacy, identified constraints to effective natural resource management and biodiversity conservation, and made recommendations. A summary of key considerations including the constraints and the opportunities (expressed as recommendations) are described below.

(a) Institutional Capacity

Key line agencies involved with enforcement of environmental legislation or responsible for managing the natural resources include the following:

- Environmental Protection Agency is in charge of environmental protection in the form of prevention or control of pollution and the assessment of the impact of economic development on the environment;
- Fisheries Department of the Ministry of Fisheries, Crops, and Livestock is responsible for fisheries policy, planning, and regulation and the development of aquaculture;
- Guyana Forestry Commission is accountable for the sustainable use and conservation of forests in Guyana, developing policy, and monitoring and enforcement in the forestry sector;
- Ministry of Amerindian Affairs represents the Amerindians of Guyana and implements components of the Amerindian Act relating to natural resource management on Amerindian titled lands;
- Wildlife Division of the Office of the President houses the wildlife management authority and regulates the trade in wildlife; and
- Environment Division is a newly constituted branch of the Guyana Geology and Mines Commission, upgraded from a unit with donor support from the Britain development agency (DFID), charged with addressing the industry impacts resulting from siltation and the use of mercury and other environmentally harmful chemical.

Overall Guyana's environmental line agencies are considered weak; only minimally effective in their role as regulatory agencies, and possessing with little or no management capacity. This is a broad-brush generalization and it should be noted that several agencies have received substantial and sustained funding to support staff development (capacity building primarily through training) and institutional strengthening (technical assistance, supplies, and equipment) through both bilateral and multilateral support (DFID and CDIA support to GFC, EPA, GMMC; and ITTO, UNDP, WB/GEF support to the GFC and Iwokrama).

But, despite major in-roads, all agencies continue to suffer from chronic, systemic problems, resulting from the lack of technical expertise in the work-force. The constraints to effective management and conservation of forest and biodiversity have been identified as follows.

Constraints associated with institutional capacity

- unnecessarily complex and inefficient national institutional arrangements -- the fragmentation of national natural resource management institutions along sectoral lines (timber, fish, wildlife, and minerals) in Guyana has lead to duplication of effort, lack of coordination, and weak available human and financial resources as they are spread across sectors;

- implementing institutions are handicapped due to in adequacy in the legislation -- which is either outdated or lacks clear definition on agency responsibilities, resulting in overlap of responsibilities and conflict, at times resulting in violations going unpunished because government agencies are unable to resolve jurisdictional disputes;
- the absence of human resources for national and local management processes -- the environment sector suffers the same "brain-drain" as seen in the rest of government sectors in which better educated or trained staff leave Guyana to seek better paying job and security in other countries);
- line agencies are further hampered by the lack of field presence and autonomy in decision-making at the field level -- although the Government is in process of decentralization there has been little progress and most environmental and natural resource agencies remain highly centralized, most concentrated in the capital city of Georgetown, with little field presence;
- the few officers operating in the field lack the needed resources -- to be effective in management, enforcement, environmental education or outreach and extension work; and as a result,
- there is very low public awareness of conservation needs and the environmental issues in Guyana and therefore there is little or no support from the general population – who, in other countries typically function as 'environmental watch-dogs' or advocates, or as partners in co-management efforts or assist the law enforcement and monitoring functions of the government.

Recommendations associated with institutional capacity

1. As noted in the National Biodiversity Action Plan (1999) there is a need for the GoG the develop the necessary wildlife management mechanisms which includes the development of institutional capacity for wildlife management; establishing post-graduate training in wildlife management; and fostering an integrated approach to wildlife management enforcement and monitoring through partnerships at the local level.
2. Environmental institutions should promote a corporate culture that recognize and engage all relevant stakeholders through an open, consultative and participatory process, as they carry out their regulatory and management functions. (Such stakeholders would include, but are not limited to: individuals, institutions, local communities, and social groups; timber concessionaires and sawmill operators as well as small-scale chainsaw timber harvesters; wildlife traders in Georgetown as well as wildlife trappers and hunters in the interior; local and international NGOs; organized church, school and environmental groups; teachers and academic and university researchers; and nature-based tourism industry representatives and other relevant members of the private sector.) The purpose of consultative and participatory processes should facilitate the transfer information and knowledge in both directions.

3. In recognition of the fact that education programs are fundamental to developing the capacity of stakeholders to make informed inputs into legislative changes and also for implementation of the legislation, all line agencies should integrate an education and outreach function. In this context, education programs need to focus not just on local people and implementing government agencies, but also on policy and law makers, and those use rely on natural resources such as wildlife managers, timber and mining operators, and those in the tourism and service sectors.

(b) Legislative Adequacy

Despite the passage of several important pieces of legislation over the past decade [Iwokrama Act (1996); Environmental Protection Act (1996); Pesticides and Toxic Chemical Control Act (2002)] (see Box 2.2), and the drafting of regulations under the Environmental Protection Act (Species Protection Regulations and Protected Areas Regulations) that clearly demonstrates the Government's commitment to environmental protection and sustainable development of natural resources, much of the current legislation remains outdates and the lines of decision-making and oversight are problematic (see Box 2.3). Efforts have been made to address this failure by drafting revisions [Forests Act, Fisheries Act, Amerindian Act] however the Government has been slow to follow through. In terms of overall adequacy, most major environmental topics have been considered within the legislative framework with one major notable exception as it relates to biodiversity conservation: there is no national policy on wildlife[1] in Guyana. There is a need for both policy and legislation to establish an effective framework for management of wildlife and fisheries.

Guyana law pertaining to wildlife in Guyana (Wild Birds Protection Act, Fisheries Act, and the Environmental Protection Act) [and internationally (the Convention on International Trade in Endangered Species (see "International Policy" section below)] consider issues based primarily on its economic or "commodity" value of wildlife, much like an agricultural product. Current fisheries and wildlife laws emphasize the control of export, licensing, and permitting export (of either living or dead animals (for consumption or for the pet and aquarium trade), or export of animal parts (fur, feathers, skins, oils). This reflects two fundamental flaws.

First, the long-term viability, and thus ensuring sustainability, of wild populations under current export guidelines is not guaranteed. Although quotas are established, these are

[1] Some concerns have been raised by stakeholders that the new wildlife legislation should be a Statute rather than a regulation under the Environmental Protection Act. The draft regulations include Statute level decisions about wildlife that perhaps should not be made by Ministerial order. The original format for this legislation was the "Conservation of Wildlife Bill" and was prepared as a Statute or Act of Parliament that would require presentation to the National Assembly. The result would be an Act of Parliament which is law. On the other hand, regulations are made by the relevant Ministers. A Minister cannot make regulations unless there is a Statute which gives him the power to do so. The Environmental Protection Act 1996 gives the Minister power to make various regulations including regulations for "the protection of particular species of prescribed flora and fauna." Some of the contents of the draft wildlife legislation are Statute level, while others are Regulation level.

generally not formulation based on any scientific data or population census or inventories (Iwokrama, 2002). There is a lack of knowledge necessary to adequately protect and manage most of Guyana's natural resources or biological diversity.

Second, the narrowly defined or perceived value of wildlife and the relationship between people and wildlife as reflected in the country's stated legislation and policy. Specifically, focusing on the international trade ignores other, perhaps equally important considerations as it affects the people of Guyana in terms of local livelihoods and cultural traditions. It ignores the need to manage wildlife populations that are an important source of food and protein – it ignores subsistence use. The limited consideration also ignores the ecological values of wildlife, as see dispersers, pollinators, and as a functional component of the natural ecosystem. Current legislation ignores the local trade in bush meat and fails to address issues of human-wildlife conflicts.

As a result of legislative and policy inadequacy, in-land fish and wildlife in Guyana remains an "open-access" resource, impacted by over harvest habitat modification and introduced diseases. Over-harvesting due to hunting, for food, sport, or to support the international trade has been evident in many parts of the Amazon. Hunting of large cats, Black Caiman, Giant River Otters, and howler monkeys has been so effective in the more accessible parts of the Amazon that these animals are now only found in the remotest of areas. In Guyana's forest interior healthy populations of the animals can still be found due to their remote and inaccessible locations. However there is a very active illegal wildlife trade that threaten to pressure these populations in the near future.

Constraints associated with adequacy of environmental legislation

- legislation lacks harmonization – a fact that was recognized by the three major recent policy documents (NEPA, NBAP, NDS). This is necessary if present and future policy and legislative-intent are to realize in the areas of environment, biodiversity, fisheries, and wildlife protection; establishment of adequate protected areas; promotion of ecotourism as a way to help fund and achieve conservation objectives; and to advance the rights of the Amerindian people. Without clearly defined and fully integrated policy guidance, it is difficult to develop legislation that incorporates issues such as clear tenure and ownership responsibilities, government agency jurisdictional responsibilities, and legislative tools for wildlife and fisheries management in Guyana;
- present laws relating to the natural resource (timber, fisheries, wildlife) management are antiquated -- and in many cases fines identified in the law are low and therefore do not serve as a deterrent: many terms of the law are not implemented;
- established quotas (governing the Wild Bird Act, Fisheries, and Wildlife trade) are, at best, weak management tools -- as, for example, the case of the Wild Bird Act, the Minister may authorize any person to kill and export wild birds (section 8), may remove the name of any bird from the list (and thereby its protect under the law) (section 9), or to change the close season. Yet, there is no requirement

such changes be done in a sustainable way or after consideration of scientific data, and there is no requirement for consultation with stakeholders;

- conflicts over natural resources arise because the existing legislation are so complicated and controversial -- a situation that exists in part, due to the historic failure to conduct adequate consultation and discussions among stakeholders, and because the system of central government control fuels conflicts because local people view natural resource issues as a local issue that is intimately tied to local livelihood security and cultural survival[23]. The danger of establishing legal mechanisms for objectives that are driven by external interests (either for environmental or economic interests) are often perceived as pandering to international interests and being unaware of the real needs of people in the country; and
- Guyana lacks a comprehensive wildlife policy -- that would form the basis for developing the new wildlife legislation to manage populations outside of protected areas, and to establish a system of protected areas that would safeguard some fraction of the wild populations within a system of protected areas.

Recommendations associated with adequacy of environmental legislation

1. Revise antiquated legislation and draft new needed legislation to address:

- The inadequacy of the legislation must address its deficiencies due to limited scientific and inventory data, partial existence of a structured and integrates legal framework, limited institutional cohesiveness, and potential threats from commercial hunting and fishing.
- The issue of ownership rights of different stakeholders, need to be clearly defined. For example, Sections 12-14 of the Guyana Forests Act (1953) clearly indicates that the State owns all forest produce from State Forests. Section 6 of the Mining Act (1989) states that the "all the minerals within the lands of Guyana shall vest in the State." The Fisheries Act (1973) does not make clear statements about ownership of fisheries resources. The ownership of the wildlife and fish resources of Guyana by the State perhaps needs clarification in legislation. The ownership of wildlife and fish resources on private lands and on lands owned by Amerindian communities will also need clarification.
- The management rights need to be clearly defined. For example, the Amerindian Act (1977) transfers to Councils the "rights, titles and interests" of the State to the Councils excepting rivers and minerals. These kinds of transfers of rights of ownership and management need to be clearly described in new legislation. In section 27 the exception in respect of Amerindians refers to "traditional pursuits" which is vague and practically impossible to enforce.

---

[2] The NDS comments that "Amerindians are insufficiently involved in the management, administration and conservation of natural resources. Policies and mechanisms need to be established, possibly with assistance from NGOs with relevant experience, to grant substantially greater autonomy and foster greater community involvement in natural resource and environmental management."

[3] Amerindian leaders noted that the new wildlife legislation needs to work with the regulations that presently exist concerning trapping, hunting and fishing in Village Councils

- The mechanism for multi-stakeholder participation in the development of management plans is needed, including the formation and functioning of management and scientific authorities, and a clear statement of the roles of stakeholders in the development and implementation of management plans.
- New wildlife legislation should address all aspects of human-wildlife interactions in a human ecosystem context including subsistence and commercial uses of wildlife; wildlife control; the protection and rehabilitation of wildlife and their habitats, research on wildlife, and the social, cultural and economic sustainability of wildlife uses.

2. Form a Ministry of Environment. A potential solution to the complicated national institutional structures (policies, laws, and agencies) for managing wildlife and other natural resources could be resolved through the formation of a Ministry of the Environment through the combination of the present agencies (GFC. GGMC, Fisheries Department, EPA, Wildlife Division) into one Ministry. Subsequent clear separation of the monitoring-regulatory and line management functions within the Ministry would be necessary. And extension officers and rangers from the Ministry would then implement across the sectors including mining, forestry, wildlife, tourism and fisheries.

(2) Regarding International Environmental Treaties and Conventions

The Government of Guyana is a signatory to several international, U.N. sponsored conventions and agreements to help conserve the country's rich biological diversity: the Convention on International Trade in Endangered Species of Flora and Fauna (CITES) and the Convention on Biological Diversity (CBD), the Convention to Combat Desertification, and the U.N. Framework Convention on Climate Change (UNFCCC). These guide the development of national policies and legislation and reflect national policies based on international agreements on "best practice." As signatory to the Conventions countries are expected to enact the necessary national legislation that reflects the intent of the agreement. These conventions espouse approaches to wildlife, natural resource management, and land use practices that incorporate people and their rights; focus on the management of whole ecosystems and land use planning, and reinforce the need for decentralization and local community involvement in management and shared responsibility. Below is an overview of those environmental agreements that the GoG has joined or is currently under consideration.

(a) Convention on the International Trade in Endangered Species (CITES)

The Convention serves to regulate international trade in threatened species of wildlife; its purpose is to protect certain species of plants and animals from over-exploitation. It does this by listing plants and animals in different appendices and applying different rules to the trade (designated as *Appendix I* and *II* CITES listing). Guyana became a signatory to the Convention on International Trade in Endangered Species of Flora and Fauna (CITES) in 1977. Enforcement of CITES regulations in Guyana is the responsibility of the customs, police, and the Office of the President. The Wildlife Services Unit under the Office of the President assumes the management and role as the country's scientific

authorities responsible for administering CITES regulations and issuing licenses for the export of animals. Species found in Guyana currently under CITES listings are listed below (also see this report Appendix V).

- *Appendix I* (representing species threatened with extinction which are or which may be affected by trade) – In Guyana these include the giant river otter, black caiman, West Indian manatee, jabiru stork, and peregrine falcon (which are given limited protection under the laws), and the bush dog, giant armadillo, harpy eagle, jaguar, jaguarundi, margay, oncilla, puma, scarlet macaw, southern river otter (which are not protected under existing legislation).
- *Appendix II* (representing species which are not necessarily now threatened but which are or may be affected by trade) – In Guyana these include arapaima, cats not listed in Appendix I, the Cock of the Rock, eagles, falcons, giant anteater, hummingbirds, macaws, monkeys, mussurana, owls, parakeets, parrots, poison arrow frogs, river turtles, salipenta, spectacled caiman, tapir, tortoises, toucans, vultures and wild hogs. Of these only the river turtles, Spectacled Caiman, falcons, hummingbirds, owls and toucans are protected under the laws of Guyana although this protection is limited.

Constraints associated with meeting country's commitment under the CITES

Under CITES, trade in Appendix I animals is strictly regulated. The Conventions allows trade in Appendix I species only under very limited circumstances and requires various permits from the Guyana authorities and various permits from the country that is importing the animals. It is a requirement that a scientific authority of the State of Guyana advises that exporting the animal will not be detrimental to the survival of the species. A management authority of the State of Guyana also has to confirm that the animal was not obtained in a way which is against the laws of Guyana. Generally the management and scientific functions are held by separate agencies and it is the role of the scientific authority to advise the management authority on technical issues, for example on export quotas.

Recommendations associated with meeting country's commitment under CITES

The weaknesses identified under the discussion of institutional capacity related to wildlife management responsibility apply in the county's efforts to meet its commitment under CITES. As noted under the discussion of institutional capacity, the wildlife management responsibilities and capabilities in Guyana are lacking and there is a critical need to support the technical capacity of the country's Scientific Authority as it is important to note that CITES listings relate strongly to wildlife involved in International Trade, rather than animals that may be threatened as a result of other causes.

(b) Convention on Biological Diversity (CBD)

The goal of the Convention on Biological Diversity to protect the earth's biodiversity by promoting "sustainable use." To achieve this goal, it is recognized that the sustainable use must reflect fair and equitable sharing of the benefits arising out of the utilization of these resources, including appropriate access to genetic resources and the appropriate

transfer of relevant technologies, while taking into account all rights over those resources and to technologies, and by appropriate funding.

Constraints associated with meeting country's commitment under the CBD

As a signatory to the CBD, Guyana needs to make more substantive progress to meeting the terms of the convention and is expected

- to make sustainable use of biodiversity a part of national decision-making. (There is also a requirement for *in situ* conservation including the establishment of a system of protected areas and protection of ecosystems, natural habitats and maintenance of viable populations of species in natural surroundings;
- to recognize and respect the role of indigenous communities to maintain and protect biodiversity[4]; and
- the state must also protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements.

Recommendations associated with meeting country's commitment under the CBD

1. The Government of Guyana is encouraged to implement needed domestic policies and legislation to help achieve the goals of the convention related to the requirement for in situ conservation through protected area and ecosystem protection; integration of indigenous communities into its national decision-making and protection of biodiversity; and sustainable use of natural resources.
2. Guyana is not currently a member of the **RAMSAR Wetland Convention** which provides habitat protection to unique and often fragile wetlands and thus protects the plants, fish and wildlife dependant on this unique ecosystem. Such protection is needed to ensure the survival of several species of in-land fish including the endangered arapaima (one of the World's largest fish), the giant otter, and several endangered species of freshwater turtles and tortoises.

(c) UN Framework Convention on Climate Change (UNFCCC)

Guyana is a low-lying state with 400 km. coastline exposed to the Atlantic Ocean that is about 0.5 to 1 meters below high-water mark. It highly vulnerable to one of the expected consequences so global warming – the potential rise in sea level. The President of Guyana signed the United Nations Framework Conventions on Climate Change in Rio, in June of 1992, pledging to abide by the terms of the Convention, and Parliament ratified it in 1994.

[4] Article 8 (j) says that the States must "Subject to national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant to the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge."

Constraints associated with meeting country's commitment under the UNFCC

The GoG has designated a National Climate Committee which needs government and institutional support in its mandate to coordinate all activities related to climate change, ozone depletion and desertification (the latter in compliance under the **U.N. Convention to Combat Desertification**.)

Recommendations associated with meeting country's commitment under the UNFCC

The GoG has taken steps that will help the country fulfill its commitment under the Framework Convention which should be encouraged and supported as described below.

1. Under the commitment of the Convention, a country must prepare an inventory of greenhouse gases, conduct an assessment of potential impacts of climate change in Guyana, analyze potential measures to abate the increase in greenhouse gas emissions and to adapt to climate change; prepare a national action plan to address climate and its adverse impacts, and prepare the first national communication of Guyana at the Conference of Parties. In 1998, the Government of Guyana and the UNDP developed a project to assist Guyana to comply with UNFCCC. The World Bank GEF support will fund the Project with a cash contribution of US$196,730. The status of this work is not currently known but efforts should be taken to conduct the necessary inventory and assessments.
2. The role of the National Climate Committee of Guyana (NCC) is to provide policy guidance and direction on actions in relation to projects in Guyana and on measures to adapt to the consequences of the climate-related environmental problems. The Committee's guidance and recommendations will require both policy and legislative support and are best developed through a multi-stakeholder participatory consultative process.
3. The GoG can encourage research into Climate Change related issues to help mitigate the effects of climate change. For example, Iwokrama, with assistance from the U.S. National Atmospheric Science and Administration (NASA) and the U.S. Department of Agriculture (USDA), is contributing towards mitigating climate change by engaging in research looking at the role of tropical forest in carbon sequestration. As a result, Iwokrama produced a study on the quantification of the short-term carbon stock responses to reduced impact logging and conventional logging practice in Guyana. Iwokrama also engaged in a spatial and temporal study of total biomass and carbon content (standing biomass, leaf litter, soil organic matter) of several key forest types within the Iwokrama Forest. Iwokrama intends to develop an understanding and estimates of the function of tropical forest to store carbon that could inform economic consideration of this forest value.[5]

[5] http://www.iwokrama.org/carbonsequestration.html

Section III. Issues and Opportunities

Despite its abundance of natural resources inland and fertile agricultural lands along the coast, Guyana remains one of the poorest countries in the Western Hemisphere due, in part, to political conflict[1], violence[2], mass migration of many of its intellectual and skilled citizen to economic opportunities outside the country, and high incidence of poverty in the rural interior, which is significantly isolated from the more developed coastal areas by poor communication and transportation infrastructure.

In many ways Guyana is two separate countries: one exists on a small narrow strip of coastal plain, made up of roughly 10% of the area, while housing roughly 90% of the population. This coastal Guyana has a similar culture as the English-speaking Caribbean, as well as similar environmental issues – solid waste challenges, inadequate water supply and sanitation, pesticide and fertilizer runoff from agriculture. The other Guyana, the interior Guyana covers more than 90% of the country's overall area and has only 10% of the population. The interior is also known as the "hinterlands" and culturally and environmentally it has more in common with Brazil and Venezuela than with coastal Guyana and the Caribbean. It is primarily made up of scattered Amerindian (indigenous) communities that struggle with issues related to land tenure (indigenous claims and conflict from invading colonists from neighboring countries), and socio-economic, environmental, and human health impacts associated with mineral and forest resources exploitation. Largely because of its low population density, low level of development, and the resultant relative lack of threats to biodiversity, Guyana presents a significant opportunity for environmental conservation and pursuing this opportunity need not conflict with Guyana's needs for development. In fact, Guyana's best chance may be to address its economic and social needs by developing and managing its natural resources in a sustainable, equitable manner. However, Guyana is urgently in need of a strengthened and more involved civil society and, as it develops its natural-based economic and trade potential, greater environmental protection and multi-stakeholder participation in resource utilization and design of much needed infrastructure.

---

[1] **Regarding political conflict:** Guyana faces many challenges to the consolidation of its democracy, most notably the political impasse among parties and the politicization of race and ethnicity that seem to pervade all aspects of Guyana's political system. The Mission has proposed an approach to addressing these problems through a combination of support for inclusiveness, conflict resolution and transparency. In particular, given the lack of dialogue between the two major political parties at the national level, the Mission plans to encourage local-level citizen participation and work with civil society groups.

[2] **Regarding violence:** Violence and crime in Guyana are deterring economic growth and investment, as well as increasing citizens' lack of confidence in the government's ability to provide basic services and security. The Mission has proposed the idea of community-oriented policing to change police performance and the role of police to be "help agents" for citizens. The LAC Bureau has cautioned, however, that as the mission considers developing a community-based pilot program, that it incorporates community policing activities into a broader community-based program.

The USAID/Guyana Mission has proposed a strategy focusing on consolidation of democracy and good governance, reduction of the risk of HIV/AIDS transmission, and improvement in the economic policy environment to foster and expand trade. Although the new Country Strategy will not include a self-standing environment program there are tremendous opportunities to address environmental needs within the context of the economic growth and democracy programs, and to provide strong synergy to the population health/HIV-AIDS program. Indeed, given Guyana's critical need for greater civil society participation and economic growth, and the fact that much of the growth will likely be fueled by the country's vast natural resources, a collaborative approach among the program elements may be the most effective approach it achieve the Mission's strategic objectives. The following sections describe three issues or sectors that may offer opportunities for USAID engagement under the new strategy: (A) Road Development; (B) the Forestry Sector; and (C) the Tourism Sector.

A. ROAD DEVELOPMENT AND THE TRANSPORTATION NETWORK

The intersection of environmental impacts, economic growth, and the efforts to promote democracy and good governance is found (as the colloquial saying goes) *"where the rubber meets the road."*

(1) What Is Being Proposed and Why?

As noted previously (see Section I, "National Economy"), Guyana is one of the poorest countries in the Western Hemisphere[3] although the nation has a good potential for economic growth given relatively small population and significant forest and mineral resources. The existence of these resources provides long-range hope that if political conflicts can be solved, the sustainable and equitable exploitation of natural resources could support long-term economic development in Guyana. In addition to the export of forest products (finished and unfinished), seafood, and agriculture, tourism has been identified as an underdeveloped resource that could provide both employment and an incentive for the preservation of forest resources. However, in addition to long-running political and ethnic conflict, one major constraint to the economic development of Guyana is an inadequate transportation system, particularly in the inland regions.

In the (2000) National Development Strategy (NDS)[4] the Government of Guyana identified the development of the road system as a central feature in the country's development plan. Specifically the NDS suggests: investment to rehabilitate and expand the existing paved road system; the construction of all-weather roads to mining, forest, and agriculture areas to facilitate development; and the completion of the Lethem-Georgetown connector road (referred to hereafter as "*The Road*") to facilitate the economic development of southern Guyana and create opportunities for trade with neighboring countries. The NDS considers the transportation to be critical to Guyana's economic development (see Box 3.1).

---

[3] 35 percent of the population in Guyana lives in poverty (with much higher percentages in rural and Amerindian areas). WB

[4] The NDS sets out priorities for Guyana's economic and social development.

Box 3.1 Vision of Completed Transportation Infrastructure

The completed transportation infrastructure envisioned in the NDS would…

- create an inter-connected road system to enable easy road access to neighboring countries, Brazil, Venezuela and Surinam;
- reduce the costs of utilizing the country's timber and natural resources, thus making them more competitive in international markets;
- assist in the penetration of the interior, the facilitation of eco-tourism, and the opening up of new lands for a wide variety of economic activities, including making suitable areas for diversified agriculture in the hinterland more easily available, particularly in the Intermediate and Rupununi savannas;
- relieve the over-crowding of the coastland, thus improving the quality of life of the inhabitants of both the coastal and interior areas and making the equitable distribution of economic activity more feasible, not only in the agricultural but also in the manufacturing and small- industries sector; and above all
- contribute immensely to the social and physical unification of Guyana.

[Source: Iwokrama (2002b). Forest Road Corridor Management Plan 2003-2007]

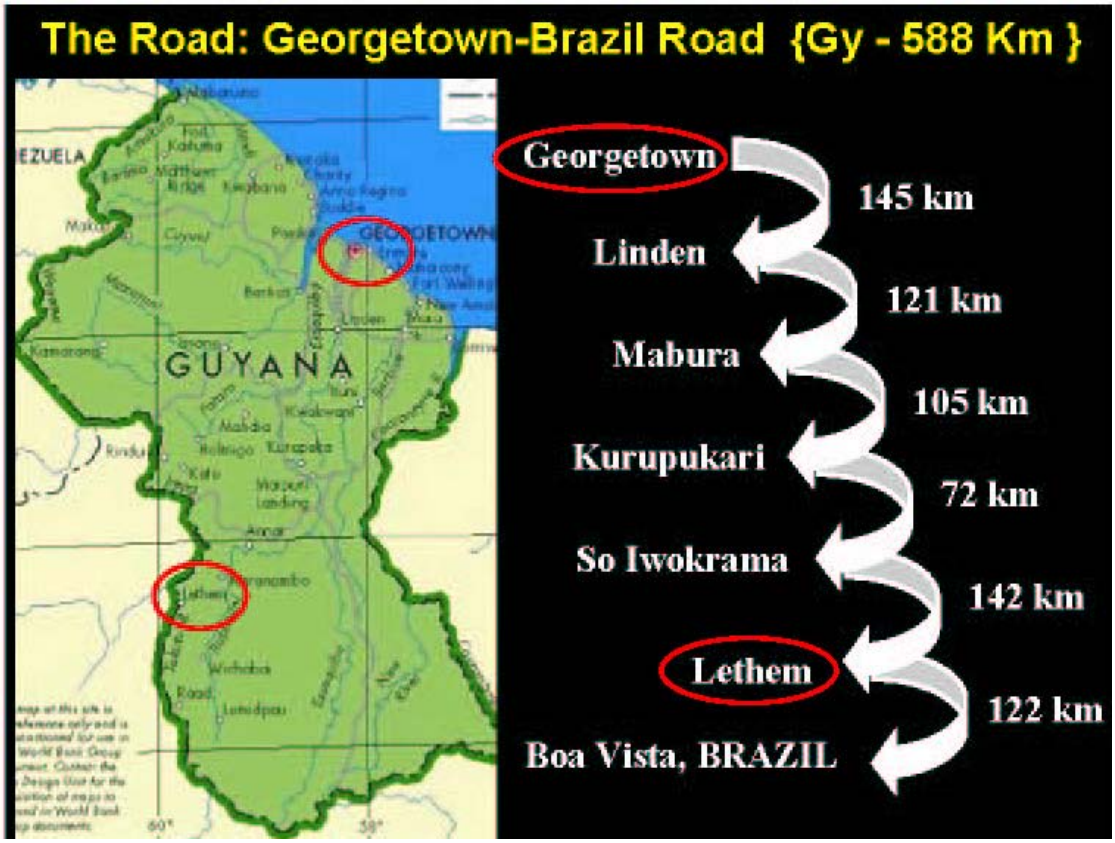


Figure 3.1: "The Road" linking Georgetown to Lethem and offering Brazil access to Guyana's coastal ports and harbors.

Box 3.2 Description of the Georgetown-Lethem Road

The 585 km Georgetown-Lethem road (Figure 3.1) has a long history, beginning back in the early 20th Century, of serving the transport of cattle overland from the interior savannas through to the coastland markets. The road also links the coast with the forested highlands (approximately 63 percent of Guyana's landmass and home to 6-10 percent of its total population). Much of The Road is dirt and whole sections are in disrepair, requiring trucks to travel in caravans in order to pull each other through rough sections, particularly in the rainy seasons. Transit from Georgetown to Lethem can take 12 hours or longer. According to a recent study funded by the European Union, the relatively low level of traffic and the rate at which maintenance or repairs

are being made to The Road suggest that the section from Linden to Lethem Road corridor will not be upgraded to an all-weather paved highway status in the near future. A more likely situation is one of accelerated road and bridge repair and maintenance, with added drainage structures to allow passage by 4WD vehicles in all but the most extreme wet weather conditions. The populations that would be served by an improved road include: Georgetown (pop. 230,000), Linden (pop. 26,000), Lethem, and the Brazilian city Boa Vista (pop. 154,166).

(2) Who Receives the Benefits and Who Bears the Costs?

There are many benefits and many costs associated with the road system proposed by the NDS. The challenge facing Guyana is to proceed in a manner that will yield the maximum benefits from access, while minimizing the social and environmental (and ultimately economic) costs associated with building the needed infrastructure. In this case, the objective of *sustainable development* will be to achieve development without transferring unsustainable (external) costs to civil society and the immediate forested and savannah environment. To examine this challenge, it is necessary to first identify and assess likely positive and negative impacts, and then to determine what prevention and mitigation measures would need to be implemented, using an integrated environmental, social and economic approach, to minimize negative and maximize positive impacts. Costs and benefits, like roads, are spatially distributed, although they may not be equally distributed and their values can vary widely.

(a) Economic Benefits Associated with Roads

With respect to "The Road" between Georgetown and Lethem, its value in terms of the transport of goods is evident. As noted in Box 3.2, the Georgetown-Lethem road has been supporting the transportation of cattle overland from the interior savannas through to the coastland markets since the early 20th Century. An improved, paved, year-round road would also link Guyana to the rest of the South American continent. As the only English-speaking country on the continent, Guyana is uniquely attractive to North American and British trading partners. An accessible and reliable overland

transportation system will also greatly reduce the cost of extracting forest and mineral resources and, if carefully designed, could increase the likelihood of generating needed cash-flow and employment. A road could also guarantee year-round access to many of Guyana's scenic vistas, and areas of exceptional natural beauty, cultural significance, and historic interest (such as petroglyphs). Such access will be necessary if Guyana hopes to develop its national tourism industry.

(b) Economic Costs Associated with Roads

In addition to the materials and labor costs inherent in undertaking a substantial infrastructure project, road development can have less obvious economic costs as well, particularly if projects are not well designed and managed. For example, once The Road is upgraded to an all-weather surface, permitting easy access between Guyana and Brazil, the Government of Guyana will risk losing tax revenue from illegally exploited minerals and timber unless systems are in place to monitor cross-border trade and enforce regulations on extractive industries, large and small.

Guyana's emphasis on extractive resources to promote economic growth is not a new in the tropics. Although this path has been well traveled, success has not always been the result. Guyana will need to undertake careful road planning in order to avoid a boom-and-bust effect on the interior economy. In the Brazilian Amazon, development based on forest resources has followed a pattern of rapid economic expansion that lasts approximately eight years as valuable trees are extracted and the most suitable land is converted over to pasture and farming (boom). Next, the economy begins to decline once the supply of highest value trees has been depleted. A second round of logging begins, focused on lower value species. Finally by about year 20, an area is exhausted of marketable wood and the local economy collapses (bust).

Although Brazil and Guyana are far from identical in their human and natural resources, Guyana would do well to note this boom to bust pattern, because it could be repeated only too easily in Guyana. However, with respect to the forest sector, the path from growth to collapse might proceed even more rapidly than in Brazil, as Guyana has dramatically smaller stocks of commercially valuable timber (av. 2 m^3/ha in Guyana vs. 50 m^3/ha in Brazil) (Jones et al., 1996 cited in Putz et al., 2000). To produce volumes similar to those extracted in Brazil, greater areas of forest would need to be exploited, and the possibility also exists that Guyana would experience accelerated boom-and-bust cycles if initially low timber stocks yield few opportunities for a second round of extraction (without the unlikely initial practice of post-harvest silviculture treatments and careful harvesting techniques).

(c) Social Benefits Associated with Roads

As noted in the NDS, there is a real need to expand the road network in order to reach into the interior of the country – not only to tap its natural resources and facilitate transport, but also to tap into the country's rich cultural and human resources and to facilitate cultural exchange among its currently isolated societies. A road system to link Guyana's coastland, southern savannas, and forest interiors would allow the flow of not only of goods but also of people and increasing exposure to other's culture, beliefs, and

traditions. Guyana boasts of being *"a country of six peoples."* Allowing all ethnic groups to have access to opportunity and to contribute to the country's sustainable development would greatly enrich the country.

The development of a road network is also critically important to the Amerindian communities living in the forest interior and southern savannas. The majority of the indigenous peoples has been marginalized in Guyana's economic development, and has very limited access to social services which are mainly concentrated on the coast. As one member of the community is reported saying, "The Amerindian people don't *WANT* the road, but they *NEED* the road" (C. Hall pers. comm. J. Brennan). A year-round system of roads would facilitate delivery of social services throughout the country, including improved access to health care and education facilities. It would also facilitate the movement of technical and outreach staff from a number of fields, such as health educators with HIV-prevention programs.

In addition, an expanded road network could provide easier access to traditional indigenous forest and savannah resources (e.g., sites for fishing, hunting, and collecting palm thatch and other non-timber plant materials for household and village use). If improved access encourages the continuation of such uses, it could contribute to local self-reliance, rural livelihoods and the maintenance of traditional skills, customs and beliefs. Easy access overland could also help communities that currently must travel to distant creeks and streams in search of safe water during the dry seasons.

(d) Social Costs Associated with Roads

Currently, 86% of the use of the Georgetown-Lethem road is by commercial trucking companies with offices on the coast or Brazilian companies (Iwokrama, 2000b). Local communities make at most infrequent direct use of the road (they have traditionally used waterways). However, local communities are likely to bear a greater share of the costs of improving the road, as measured by the environmental impacts identified in the following sections (e.g., decreased availability of animal protein and forest products needed for subsistence livelihoods; degradation of soil, water, and air quality). Without careful planning, monitoring, and enforcement of policies such as a use toll and guidelines for natural resource extraction, the costs associated with improvement of the road will be passed on to the part of society least able to afford it.

While the road may enhance access by health educators and practitioners to remote Amerindian communities, as noted above, it is also likely to expose these same communities to disproportionately high health risks, in particular exposure to HIV/AIDS. Although many Amerindian populations have received only minimal health education and health care, to date they have been somewhat 'protected' by their relative isolation. With the improvement of the Georgetown/Lethem road and the development of a road network through inland Guyana, they may be at increased risk of contracting sexually transmitted diseases due to traffic and exposure to truckers moving from Brazil to the coast. Already HIV/AIDS is making in-roads in the hinterland, as reports indicate that men living and working in mining camps within the interior are known to be serviced by young Amerindian girls brought to the camps by their fathers to help

generate added income and meet family expenses (Arnold et al., 2002). Unless an expansion of health care and education for Amerindian communities (Figure 3.2) goes hand in hand with road improvement, paving the road across the country may pave a path for disease to travel through these traditionally isolated communities.

Figure 3.2 Amerindian homestead and young woman.
http://www.sdnp.org.gy/gallery/mm/indigenous.html

In addition, communities living close to new, major roads will be subject to increased vehicle accidents, especially in interior areas where long expanses of undeveloped territory contribute to driver fatigue. The large trucks likely to populate many interior roads will be less able to maneuver safely when heavily loaded with timber, chemicals, or ore, posing another safety risk to other travelers and those who live along the roads. If road surfaces are inadequately maintained, they will also increase the risk of vehicle accidents.

Finally, without adequate law enforcement capacity, newly improved but remote roads would offer a perfect cover for criminal activities. Currently, levels of crime within Guyana's interior are believed to be relatively low, but accurate statistics do not exist due to the limited levels of law enforcement presence in the interior. Unless this capacity expands as the roads do, hijacking, kidnapping, smuggling and transshipment of illicit materials, homicide, illegal dumping and wildlife poaching may seriously threaten the safety and security of local community residents, visiting researchers and university staff, and tourists who travel along the road. Criminal activities associated with road expansion can quickly undermine any economic growth and development initiatives, jeopardize business and consumer confidence, and thwart the Government's efforts to promote forest and biodiversity conservation and sustainable development in interior Guyana. Adequate law enforcement, criminal investigation, and prosecution will be required to offset criminal activities.

(e) Environmental Benefits

As the road network expands so too expands the agricultural and extractive frontier, into the previously isolated and relatively undisturbed forested interior. As a result, without careful planning and control, road development is likely to bring higher environmental costs than benefits. One exception could be improved access to remote areas of the

interior by extension agents representing Guyana's natural resource agencies. Such extension efforts would be critical to developing and carrying out a natural resource-based sustainable development strategy. Another potential environmental benefit of a carefully planned and controlled road network could be the facilitation of law enforcement and patrolling activities, enhancing effective resource management and monitoring and improving security and stability.

(f) Environmental Costs

Guyana's national economy and high level of foreign debt has placed great pressure to accelerate the extraction and export of Guyana's wealth of natural resources, both biological (timber, fisheries, wildlife) and mineral (gold, diamond, and bauxite). As a result, Guyana has turned to foreign companies for investment and employment in such resource extractive activities as Forestry and Mining. However, the immediate profit-incentives of most foreign investors run counter to the need for sustainable, long-term management of natural resources. For example, many investors are reluctant to make more than a bare minimum investment in capital-intensive infrastructure needs such as properly constructed and maintained roads in extractive areas. In addition, because Guyana suffers from low institutional capacity to monitor the performance and impact of these industries (see Section II), uncontrolled exploitation can occur. Where markets are unregulated or inadequately regulated, illegally extracted products can more easily enter the flow of products into legal markets.

These larger issues with respect to unsustainable resource exploitation are relevant to the discussion of environmental costs of road development because the development of an improved and expanded road network will certainly grant easier access to previously isolated areas of Guyana, and may also facilitate illegal transport and trade. Natural resources are obvious targets and wildlife populations could be severely threatened.

As noted above, the potential "costs" of The Road will depend on the level of effort expended in planning, maintaining, and monitoring it. Therefore the most appropriate way to examine cost is to express it in terms of the impacts of both road building and the presence of roads on the resources and environmental services provided by the forests and waterways adjacent to and downstream from roads. The potential negative impacts of both road construction itself and the potential for an expansion of extractive practices (either legal or illegal) as a result of an improved road network are outlined below.

(i) Biological Impacts

- *Edge effects (forest structure and health)* – Cutting a road through a forested area creates an abrupt forest edge, which research since the 1980s has documented causes significant ecological changes in the forest. The changed conditions created by the road opening are hostile to forest regeneration in several ways. The open road area allows sunlight and wind to penetrate laterally into the edge of the forest, changing the forest microclimate by increasing the temperature and decreasing humidity. These changes in turn immediately affect the physical structure of the forest, rates and kinds of leaf fall, turnover in the plant community, seedling recruitment patterns, and distribution of animals (some of which are critical for

pollination or seed dispersal and germination). Tree mortality increases dramatically near the forest edge (see Figure 3.3), resulting in the gradual receding of forest habitat from the edge of the road. Edge-affected zones, as wide as 1 km, are not uncommon natural phenomena such as El Niño events act synergistically with edge effects to magnify the disturbance (IPAM, "Report of the Scenarios Project: Avança Brasil") [http://www.ipam.org.br/avanca/ameacasen.htm].

Figure 3.3 Road building creates a perimeter of abrupt forest edge. (Left to Right: forest edge allows sunlight and wind to penetrate laterally resulting in microclimatic change along a wide band of adjacent forest; immediately affects forest structure, leaf fall, turnover in plant community, seedling recruitment patterns and distribution of animals; tree mortality increases dramatically near the forest edge (Gascon, Williamson, da Fonseca, 2000)

- *Edge effects (wildlife)* – As noted above, the zone of edge-affected forest can be more than 1 km. Impacts on the health and behavior of many animal species can be observed up to 100 to 300 m from the road edge. These impacts can include disruption of breeding and nesting sites, and restricting or influencing animal's movements in their search for food and mates.
- *Species colonization* – The disturbed area created along road edges also provides easy access for colonization of invasive or exotic species of both plants and animals. The presence of such non-native species can cause large-scale damage, resulting in ecological displacement of the native species. The ecological impacts of invasive species in South American tropical forests have received little attention by the scientific community. However, environmental losses and disturbance associated with such colonization have been well documentation in the U.S. in the Hawaiian Islands and southern Florida.
- *Wildlife exposure to domestic animals* – Wildlife along roads face an increased exposure to domestic animals and diseases that they may carry. In 2001 the Ministry of Agriculture established a monitoring station in 2001 to monitor the movement of cattle and sheep as a detection and prevention program against the spread of foot-and-mouth disease. But domestic birds, cats and dogs pose an even greater threat to wild population of jaguars and other species of wild cat, as well as the Giant Otter which is susceptible to both canine and feline diseases. Numerous

examples from Africa have documented the potential devastation that exposure to humans and human settlements poses to wild primates.

- *Vulnerability to accidents* – Some species are attracted to roads as they offer ease of travel and often an abundance of non-forest plants (generally "weedy" or pioneer species). As a result, although roads can offer improved visibility of wildlife for nature-based tourism, the animals' very visibility makes them vulnerable to injury from passing trucks and vehicles,. Roads pose a different problem to animals that typically move through the branches and vines of the forest canopy, since the break in the forest either prevents their movement or exposes them to increased risk of predation from either natural predators or humans.

Figure 3.4 Wildlife on Roads [http://www.iwokrama.org/wildlife/]

(ii) *Physical Impacts*

[This section draws heavily from the work presented by Iwokrama, 2000b.]

- *Soil erosion* – Inadequate road design and maintenance, and the impact of overloaded trucks and use under extreme wet weather conditions, can all cause soil erosion, in turn resulting in reduced stream water quality and increasingly negative impact on aquatic fish and plant life. Adequate road maintenance, combined with enforcement of maximum vehicle weights and monitoring of road conditions can help to address this threat.
- *Pollution (solid waste)* – Litter that falls onto (or is thrown onto) roads from passing vehicles, depending on its volume, material composition, and site of deposition, can have deadly effects on fish and wildlife that come into contact or attempt to consume it. The same is true of abandoned vehicles. In addition, such refuse detracts from the recreational value of a roads – decreasing the potential appeal to tourists and others of of a scenic corridor through forests and savannas. While carefully located rest stops with adequate waste bins that are maintained could help to address litter and illegal waste disposal, inadequately maintained bins could actually create a greater concentration of waste with potentially serious negative impacts on local communities, flora, and fauna as well as travelers along on the road.
- *Pollution (liquid contaminants)* – In the event of leaks or spills, liquid pollutants, such as inorganic compounds from truck and car engines and gasoline, diesel, kerosene, agricultural chemicals, and other toxic chemicals likely to be transported along the road, pose a similar risk to the environment. This form of pollution can have negative impacts on soil fertility, water quality, and the health of plant, animal, and human populations. Because of Guyana's extensive series of creeks and stream, road often cross or interest such waterways. Pollutants can flow along the roadsides and enter water systems downstream, which should be a matter of some concern since the majority of the human settlements in the interior rely on natural sources to provide

water for consumption, bathing, and the variety of fish and aquatic life they rely on in their diet.

- *Dust* – Both air and noise pollution are by-products of roads. A major consideration is the volume of dust created as traffic moves from paved and unpaved surfaces as the dust produced can have major impact on forest-edge vegetation and water quality. This is particularly a concern in periods of low rainfall.

(iii) Impacts Due to Increases in Destructive Activities

- *Illegal fishing and hunting* – The easier access to natural resources created by an improved road network would likely increase the threat of illegal and poorly managed harvesting of wildlife along the roads. Such harvesting represents a major threat not only to the viability of plant and animal populations, but also to the local human communities that rely on these populations for subsistence use. A decrease in wildlife at the local level also would threaten nature-based tourism, since the opportunity to view wildlife in a natural setting helps to draw and maintain paying customers. Mitigation efforts could include installing informational signs and warnings, developing a system of ranger patrols to reduce or eliminate poaching, and working with local communities, commercial trucking operations, and private tour companies to build awareness of the problem.
- *Trafficking in wildlife and flora* – Illegal trafficking and trade in wildlife and plants and their derivatives (e.g., fur, skins, feather, bones, and oil) must be addressed at the national policy and legislative level in order to develop a system of adequate enforcement, monitoring, and prosecution. Endangered species are especially threatened due to their vulnerable status due to their low numbers, restricted or reduced habitat, or high level of pressure due to harvesting, specimen collection, or hunting. This report has already noted the pervasive weakness of the relevant resource agencies due to limited resources, staffing, and lack of decentralization.
- *Illegal mining* – As with hunting and fishing, the increased access offered by an improved road network can be expected to increase illegal mining operations in the hinterland. Mining takes place at several scales in Guyana, from large scale, generally foreign financed operations to small, low-tech, illegal or semi-legal operations. Unfortunately, in addition to economic benefits (e.g., job creation and attraction of foreign investment), mining results in substantial negative environmental impacts. Medium- and small-scale mining are responsible for some of the most insidious impacts, since these operations are widely scattered, are subject to little or no regulation, and lack both the training and resources to undertake environmental mitigations. Common surface mining practices include the removal of surface trees and vegetation, which in turn leads to soil erosion, increased sedimentation downstream, decreased water quality, and species disturbance or loss (Figure 3.5).

  In addition to the impacts associated with land use change, gold mining also poses a threat to human and animal health due to the use for processing of chemicals including cyanide and mercury. Improper storage, transportation, or disposal of these toxic chemicals have devastating effects on soil, water, aquatic plants and animals, and the people and animals that depend on clean water and aquatic food. In the case of mechanized mining, fuel leaks onto soil or into waterways are also of concern. In

the remote areas where small-scale mining takes place, human settlements typically spring up to support the mining camps. These settlements often lack adequate sanitation and treatment of human waste, and concentrations of human-borne viral and bacterial contaminants can therefore impact adjacent and downstream human communities and animal species. Finally, holding ponds that miners create to capture sediments and chemical runoff also serve as mosquito breeding sites, and have been linked to malaria outbreaks.

Figure 3.5 Series of photos of small-scale surface mining and chemical storage shed. (J.Brennan)

- *Illegal logging* – The forests of Guyana contain valuable hardwood tree species and the forestry sector contributes to the national economy. Much of the country is divided into industrial forestry concessions, many currently unexploited or underexploited due to the high costs of access and the current depressed state of the forest sector in Guyana. The completion of an improved road network in Guyana would likely stimulate logging activities (both legal and illegal) by increasing access to the country's forest resources. In Brazil, Guyana's neighbor, the relationship between highway paving and deforestation over the past several decades suggests that the construction of an improved road network through the heavily forested interior of Guyana will greatly accelerate the rate of deforestation and illegal logging activities. Estimates of the percentage of the Brazilian timber that is illegally harvested run as high as 90% (Nascimento, 1998 cited by IPAM "Report of the Scenarios Project: Avança Brasil") [http://www.ipam.org.br/avanca/ameacasen.htm]). The completion of a paved a road connecting Brazil to Guyana's ports by way of Lethem will only accelerate the movement of timber out of the Amazon. The volume of illegal timber likely to pass through Guyana will offer an entry point for illegal timber from Guyana's forests as well. The increased volume of timber (illegal and legal) may further challenge the health of Guyana's forest sector, as legally harvested timber can not compete with cheap illegal timber. An influx of illegal timber is also likely to impede the government's effort to promote forest certification, since the socially and environmentally sustainable practices required by certification are inherently more costly than both existing legal (unsustainable) practices and cheap illegal harvesting. Finally, without careful advance planning and increased capacity, an improved and expanded road system will also dilute the government's ability to monitor and enforce logging in Guyana.
- *Logging and forest fires* – Forest gaps, tree damage, and debris left by conventional logging practices all increase the potential flammability of the remaining forest by

allowing increased sunlight and wind to decrease the natural moisture of the forest, weakening the health of remaining trees, and providing potential fuel for a forest fire. The harvesting practices used by illegal loggers can be more destructive than conventional methods, given the pressure for them to act quickly to avoid detection. After an area of forest has burned once, up to 40% of the adult trees can die. Once burned, such forests are even more susceptible to recurrent fires – creating a destructive feedback loop that can transform extensive forest areas into impoverished scrub vegetation that is highly susceptible to burning (see Figures 3.6 and 3.7). As suggested by Brazil's experience, the expansion of a road network in Guyana may create an incentive for illegal and unsustainable logging, which in turn increases the susceptibility of the forest to fire. To avoid this result, Guyana must undertake road expansion in the context of effective policies for governing land use activities and natural resource conservation.

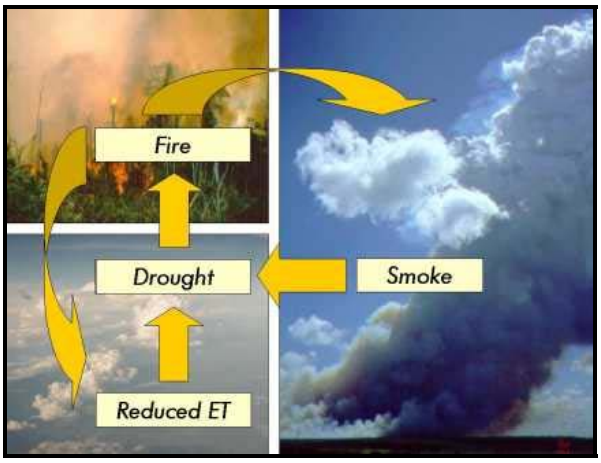


Figure 3.6 (left) selective logging and drought events increase the flammability of large areas of forest, and many forests catch fire … Figure 3.7 (right) expanded deforestation enhanced by the two previous feedbacks would inhibit rainfall, causing an increase in the occurrence of accidental fires. These, in turn, would reinforce phenomena that further inhibit rainfall. Rain is inhibited both by smoke and by the reduction in evaporation that results from deforestation and burning. IPAM -"Report of the Scenarios Project: Avança Brasil") [http://www.ipam.org.br/avanca/ameacasen.htm].

- *Squatters and forest fires* – Roads into areas of low population densities often encourage illegal settlers or squatters to move onto the land, especially those in which the land claim is unclear or in dispute. Immigrants are already creating conflict in areas near the Brazilian border, as colonists move into lands traditionally claimed by Amerindian peoples. Human incursions into forest lands near roads increase the risk of fire due to the increased number of ignition sources, such as discarded lit cigarettes or abandoned cooking fires. Landless people that move into a forested area often practice subsistence farming, relying heavily on slash and burn techniques to clear land for cultivation. Although historically fires are not frequent in the forested areas of Guyana, nearly all Guyanese forests have at some point in time been affected by fire. These fires have often escaped into adjacent forest, which is likely to increase that forest's susceptibility to fire (see explanation above).

(3) Recommendations Related to Road Development and Transportation Network

Economic development is vital to Guyana reaching its long-term development objectives, and developing the necessary road network to serve that development will be critical. At least initially, the most critical portion of the proposed road expansion will be completion of a paved, year-round road, "*The Road*," to link Lethem to Georgetown and the coast. While completion of The Road is needed and inevitable, Guyana faces a defining challenge: whether it will be possible to plan, implement, maintain, and monitor The Road (and the broader road network) in a manner that simultaneously supports development and the management and conservation of natural resources.

Constraints associated with Road Development and Transportation Network

One element of this challenge is the need for, and present lack of, political will. Where natural resources represent the wealth of the state, access to those resources (through permits, contacts, or concessions) may be facilitated in return for political support. In such a setting, there is little incentive to provide a more equitable resource-sharing system. In Guyana, this situation is complicated by decades of "brain drain" (out-migration of many of the country's best and brightest that has resulted in a lack of human capacity), institutional weaknesses, and conflict over land rights. The road will need to be managed, but the government lacks the necessary resources to effectively monitor and manage resources, enforce legislation and policies, and stimulate the small-scale business development that will be critical to local livelihoods, stability, and sustainable development.

Recommendations associated with Road Development

1. The key is to govern expansion so that most forests remain standing and well managed, while addressing concerns for economic development. Many of the key elements are in place but need to be supported as follows.
   - The majority of the people living in the interior are Amerindians. As the communities who will be most directly impacted by the proposed road network, yet are most closely tied to the hinterland by culture, tradition, and subsistence use. The Amerindian and communities within the Guyana's interior should be utilized as the logical conduit for change.
   - These communities are eager for education and health care services and the road, which could greatly facilitate the delivery of such basic social services, should be planned within that context.
   - Formation of community-based youth groups, such as those established in the form of Environment Clubs with the help of the Iwokrama Research Centre and the Environmental Protection Agency, should be promoted as they can serve as a forum for direct educational outreach and information exchange on issues related to the environment or on issues of social concern. For example, these local organizations can respond to requests from the members to facilitate discussions on issues of social concern such as HIV-AIDS information and prevention.

- Local representation and decision-making at the Village Council level generally works well in the interior, with democratically elected representatives who are widely perceived as truly representative of local interests. Village Councils thus provide a strong institutional foundation that should be relied upon to build and strengthen local governance.

2. Every effort should be made to take advantage of various stakeholders' strengths, while minimizing institutional weaknesses would be to coordinate, to the maximum extent possible and across a wide array of stakeholders in carrying out: (a) patrolling and enforcement, (b) maintenance and repair, (c) environmental and social impact monitoring, (d) impact amelioration and mitigation, and (e) information access and public awareness building. These activities could be promoted through various mechanisms including co-management or partnership agreements. As noted in the analysis presented by Iwokrama, "a key element of either approach would be to identify incentives within the agreement(s) for the involvement of key groups, including Amerindians, road users such as truckers, and others. Incentives could take the form of targeted employment opportunities, equipment transfer and loan facility development and access, exchange of technical assistance, reduced or waived user-fees, and conservation contracts (2000b)."

3. Striving for the sustainable use of Guyana's resources may be the country's best chance to achieve the desired forest and biodiversity conservation and to secure both social and biological benefits for Guyana's current and future generations. Careful planning and management of the proposed system of roads that will cut across the country's forested interior will be key to achieving this goal. To be successful in the long run, investments in economic growth for the interior of Guyana must help communities make transition from serving as the suppliers of raw materials to producing consumer products. Local government and civil society in small urban areas should be encouraged to gain the institutional capacity and ability to direct the process of rural development. If the road expansion is accompanied by matching investment in schools, health care, technical assistance for producers, environmental conservation, and resolution of indigenous land claim disputes, the effects of road paving on local development would be tangible, and would be more likely to lead to sustained and equitable growth.

B. FORESTRY SECTOR IN GUYANA

(1) Guyana's Forest Resources

As noted in Section I (*Country Profile*), Guyana is a country covered predominantly in natural tropical forest vegetation cover. Several different forest types exist (Box 3.3) including tropical rain forests (36%) or montane forests (35%); swamp, marsh forests (15%) or mangrove forests (1%); dry evergreen forests (7%), and seasonal forests (6%).

Box 3.3 Classification of Guyana's Natural Forests

Rainforests occur in areas where the climate is wet, with rain occurring every month or where dry spells are short. Trees are numerous and stand in strata or layers, ranging from low shrubs to very tall dominant trees with large spreading crowns. Climbers and epiphytes are abundant. In Guyana, rain forests are the most common forest type, occurring from the north-west through to the south of the country. It is also the most important type for timber production.

Swamp forests occur where drainage is impeded and soils are frequently waterlogged. This forest type includes the mangrove forest along the coastline and the Mora forests occurring in lowland swampy areas and along the interior. Mangrove forests provide protection to the shoreline against erosion and are an important habitat for marine life. Removal of mangroves for fuelwood from the Essequibo River to the Corentyne has not only exposed lengths of coastline to erosion but also degraded these ecosystems, limiting their ability to act as nurseries for pelagic fish species. [An estimated 75 percent of fish caught commercially spend some time in the mangroves or are dependent on food chains which can be traced back to these coastal forests.] Mangrove plants and sediments have also been shown to absorb pollution, including heavy metals. Mangroves along the north-west coast are still largely intact. An evaluation of the mangrove resource is to be carried out by the Guyana Forestry Commission and plans for its protection and management are to be developed.

Dry forests occur where soil moisture is frequently limited either because the soil drains rapidly or where there is excessive evaporation due to strong winds. Examples of dry forest are found on the white sands of the Soesdyke-Linden highway and throughout the Pakaraima Mountains. Wallaba forests are common in the white sand regions.

Seasonal forests (also known as monsoon forests) occur where there are regular dry seasons. Trees are not as tall and the top of the forest canopy. In the dry season, the larger trees often lose their leaves, and climbers and epiphytes are less abundant. Seasonal forests are found in Guyana in the north Rupununi and the upper Berbice areas.

[SOURCE: from ITTC 2003]

Relative to other countries in the region, Guyana timber exports contribute little to export levels and the country's forest industry remains a minor player on both the regional/Caribbean and international markets. Because of the vast natural forested area within Guyana's interior, the timber industry has been an element of Guyana's National Development Strategy (2000) as a potential engine of economic growth. Despite the vastness of the area under forest cover, the commercial forest industry in Guyana remains a minor contributor to economic growth due to macro-economic and political constraints within the country. The industry is only marginally profitable because much of the country's timber occurs in low density. Although the forest offers great species diversity, most are heavy and dark woods with limited

commercial value or appeal due to the difficulty processing hardwoods. The industry is handicapped by several additional factors. Most operations are family owned in which the management culture often means that tough decisions may be compromised in deference to family ties or hierarchical structure. Many operations have antiquated equipment, limited capital, and are operating in an economy with high interest rates. Timber is not dried once harvested, which increases wastage due to splitting. All these factors combined with the nature of the culture, lack of transparency of financial transactions and record-keeping, and inability to meet contract requirements regarding product specification and delivery have effectively blocked many of Guyana's companies from penetrating the highly competitive international markets. Reducing transportation costs by investing in the expansion of the road network into the interior will have modest impact on profitability. According to a recent analysis, the greatest economic return for Guyana's forest can be achieved through value-added processing and employment opportunities (ITTC 2003).

The National Development Strategy however recognizes the value of Guyana's forests beyond its commercial value, for the critical role they play in the lives of both local and global communities. As noted in Section II (Policies and Legislation) the Forestry Act has not been revised to reflect the Government of Guyana's international commitment to develop its forest resources in an environmentally sound and sustainable manner, nor does it reflect the multiple benefits of forests. The latter is especially true in recognizing that most of the local forest-dependant peoples, especially the Amerindian communities living in the country's interior, rely on the forest as a source of meeting local livelihood and food security needs. For these native communities the forest serves as a safety-net as it provides food, shelter, medicines, energy, and a source of income. In this manner, forests help preserve indigenous cultures and traditions. Conflict over issues of land tenure however plagues efforts to achieve this dual objective.

The estimated 40,000 Amerindian people (representing nine distinct tribal groups, are recognized in approximately 128 Amerindian communities) live within the forest interior of Guyana, of which approximately 60% now hold title to some of their traditional lands. Land title grants the communities usufruct rights to traditional and farming uses, as well as the rights to all timber. Currently titled land holdings represent approximately 7% of the national territory, most of which is within Amazonian or savanna ecosystems on poor soil and are unsuitable for agricultural uses. On traditional lands that overlap state forest, Amerindians may have hunting and fishing rights. However, on areas under timber concession agreements, hunting is often restricted or prohibited which, in cases where the government subsequently designate as a forest previously utilized by Amerindian communities without title, creates immediate conflict as traditional hunting and fishing areas fall within the timber concession area (Allan, 2001).

There is currently no national policy on demarcating indigenous lands and, although the 1951 Amerindian Act (amended in 1961 and 1976) designates Amerindian

rights to land and natural resources, it does not provide an adequate legal instrument. This problem was formally recognized by the Parliament in 1993 with a motion for a review of the Amerindian Act, however, this has yet to be completed. The land surveys for the Amerindian claims are still underway due to refusal of some Amerindian communities to accept the land titles being proposed under the government surveys. According to some Amerindian rights activists, the failure to resolve the Amerindian land tenure issues is due in part to the Government's top-down approach to decision-making and management. There is a general sentiment that the surveys are inaccurate and did not involve adequate community consultation (Forte, 1995).

The global community values Guyana's forests as a rich reservoir of biological diversity and spectacular scenic beauty. Its importance is recognized as a critical, vast store of carbon that would otherwise be released into the atmosphere and possibly trigger regional or global changes in the climate system. The global community is also concerned about social as well as environmental issues and is looking, increasingly so, toward tropical timber producing countries to provide assurances that forest products have been harvested in a sustainable and socially-responsive manner. Actions on the part of the GoG also reflect the concern and commitment to sustainable natural forest management. Perhaps the most extreme demonstration of this commitment is witnessed in the Government's designation of the one million acre (360,000 ha or 1,400 sq. mi./3,700 sq. km) Iwokrama Forest in central Guyana as a protected area, effectively gifting it to the international community for the purpose of developing models for sustainable use and conservation of tropical rainforests (Box 3.4). The purpose of Iwokrama is to demonstrate how tropical rainforests can provide economic, social, and cultural benefits while conserving biological diversity. Operating under a unique partnership of scientists, land managers, and indigenous communities, the designation will work to preserve the natural forest resources and environmental services while using some resources to the benefit of Amerindians and the country as a whole. Various business options that have been developed under this multiple use model which include timber and non-timber forest product harvest and marketing, ecotourism and craft sales, and creating linkage with zoos, aquaria and conservation NGOs to promote *in situ* conservation through the revenue from various sources and activities.

Guyana's commitment to sustainable forest management is equally reflected in the role and actions of the Guyana Forestry Commission (GFC). The GFC has facilitated the preparation of a National Forest Policy Statement (Box 3.5), and a Code of Practice for Forest Operations and accompanying Manual of Audit Procedures for checking compliance with the Code. GFC's efforts to prepare revisions to the forest laws include a legal framework for implementation of the Code and for the certification of forest operations[1] (Iwokrama 2002a). The GFC

[1] Draft revisions to the 1953 Forests Act were prepared in 1997 and revisions to the Guyana Forestry Commission Act were submitted to the GFC Board in 1998. The purpose of the draft Guyana Forestry Commission Act is to repeal and replace the Guyana Forestry Commission Act, No. 2 of 1979 (the former Act)

Box 3.4 Overview of Iwokrama Forest and International Research Centre

History:

In 1989 Guyana and the British Commonwealth designated the vast Iwokrama Forest as a protected area dedicated to the international community for the purpose of developing models for sustainable use and conservation of tropical rainforests. It was to be managed by an International Board of Trustees supported by the international community. Guidelines for the management of the site were developed and in 1993 the United Nations Development Programme (UNDP), through the Global Environmental Facility (GEF), signed an agreement to grant US$3 million as seed funding to assist with the development of the Programme. The following year the Iworkrama Research Centre field station opened, dedicated to manage the forest for this purpose and to scientifically document its development and impact. In 1996 Guyana's National Assembly passed and its President signed into law the Iwokrama Internationals Centre for Rain Forest Conservation and Development Act. The purpose of Iwokrama is to demonstrate how tropical rainforests can provide economic, social, and cultural benefits while conserving biological diversity. Iwokrama operates under a unique partnership of scientists, land managers, and indigenous communities, all working to preserve its wilderness character while using some of its resources to the benefit of Amerindians and the country as a whole. The business options that have been developed through this program include timber and non-timber forest products harvest and marketing, ecotourism and craft sales, and links with zoos, aquaria and conservation NGOs to promote *in situ* conservation efforts. The Centre also supports national environmental education through various training programs and citizen participation.

Iwokrama Programs

- *Conservation and Use of Biodiversity* – integrated management of all forest resources taking into consideration biological, landscape and social factors;
- *Business Development* − developing equitable business partnerships operating under high standards of environmental stewardship and producing high quality products;
- *Human Resource Development* − helping stakeholders, through training and developing their ability to benefit from the tropical forest of the region;
- *Research, Monitoring and Evaluation* − focusing on the development of knowledge and technology through good research that will guide decision-making and provide feedback on the management of tropical forest resources;
- *Information and Communication* – providing a resource centre for the dissemination of knowledge, principles and practices gained by Iwokrama and outreach services to researchers, students and the general public;
- *Stakeholder Processes and Governance* − developing dynamic participatory mechanisms and collaborative arrangements to ensure effective involvement of stakeholders.

[Source: http://www.iwokrama.org]

has also played an active role in supporting the Industry's recent efforts to gain greater market access and promoting new market opportunities such as those offered in the certified timber markets. Guyana is also experimenting with a new model to sustain forests; the so-called "conservation concession." Under this experimental model, instead of harvesting timber stocks to generate financial flows, the government is compensated for the value of the resource that would have been harvested under conventional logging concession agreements, through donations, or

in order to revise the law governing the operations of the Guyana Forestry Commission (GFC) [Iwokrama 2002a].

interests from conservation endowments maintained by the "concessionaire" (a non-governmental environmental organization).

Box 3.5 Guyana's National Forest Policy Statement (1997)

The national forest policy reflects the Guyana government position that the country's natural resources must be utilized in a sustainable manner while making a significantly greater contribution to the national economy.

The Forest Policy identifies the following categories:

FOREST CLASSES: The National Forest Policy acknowledges that several different classes of forestlands exist in Guyana with require differing provisions in order to optimise the sustainable management of the country's forest resources. Seven classes are recognized as follow: (1) permanent production forest, (2) permanent protection forest and biodiversity reserve, (3) reserve forest, (4) extractive (non-timber forest products; NTFPs) forest, (5) multiple-use forest, (6) permanent research forest, and (7) conversion forests. (Extractive, multiple-use and permanent research forests can exist within permanent production forests.) [This classification system refers to the management objective and not to the contractual agreement the GoG uses to authorize access to the State Forests for the purpose of achieving that management objective.]

EXTRACTIVE WOOD PERMITS:

TSA – Timber Sales Agreement: concession duration of ≥ 20 years and a total area ≥ 24,281 ha

WCL – Wood Cutting License: concession duration of 3-10 years and a total area 8,093-24,281 ha

SFP – State Forest Permit: non-exclusive permit allowing the holder to remove a certain quota of timber from an area, valid for one year

The Policy includes the following provisions:

FOREST INDUSTRY:

- Primary access roads for harvesting will be encouraged, including fiscal rewards, to improve the hinterland infrastructure;
- Industry size and location will be developed that are consistent with sustainable supply of raw material and which ensure financially and economically viable industry through increased diversity of species utilised and optimal conversion efficiency;
- Foreign investment will be directed to the more capital intensive, high technology industry but such industries will also maximise employment opportunities for Guyanese nationals;
- Increased downstream processing, of timber and non-timber products, will be encouraged through a variety of means including processing centres and there will be efforts made to develop standard specifications;
- Marketing of Guyana's timber will be supported jointly by government and industry to encourage added value processing and make buyers aware of the unique properties and diversity. Marketing strategies will include certification; and
- Fiscal instruments and incentives will be developed on the basis of regular analyses to encourage efficient, high quality processing.

[Sources:http://www.sdnp.org.gy/forestry/]

(2) Commercial Timber Production Forests

Although there are over 1,000 woody species in Guyana, Table 3.1 lists the main commercial species, although only 12 are presently being harvested for commercial purposes. Most of Guyana's commercially valuable timber resources reside in the dense rain or montane forests that have already been gazetted as State Forestlands under the Forestry Act, and are under the jurisdiction of the GFC. Forests outside

these areas are either public or privately owned or are recognized as Amerindian lands (Table 3.2).

Table 3.1 Principal Commercial Timber Species

Commercial/ Local Name	Scientific Name
Purpleheart	*Peltogyne venosa*
Tauroniro	*Humiria balsamifera*
Aromata	*Clathrotropis brachypetala*
Simarupa	*Quassia simarouba*
Tatabu	*Diplotropis purpurea*
Shibidan	*Aspidosperma album*
Locus	*Hymenaea oblongifolia*
Warama	*Swartzia leiocalycina*
Bulletwood	*Manilkara bidentata*

(cont.)	Scientific Name
Mora	*Mora excelsa*
Kabukali	*Groupia glabra*
Greenheart	*Chlorocardium rodiei (also called Octea rodiaei)*
Crabwood	*Carapa guianensis*
Baromalli	*Catostemma commune*
Soft Wallaba	*Eperua falcata*
Ituri Wallaba	*Eperua grandiflora*

[Source: ITTC 2003.]

Table 3.2 Guyana's Land Use Pattern

Guyana's Land Use Profile	Area (000 ha) (%)
Total Land Area	**21,497 (100%)**
1. Area of Natural Vegetation Cover	**20,496 (95%)**
• Tropical High Forest (Box .3.3 breakdown by forest type)	16,835 (78%)
• Mangrove Forest (Box 3.3 breakdown by forest type)	81 (0.4%)
• Savanna and Scrub	3,580 (16.6%)
2. Area of Settlements, Cultivation, and Deforested	**1,002 (5%)**
of the Natural Vegetation Total (#1 above;THF+MF+SavScrub)	
• State Forest (under the jurisdiction of the GFC) (Tables 3.3 and 3.4)	13,580 (66%)
• Other natural cover/forest land (e.g., State land, Amerindian land, or private property)	6,916 (34%)

[Source: adapted from ITTC 2003.]

(a) Harvesting Agreements/Permits

The Forestry Commission manages State Forests under several formal agreements based on area and duration of contract (Table 3.3). The largest area is covered under a Timber Sales Agreement (TSAs), a lease normally valid for 20 years or more, for an area of 60,000 acres or more. Wood Cutting Leases (WCLs) are a 3-10 year lease for areas up to 20,000-60,000 acres (81-243 km^2). Both TSA and WCL contracts require concessions to operate under a forest management plan that has been approved by the Guyana Forestry Commission and are expected to comply with the Code of Practice (Box 3.6). State Forest Permissions (SFPs) are a 1 year lease for areas up to 20 acres (0.08 km^2). These

"chainsaw operations" are not required to prepare management plans and their operations are largely unmanaged.

Table 3.3 Allocation of the State Forest for Commercial Use (000 ha)

Type of allocation Commercial Use	Area (000 ha)	No	Average size	% State Forest	% Commercial Allocation
State Forest Permissions	1,325	352	3.8	9.8%	22.9%
Wood Cutting Lease	500	8	62.5	3.7%	8.6%
Timber Sales Agreement	3,731	20	186.6	27.5%	64.5%
Total production	5,556			40.9%	96.0%
Exploratory Permit	233	2	116.4	1.7%	4.0%
Total State Forest land allocated for commercial use	5,789			42.6%	

[Source: ITTC 20003.]

Recently the GFC introduced a quota system to control forest stocks under the SFPs. However, the Commission has little data on the status of timber resources upon which to base quota levels and therefore its ability to safeguard the resource and to guarantee its sustainability is questionable. The GFC has reviewed and revised the administration of SFPs but report recent incidents of issuing, or re-issuing, a SFP only to have the licensee subsequently complain that there is no timber resource within the area (Bird and Dhanraj, 2001). An increase effort on field surveys is required for the GFC to more effectively plan and manage areas slated for this sort of permitting. This is an area of concern as there has been a significant increase in the production of logs and chainsawn lumber under annual (SFPs) permits in recent years. The GFC has made an attempt to conduct a rapid assessment (SFP-RAP) to determine areas that should be closed to timber harvesting and has proposed a classification system to identify non-productive areas under the following categories: (1) no production of forest products, (2) local production of fuelwood, (3) local production of all wood products, and (4) national SFP allocation. The second and third categories refer to areas with little commercial value but offering wood resources to help meet immediate and basic rural livelihood needs. These areas, however, offer limited yields and alternatives should be sought to meet basic needs or generate income.

Box 3.6 Guyana Forest Operations Code of Practice (GFC, 2002) – Forest Management Plans and Guidelines

Prescribes an annual allowable cut of 1/3 m^3/ha on each occasion

- This implies that a cutting cycle of 60 years is required to sustain a cut of 20 m^3/ha. It is also suggested to limit the average logging intensity to 10 trees/ha – which translates to about 20m^3/ha, as well as to preserve certain species identified as "keystone species". These cutting levels are currently being applied to State Forest Permits, through the quota system. However, these measures alone are insufficient to ensure sustained productivity of the remaining forest and to retain sufficient growing stock of most of the desirable, high value species.

Recommends retention of habitat to include the needs of NTFP-producing and seed trees

- In general, the retention of habitat trees does not interfere with logging practice at present, due to the current low logging intensity and the fact that hollowed trees are left untouched. In general, at least two trees per hectare of seed tree quality of each desirable, high value species should be retained per hectare. Quality seed trees are over 40 cm in diameter, well formed, straight with a bole length of at least six meters, free of defect and disease and undamaged.

Requires that provisions must be made for allocating protected areas and buffer strips within logging concessions

- There is an ongoing debate on the minimum size of each area as well as the total area of protection forests mainly related to a lack of comprehensive baseline data.
- It is possible that protection forests within permanent production forest will become part of the National Protected Area System. In the meantime, it is recommended to leave 4.5% of the forest untouched in blocks exceeding 1,000 ha. This fraction of 4.5% would include formally protected areas (biodiversity reserves) as well as streamside buffer strips, non-productive forest and areas excluded from logging due to a high risk of site degradation.

[Source: Guyana Forestry Commission, 2002]

(b) Timber Yields

The Forestry Commission has stipulated a maximum timber cut limit of 20 m^3/ha on a 60-year rotation schedule (Box 3.6). However, according to a recent analysis concessions typically cut only between 8 and 12 m^3/ha (ITTC 2003). The same study also concluded that the current practice of granting 20-year concessions (which represent only a fraction of the anticipated 60-year cutting cycle rather than indefinite concession) provides little incentive for concession operators to effectively manage the resources and to protect the remaining or standing forest assets. The recommendation was made to move toward indefinite concessions which are negotiable assets as one way to encourage investment in forestry and associated industries.

Guyana's primary timber exports are in the form of roundwood (logs, piles, poles) (164,000 m^3), secondary in the form of plywood (61,000 m^3), and smaller volumes in the form of sawn timber (22,000 m^3, all given as 1997 figures) (Table 3.4). Logs are predominantly exported to the Asia/Pacific region (93% in 1997) with remaining sent to Latin America, Caribbean and North America. Plywood is predominantly exported to North America (64%) and the Latin

American and Caribbean (22%), with a smaller fraction entering the European markets (7%). Sawn timber is exported to Latin America and the Caribbean (54%), Europe (30%), and North America (11%) (GFC 2003; Whitney, unpub.).

Table 3.4 Raw Wood Exports: Values from Guyana (000 m³), and Percentage of its Volume of the Tropical America Int'l Tropical Timber Producers Markets

Year	*1997*	*1998*	*1999*	*2000*	*2001*
Logs	81	61	48	54	40
Sawn	40	22	40	40	35
Plywood	140	161	175	200	168
% Tropical America					
Logs	40.5%	61.0%	24.0%	27.0%	20.0%
Sawn	2.0%	1.5%	2.0%	1.7%	1.2%
Plywood	8.7%	17.5%	12.7%	12.4%	12.2%
Total	6.5%	9.2%	7.0%	6.7%	5.2%
% ITTO Producers					
Logs	0.5%	0.5%	0.3%	0.3%	0.3%
Sawn	0.1%	0.0%	0.1%	0.1%	0.1%
Plywood	0.5%	0.6%	0.7%	0.9%	0.7%
Total	0.4%	0.5%	0.5%	0.5%	0.4%

[Source: ITTC, 2003.]

Minor domestic timber markets exist for mangrove trees. The bark is used for tanning and fuelwood is made available from a mixture of wood products. With recent rises in oil import costs, and the resulting decline in electric energy production, in recent years more and more Guyanese in both urban and rural areas have switched to charcoal to meet their energy needs. Charcoal production significantly increased in 2002, by 75%, from 521,903 kg in 2001. Production of firewood amounted to 13,402 cords in 2002, representing a 331% increase over 2001 volume. Continued power outages associated with the current Guyana energy crisis will place increasing pressures on the natural forest resources to provide fuelwood demand.

There are currently no commercial plantations in Guyana beyond a limited area set up as an experimental research demonstration trial project of Caribbean pine (*Pinus caribaea,* also known as Pino and Ocote) and a few plots of several commercially valuable species including greenheart (*Chlorocardium rodiei*). There are recent reports of a plan to establish a 4,000 ha plantation of paulownia (*Paulownia fortunei*) for the production of veneer.

(c) Illegal Logging

The recent economic downturns, manifested in part as breakdowns of public-private partnerships, has lead to conflict and uncertainty in the investment climate within many of Guyana's economic sectors. These downturns have also had an indirectly impact on forestry sector including the acceleration of illegal logging activities. For example, the closures of the commercial bauxite[2] mining operations have led to a massive proliferation of chainsaw logging. Because the majority of these low capital operations operate outside the formal industry and enforcement structure, they pose environmental damage and economic dangers to the industry as cheap timber enters the market and undercuts responsible industry production costs. The evolving result is that Guyana's domestic market relies on cheap chainsaw timber at the expense of the industry, industry jobs, and social benefits otherwise offered to the country's growth and development. With the loss of the local market, commercial forestry operations must rely on, and compete with, the limited export market which has further depressed prices. The industry response in Guyana has been to focus on export of logs or to supply logs to the few large foreign owned companies operating in Guyana; both yielding low revenues.

The GFC is aware of the threat and is attempting to control it through licensing (see SFP above). The limited field presence of Forestry Commission enforcement officers, however, remains a problem. Due to limited staffing levels within the GFC, resources are scarce to monitor activity. It is therefore not possible to measure or estimate the long-term impact illegal logging will have on the integrity of Guyana's forests or the threat it poses to national development due to impoverishment of its forest resources.

(3) Certification of Timber Products

Guyana's National Forest Policy promotes sustainable forest management[3] practice within the country's commercial forestry operations. This is a direction that will work within the regulatory system, under the proposed revisions to the Forestry Act, but it also supports voluntary initiatives of forest certification (Appendix VI). Certification systems are being promoted within the international timber trade in response to corporate and consumer pressures to reward companies that offer timber or wood products that have been "certified" as having come from sustainably managed forestry operations that address both social and environmental concerns. The reward for producing certified timber and forest products is to gain greater market share and, in some markets certified products can yield a higher price[4]. Internationally recognized certification systems rely on independent, inspection and verification that label

[2] Bauxite is a mineral used to manufacture aluminum.

[3] Sustainable forest management implies managing the forest to provide for continuous production of goods and services in perpetuity without their reduction or loss.

[4] The North American markets do not show a willingness to pay a premium for certified timber. Currently only the European and Scandinavian markets are willing to pay a premium of upwards to 10%.

and track the products through a chain of custody from the certified forest to the consumer[5]. This system not only rewards responsible forestry operators for their social and environmental stewardship, it also serves to ensure that only legally sourced timber reach that market. The certified market is currently a small proportion of the international timber market, estimated at 2%, although there is greater demand than the market is able to supply.

The GFC promotes sustainable forest management as a matter of domestic policy, regardless of whether or not a company chooses to pursue voluntary certification as a market strategy. Certification is biased towards large producers who can benefit from economies of scale and the reduced variable costs (but see Box 3.7; the possible formation of community group associations hold promise to link communities to the certified timber market.) Small and inefficient producers have to incur proportionately higher costs than large and efficient producers. For many of the large operations, forestry practices that are environmentally sound make good business sense when the costs are calculated as part of a long-term investment. But because the Forestry legislation remains antiquated, companies need not adopt forestry practices that "sustainable" (i.e., by definition are long-term), thus creating a perverse incentive to operate under a short-term investment scheme that promotes stripping forest assets rather than investing in sustaining the resource over the long-term. This situation exists because companies that can not meet the higher standards (due to their associated higher cost incurred for in planning harvesting operations, pre-inventory surveys, and careful surveys to lay out low-impact skid trails) have little incentive to create buffer zones or protect seed trees because they see their participation in the sector as a short-term investment. This is especially a concern among timber companies operating in Guyana that sell to the indiscriminate Asian markets (i.e., those that do not seek certified timber). The three large concessions currently operating in Guyana are foreign owned and are pursing certification (Box 3.8).

[5] A third-party inspector giving a written assurance ("certifies") that the quality of forest management practiced conforms to specified standards. These standards are believed to represent sustainable forest management techniques, such as inventory, improved planning of harvesting activities including felling technique, and pursuit of rational business decision to ensure that the future of the resource and thus income streams are maintained. The raw or processed products labeled and tracked through the chain of custody and verified to have come from the certified forests and are not mixed with, or substituted by, products from other forests.

Box 3.7 The Ituni Small Loggers Association (ISLA)

The Ituni Small Loggers Association (ISLA) is a recently-formed cooperative of around 40 small-scale timber harvesting operators who are working to gain a woodcutting lease on their combined area of around 33,300 hectares. The Ituni community is under severe economic pressure due to the collapse of the bauxite industry, which was formerly the main source of employment in this area. This situation has tended to promote unregulated and illegal harvesting of forest areas neighboring the community. The Association's present area is an amalgamation of the State Forest Permissions held by 11 individual members, who still hold exclusive cutting rights to these areas. Association members work for these 11 operators, who share log quotas allocated by GFC. The Association was formed as the first step towards providing a legitimate means for community members to sustain their livelihoods in a cooperative forestry venture. However, in order to be allocated this combined area as a long-term concession, the community must demonstrate the capacity to competently manage it, the immediate indicator of this being the preparation and approval of a forest management plan.

[Source: Nicol, Singh, and Khan, 2003]

Box 3.8 History of the Forest Timber Industry in Guyana

- The timber industry developed during the 1900s with a number of medium sized companies producing mostly greenheart for export and a small range of other species for local use. In 1956 there was investment by the Commonwealth Development Corporation to establish British Guiana Timbers with a logging operation at Wineperu and a large export sawmill based at Houston in Georgetown. In 1984 the Government of Guyana established Demerara Woods Limited at Mabura Hill to support a policy of encouraging hinterland development.
- Political changes in the late 1980s brought a more open economy and renewed donor interest. This included support to re-equipping the industry, a trade and marketing section and rejuvenated the support services to industry. The former Guyana Timbers Ltd. was sold and then the large concession for plywood manufacture was granted.
- This created two very large, foreign-owned concessions; one serving a plywood mill and the other a sawmill. A third foreign concessionaire Barama Company Limited was granted a 16,000 km^2 concession in 1992, outside the greenheart belt and in forest previously considered non-commercial. Sixteen species are currently harvested from this concession, primarily for the production of plywood. Barama's annual production of 200,000 m^3 represents more than 40% of the total national log harvest. The rest of the industry was made up of small, family-owned businesses nearly all of which operated sawmills ranging from sophisticated to museum exhibits, and sold rough-sawn timber. Very little further processing was the norm.

[Source: http://www.sdnp.org.gy/forestry/forestindustry.html]

Guyana may lose market share as the international demand for certification increases; a threat that has not gone unnoticed by the country's forest industry (Box 3.9). The GFC is working with industry and the United Nations Development Programme to determine the best way forward for the certification of Guyanese producers: to adopt established (regional) standards or to develop national criteria and indicators. Ideas under discussion include development of a national certifying organization, and accreditation or recognition by an international certification organization, both of which would help to reduce the costs of registration and of certification for producers.

Box 3.9 Trends to Support Certification – International Demand

- The issue of the demand for certified products is uncertain, but there are indications in the market of a move towards certified timber products or alternative forest products. For example, the case of Atlantic City (USA) in 1997 making the decision to use only certified timber products or plastic lumber in construction around the city. The potential for a loss in market share for Guyana's exporters is real.

- In March 1999 the New York City Council eliminated greenheart from their list of approved species for NYC boardwalks and other uses. NYC is one of the largest buyers of Greenheart and the ban is expected to have a great impact on the forest sector in Guyana. In particular this will have an impact on the export of Greenheart piles to North America. In 1998, the value of Greenheart pile exports was 38% of the total export value of roundwood, which in turn accounted for 6% of the total export value for Guyana.

- The impact of certification in international markets is already beginning to be felt in Guyana. For example, the USA is becoming more stringent in its buying practices and producers are finding it increasingly difficult to maintain markets without certification.

- Although the European market for certification is presently estimated at being less than 5% the trend in consumer preference is increasingly moving towards certification and labeling of forest products.

- Internationally, Guyana is still a relatively minor player in markets and as such will be affected by the situation on the international forest markets.

[Source: http://www.sdnp.org.gy/forestry/certification.html]

(4) Non-Commercial Forests

Forests are also managed for non-commercial or non-resource utilization purposes in Guyana. These are recognized in the national forestry policy as research forests or reserves, and others are open for exploratory purpose under a limited license agreement. Conversion forests is a designation that also pertains to non-commercial use of forest lands as it allows portions of allocated lands to be recalled in the interest of national priorities such as the designation as protected areas[6]. Guyana is in process of establishing a Protected Area Network. Currently there is one National Park (Kaeiteur Falls – 630 km²) although the GoG is in the process of establishing a protected areas network

[6] This provision has also been used to accommodate Amerindian settlements.

with support from the World Bank. There are approximately 100 km² of Reserved and Research Forests (Iwokrama, 360,000 ha; Moraballi, 29,000 ha; and 395,000 ha of State Lands allocated for research.

(5) Non-Timber Resource Base (Non-Timber Forest Products: NTFPs)

Several non-timber forest products (NTFPs) have been harvested for commercial purposes within Guyana. The Iwokrama Research Centre has been the leader in exploring potential products and markets for NTFPs, and to devise management protocols for several plant species including bulletwood, crabwood, hog plum, kokoritiballi, sawari nut, ubudi which are being evaluated for their latex and oils. The balata latex has also been promoted for its use in creating hand-crafted figurines that are marketed, to a limited extent within the country, but are also being sold internationally via the internet. Woody species of vines, kufa and nibi, are also being use in furniture products. Most are sold in domestic markets, although a few companies also export to the Caribbean markets. Their value has been recognized. Provisions to protect these NTFPs as a commercial forest product is reflected in the harvesting standards adopted under Guyana's Code of Practice that seek to promote regeneration following the logging of the host trees.

Figure 3.8 Cane furniture made from non-timber forest products (kufa and nibi vines).
http://209.94.197.2/oct/oct3/features.htm

Figure 3.9 Hand-crafted figurines sculpted from latex collected from bullet trees.
http://www.oneworldprojects.com/products/

The heart of palm (manicole palm) has long been recognized as a valuable forest product and is a major export in excess of 6.5 million stems, which are primarily exported to France.

Figure 3.10 Manicole palm in nature *Figure 3.11 Exported heart of palm*
http://www.barima.com/English/product/

(6) Recommendations Related to the Forestry Sector

A recently completed analysis conducted by the ITTC (2003) concluded that, despite the low profitability of the Guyana's forest industry and the vastness of the area under natural forest cover, there remains substantial potential for the sector to contribute to the economic growth and sustainable development of the country.

1. In order for the Forestry Sector to realize its potential to contribute to the country's economic growth, the following recommendations should be followed.
   - The industry must undergo a major overhaul, including the need to upgrade equipment requiring both technical and institutional support;
   - The GoG and industry should jointly support marketing efforts, and the industry should strengthen its industry associations in order to increase access and sharing of market information;
   - Non-timber forest products can make a significant contribution to both the growth and diversification of the industry and serve as a conduit to enable the flow of benefits back to the local people, thus the industry should promote horizontal or value added enterprises and the creation of employment opportunities, rather than through the pursuit of high volume and vertical integration; and
   - (As noted in the ITTC study) earlier market studies recommending that Guyana compete in the general market failed to recognize the severe lack of capital, weak infrastructure, and limited volumes of merchantable timber within the forests of Guyana, thus it is recommended that the industry specialize and pursue niche markets (ITTC 2003).
2. The industry representatives and professional associations need to work with the GoG to effect changes to ensure the development of much needed infrastructure. Specifically,
   - Guyana will need to develop its deepwater port access if it hopes to increase exports to certified markets;

- Recent power disruptions must also be eliminated if sawmills are to operate more cost-effectively. The production side of the industry should explore co-generation power alternatives that utilize wood waste to fuel off-grid power generation to run the mills. In many cases such "co-gen" power stations can also serve as an additional source of revenue as excess power can be sold to surrounding communities and businesses. (Several examples are currently operating in both Bolivia and Brazil.)
- The need to support the expansion of the road network into the interior has already been recognized by the GoG but industry can help spur political will and action. This will help reduce transportation costs in moving products to the coast for export. Road expansion could also help move certified timber into Brazil, supplying the large timber companies are already selling to the certified markets, but severely constrained due to lack of supply to meet the market demands. Whether or not the Government of Brazil or local environmental groups would permit this would need to be explored.

3. Promoting a multiple-use approach to commercial utilization areas should be encouraged. Harvesting of NTFPs, as well as creation of protected areas that support wildlife to support ecotourism are also viable economic options, especially in areas that remain idle (undisturbed) between cutting cycles.
4. Efforts to support the National Initiative on Forest Certification's efforts to develop national certification standards for Guyana should be expanded. While forest certification does not offer all of the answers to modernize and rationalize tropical forestry, it can be a powerful tool to gain preferential access to the international market, while achieving social and environmental goals.
5. As the Forestry Sector grows, great care should be taken in guiding its development in a manner that address and mitigate the principle threats to the long-term sustainability of Guyana's forests, the maintenance of its biological diversity, and ability to provide critical environmental services. Specifically, growth in the industry must address the threats associated with
    - granting large timber concessions to foreign logging companies based on short-term contracts (and by extension short-term investments that promote maximizing profits by stripping forest resources);
    - the inability of natural resource agencies, primarily the GFC, to adequately monitor logging operations (and by extension the inability of the government to capture lost revenue such as from small-scale chainsaw and illegal logging activities); and
    - the government's failure to recognize the rights of indigenous peoples (and by extension secure land ownership and access rights to protect against illegal entry or encroachment on forest lands.)

C. TOURISM SECTOR AND PR0TECTED AREAS

(1) Tourism as Part of the National Development Strategy

Tourism is the largest industry in the world, according to the World Tourism Organization, accounting for one-third of all international trade. In 1997, the organization estimated that the tourism market was growing 23% faster than the overall work economy. In 1998 alone, 624 million international travelers spent US$ 444.7 billion in travel related costs, excluding airfare (OAS, 1997). However, despite these global trends, Guyana's tourism industry, which had thrived during the 1970s, has experienced a steady decline. Tourism is now a very minor player in the country's economy, despite the recognition in numerous national assessments, studies, and plans of its potential to stimulate and advance economic growth (Box 3.10). For example, Guyana's National Development Strategy for 2000-2010 identifies actions needed over the period of the strategy to overcome the constraints and limitations facing tourism development. However, the Government has yet to formally adopt a tourism policy.

Box 3.10 History of Guyana's Tourism Sector

1970s Guyana's tourism sector thrived in the early 1970s.
1986 EEC and Caribbean Development Bank sponsored and coordinated a study to identify Guyana's tourism potential.
1987 Government created the Ministry of Trade and Tourism.
1989 Through assistance from the EU, Government developed the Kelley Reports for the tourism sector -- an Action Plan, Investment Guide, Policy and Strategic Plan and Manpower Development Programme.
1991 Ministry of Trade and Tourism renamed as the Ministry of Trade, Tourism, and Industry and Division of Tourism established.
1992 Tourism Association of Guyana (TAG) formed by industry members.
1993 Government established the Tourism Advisory Board; University of Guyana created a course of study leading to a Tourism Studies Diploma.
1996 Ministry of Trade, Tourism and Industry sponsored a Tourism and Environment Expo aimed at Guyanese expatriates. Results suggested that marketing to expatriates did not yield significant economic benefits, since those returning to Guyana tended to stay with family rather than staying in hotels and eating at restaurants. The first draft of the National Development Strategy (NDS) was released.
1998 Kaieteur Park Master Plan was developed with assistance from the Organization of American States (OAS). University of Guyana Division of Caribbean and Tourism Studies Consultancy team presented a Tourism Policy report that suggested that the sector's policy objective should be "*To develop a sustainable tourism industry that produces maximum economic, social, cultural and environmental benefits, while minimizing negative impacts, as part of an integrated national development strategy through the optimum use of human resources and the provision of a product of the highest quality.*"
1999 OAS-funded Integrated National Tourism Development and Management Plan for Guyana released. Government released revised draft of the NDS.
2000 Final version of the NDS (2000-2010) released, in which Chapter 20 addresses the potential role of tourism in Guyana's national development. Although the NDS does not promote a clear tourism policy, it does identify the constraints and limitations facing the development of the tourism sector.
2001 Through development assistance for human resources and capacity building from Canadian International Development Agency (CIDA), a Tourism Task force formed. CDB approves funds for a Tourism Market Demand Survey to be started.

(2) Why and What Kind of Tourism?

Over the past several decades, a number of thorough studies have offered specific recommendations on how to promote the tourism sector in Guyana. To date, the lack of advancement in this sector of the economy resulted from both inaction and ineffective actions. Progress in the sector will require the GoG and the Tourism Association of Guyana must be committed to taking action to promote the industry and its products with the goal of increasing foreign exchange and creating a sustainable tourism sector in Guyana. Specifically, the tourism sector in Guyana needs to explore opportunities stemming from the country's unique position in the Caribbean and close proximity to both North and South American neighbors. Finally, Guyana's approach to tourism must recognize both its strengths and weaknesses (Box 3.11).

Box 3.11 Strengths and Weaknesses in Developing the Tourism Sector in Guyana

STRENGTHS

- rich biological diversity and vast natural and scenic landscapes
- unique history and cultural diversity
- strategic location in South America
- association with the Caribbean
- low population density
- relatively low incidence of deforestation due to land-conversion
- English speaking

WEAKNESSES

National-level

- lack of government support for tourism as a priority
- lack of appreciation of the potential of tourism development
- poor or nonexistent communications systems in the interior
- persistent poverty and crime
- limited availability of investment capital for development
- environmental damage from extractive industries (mining and logging)
- past exploitation of Amerinidans
- slow middle class growth
- inadequate land-use and parks and protected areas policies

Sectoral-level

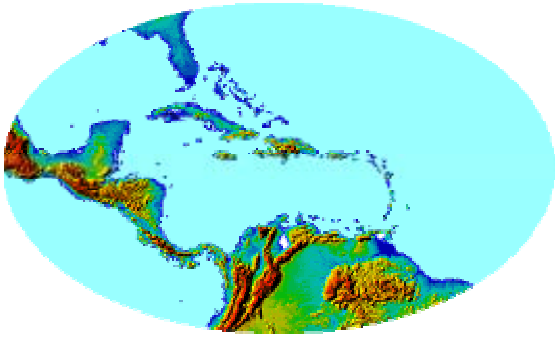
- lack of facilities and infrastructure to receive tourists
- limited skills, service orientation, and product quality
- poor public understanding of the hospitality industry
- domestic tourism restricted by the high transportation and lodging costs, lack of opportunities, and misperceptions by coastal Guyanese about the dangers of the interior
- lack of good local models for success in tourism
- lack of legislative framework and associated policy to guide implementation of human resource development, adoption of tourism standards, and construction of infrastructure

International-level

- lack of an established image in the international market as a potential tourism destination (in part due to the lack of an effective and sustained destination marketing program)
- limited air access by scheduled carriers
- unsophisticated infrastructure and unskilled human resources do not offer the quality of lodging, restaurants, shopping, and other services expected by all but the most adventurous international tourists
- lack of off-shore representatives to facilitate the processing of inquiries and reservations

(3) Identifying the Market and the Audience

Given the current economic conditions and past research (see Box 3.10, 1996 entry), Guyana's most likely tourism audience is the international visitor, rather than the large expatriate Guyanese community or the domestic market. Because of the country's location, Guyana potentially must compete for tourists against neighboring Caribbean Islands, known for their white sandy beaches and clear blue sea. The Caribbean's "Triple S" appeal – Sun, Sea and Sand – as well as their proximity and easy airline access from U.S. metropolitan markets make these islands a particular favorite with North Americans.



[Source: httpwww.cep.unep.org/]

While Guyana lacks the extensive beaches needed to offer the same "Triple S" experience, it can offer visitors a relatively unspoiled tropical environment including forests, savannahs, and rivers in which to experience the wonders of nature. Given the relatively undeveloped state of the country's infrastructure, targeting niche markets such as 'adventure' and 'nature-based' tourism probably represents the most effective immediate strategy for promoting tourism in Guyana (Box 3.12). Rather than competing at a disadvantage with the "Triple S" appeal of the Caribbean Islands, Guyana should pursue adventure and nature tourism markets in North America (U.S. and Canada), the U.K. and Europe (primarily Germany, the Netherlands and Scandinavian countries).

Box 3.12 Types of Tourists likely to be Attracted to Guyana's Unique Tourism

Ecotourists	Particularly concerned about the environmental impact of their visit and the authentic quality of their experience. Tend to be upscale, yet willing to accept more rustic facilities as part of an authentic experience. Consider themselves to be environmentalists, and reflect this perspective in their spending decisions. On average, spend 10 days to 2 weeks in country. Some spend as long as three weeks or as few as 5 days. If the trip is part of a multi-country travel plan, the duration of the stay in Guyana may be reduced.
Adventure Tourists	Typically younger and more inclined to participate in strenuous activities such as overland treks on foot, white water rafting, and mountain climbing. While often investing substantial money in personal gear, generally seek to spend minimally on meals and accommodations.
Heritage Tourists	May be attracted to Guyana, given its unique history of colonialism, slavery and cultural diversity (e.g., impressive wooden architecture of Georgetown; archaeological ruins of Dutch settlements; Amerindian communities); however, likely to have limited appeal for the international market

Within the rapidly expanding tourism sector, the ecotourism niche market is growing at a rate of approximately 30% each year, or 2.5 to 7 times faster than the rest of the sector. According to the World Tourism Organization's 1998 estimates, international travelers spent US$48 billion on nature tourism, which represents approximately ten percent of all international travel expenditures. Furthermore, from the U.S. alone, 4-6 million Americans travel overseas for nature-related tourism each year. The Ecotourism Society estimates that 30% of all tourists today are "ecotourists" (Box 3.13), which suggests that this sector of the industry generates approximately US$ 145 billion.

Box 3.13 Market Profile of Nature Tourist

- Age: 35-54 years old, although age varies with activity and other factors such as cost
- Gender: 50% female, although clear gender differences were found by activity
- Education: 82% college graduates
- Party Composition: Majority (60%) travel as a couple, 15% travel with their families, 13% travel alone
- Trip duration: 50% preferred trips lasting 8-14 days
- Expenditure: 26% prepared to spend $1,000-1,500 per trip
- Important Trip Elements: top three choices: (1) wilderness setting; (2) wildlife viewing , and (3) hiking/trekking.
- Motivations for Taking Next Trip: top two choices: (1) enjoy scenery/nature, and (2) new experiences/places.

[Source: HLA and ARA Consulting, 1994 and Wight 1996a, 1996b, Wood, 2002]

(4) Ecotourism Differs from Other Segments of the Tourism Industry

Although several definitions of ecotourism have been offered (Box 3.14), there is not generally agreed upon definition. In general, definitions expressed from the 'consumer' or tourist perspective include the following elements: (a) promotion of biodiversity conservation; (b) contribution to local sustainable development goals; and (c) providing profits to participants. Definitions expressed from the 'service' or host-nation perspective include the key elements such as (a) minimizing physical and social impacts on the visited area; (b) providing ecological education to the tourist; and (c) securing significant economic participation by local resource managers (Rubinstein, et al., no date cited). Functionally, ecotourism generally focuses on individuals or small groups of up to 25 people who stay in hotels with less than 100 beds that are operated by small- and medium sized companies, frequently located close to or within natural areas (Wood, 2002).

Experience around the world has shown that ecotourism can provide financial incentives over time that equal and, often, surpass the benefits of most extractive industries. Natural treasures can draw a wide range of people – from scientists and filmmakers to birdwatchers and committed naturalists – and this variety can fuel a proliferation of local small businesses specializing in guiding visitors into remote wilderness areas. Today, with growing global pressures on forest and other natural resources, it has been natural to look towards ecotourism as a potential 'win-win' component in the design of conservation strategies and practices. The tourist wins because s/he considers him/herself to be an environmentalist. Ecotourism has been found to have national and local level conservation value as well, as income from tourism tends to change local attitudes and

encourage more rationalized resource use – such as reducing over-exploitation and creating 'untouchable' zones or user quotas (Wunder, 1999).

Box 3.14. Definitions of "Ecotourism"

The International Ecotourism Society (previously known as The Ecotourism Society) produced one of the earliest definitions: "*Ecotourism is responsible travel to natural areas that conserves the environment and sustains the sell being of local people*" (1991).

IUCN states that ecotourism "*is environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy and appreciate nature (and any accompanying cultural features – both past and present) that promotes conservation, has low negative visitor impact, and provides for beneficially active socio-economic involvement of local populations*" (1996).

CIFOR identifies several key components of ecotourism by way of definition: Ecotourism *(a) contributes to conservation of biodiversity; (b) sustains the well being of local peoples; (c) includes an interpretation/learning experience; (d) involves responsible action on the part of tourists and the tourism industry; (e) is delivered primarily to small groups by small-scale businesses; (f) requires lowest possible consumption of non-renewable resources; (g) stresses local participation, ownership and business opportunities, particularly for rural people (*S.Wunder 1999).

Ecotourism is not only an economic force that can play a strategic role in shaping economic development, but it is also a force in promoting ecological health and social justice. –Ideally, "ecotourism" connotes an effort to meet the challenge of promoting a form of travel that will directly benefit local economies, empower local communities, promote favorable cultural exchange, and contribute to biodiversity conservation (Box 3.15).

Box 3.15 Anticipated Benefits from Ecotourism Development

National-level, General Benefits
- generation of foreign exchange
- enhanced tax base for national development
- employment opportunities and human resource development
- conservation of natural and cultural resources
- enhanced international identity

Local-level, Direct Economic Benefits	**Local-level, Indirect Economic Benefits**
– transportation (air, ground and water transport)	– construction/infrastructure improvements
– lodging (rooms and incidentals)	– transport maintenance
– local crafts and souvenirs	– agriculture (food and beverage production)
– guide fees	– craft production
– meals	– shipping and transport of materials
– park and conservation fees	– medical services enhancements
– museum and zoo administration	– communications enhancements
– departure taxes	– conservation of resources

(a) Local Economies

Classifying a tourism operation as 'ecotourism' implies that local residents at the site receive substantial economic benefits, which serve both to raise local living standards, but it also generates incentives for nature conservation, which may realize benefits over

the long-term. It is misleading to consider the benefits to local community's economies solely on immediate income. A more complete assessment of the benefits to local communities must also be calculated in terms of those associated with sound natural resource management and conservation. These benefits manifest in one of three ways: (1) the '*income effect*' (where the dependence on activities that degrade the environment, such as conventional agriculture, timber exploitation, and cattle ranching, would be reduced); (2) the '*substitution effect*' (where the awareness of the trade-offs between tourism and other activities lead to a more resource-efficient management and a shift away from or substitution of the activities that directly jeopardize the tourism operation); and (3) the '*empowerment effect*' (in which tourism and the income derived strengthen local communities to oppose external agents seeking to exploit natural resources in an unsustainable manner, or the in-migration of colonists and strip mining operations) (adapted from Wunder, 1999).

The economic impact of tourism can be positive if carefully monitored, however, the equitable distribution of benefits to all participants remains a significant challenge to ecotourism. In general, reports indicate that, where international travel and resort chains or urban investors control the tourism industry, the local economic effect of ecotourism may be minimal. Early studies suggest that for every tourist dollar spent, only 20 to 30 cents flows back in to the national economy and even less reaches local communities.

The level of local community participation can vary, ranging from autonomous operations to pure salary employment. A recent comparative study across the range of community or village ecotourism models found that, in all cases, local community members receive economic benefits that are significant and competitive compared to other sources of monetary income, and that income difference between communities cannot be explained by their different degree of autonomy from tourist agencies. Factors that determine the observed tourism income differences between communities were found to be the degree of indigenous organization and tourism specialization, the appeal of the natural sites (including their present conservation status) and cultural attractions, and the quality of local services (including the adaptability to tourism demands).

Villages whose development was focused on cattle and commercial crops, due either to past access to transportation and markets or to external pressure from migrant squatters and oil companies, were likely to have a natural environment that had already deteriorated to a point where local flora and fauna attractions were less competitive in an ecotourism market than more virgin, remote natural areas. The specific local history of past resource management is thus an important factor in determining a community's options to develop tourism. Internal organizational capacity is another important condition, especially in order to implement (semi-) autonomous models of community or village-based tourism. Differences between salary employment and autonomy were observed in terms of economic incentives: in the long run, the gradual transfer of ownership and responsibility to local community members is beneficial to the quality of the tourist operation. The author recommends gradually augmenting local participation, strengthening both incentives and tourist operations in the fields of food production, handicrafts, and training local tourist guides (Wunder, 1999).

(b) Cultural Sustainability and Exchange

An important element in ecotourism is the consideration of the cultural sustainability and well being of indigenous communities in the various locations. Part of the attraction visitors seek through well-managed ecotourism is not only a sense of closeness to natural attractions, but also an introduction to local culture and communities. Conversely, poorly managed or unregulated nature tourism present risks not only of damage to the environment, but also erosion of local culture (Box 3.16).

Box 3.16 Risks to Communities: Potential Negative Socioeconomic and Cultural Impacts

- the in-migration of culture (introducing foreign elements into the culture and loss of traditions)
- commercialization of local cultural products
- crime and adoption of illegal underground economies that serve tourist through prostitution, gambling and drugs
- increased exposure to communicable disease by tourist (such as influenza and HIV/AIDS)
- local inflation (side effect of tourism-led demand that may raise the prices of labor, land, and locally produced goods)
- gender impact in the sense that tourism employment is almost exclusively confined to men, while women are left with more work and greater responsibilities in domestic affairs
- undermining family structure
- loss of interest (particularly among youth) in land stewardship
- (increase wages) should only be seen as a social problem if the benefits from tourism are extremely unequally distributed -- fighting among those that benefit from the tourism cash economy and those that do not

Currently, there are no internationally recognized standards, nor regulatory body to provide oversight of this element of the tourism sector. And, although ecotourism, by definition, aims to achieve higher social and environmental goals, its success is highly dependent on the commitment of individual business owners. Prior to undertaking substantial ecotourism development in the hinterland, the tourism industry in Guyana, together with Amerindian representatives, must develop a code of conduct to safeguard against exploitation of vulnerable communities. To this end, the 1996 Environmental Protection Act carries a measure of legal support in that the Act requires all tourism projects within Guyana's interior to carry out an Environmental and Social Impact Assessment. The assessment requires extensive consultations and discussions with stakeholders, including Amerindian communities in the project vicinity. Based on the outcomes of these consultations, project modification may be stipulated by the Environmental Assessment board before the issuance of an Environmental Permit. However, the reality is that many projects have gone ahead without complying with the EIA requirement and, even when they have complied, the EPA's capacity to effectively monitor the implementation of the recommendations is extremely limited.

(5) Necessary Tourism Draw -- A System of Protected Areas for Guyana

Guyana has many areas natural areas that are already recognized as scenic tourist destinations. These include Shell Beach along the northern coast, and Kaieteur Falls, Mount Roraima, Orinduik Falls, and the Kanuku Mountains in the forest and savanna regions of the interior (Figure 3.12 and Box 3.17). Several additional sites have been

identified for further consideration as natural areas and sites for tourism development: (1) the Barama river (the 'Soap Rock' phenomenon); (2) the Upper Corentyne River, encompassing Orealla and Siparuta; (3) the Rupununi River; (4) the Abary Conservancy; (5) the Moruca River; (6) Kumerau Falls (proposed site for a hydro project); (7) Puruima Falls; (8) Kamana Falls (in the Pakaraima mountains); (9) Shea mountain (a huge rock pointing into the sky); (10) the Waini River; (11) the Upper Pomerron River; (12) Warapoka Village (North West district); and (13) the Georgetown Sea Wall Area. To date, tours within the interior have focused primarily on the Kaieteur and Oriniduik Falls and the Rupununi savanna.

Box 3.17 Currently Recognized Tourist Destinations of Natural or Scenic Beauty

Kaieteur Falls
The 400 feet wide Potaro River plunges over the Pakaraima Plateau resulting in a magnificent waterfall whose width varies from 250 feet in the dry season to 400 feet in the rainy season. It has a perpendicular drop of 741 feet. Kaieteur is twice as high as Victoria Falls and almost five times as high as Niagara Falls.

Orinduik Falls
The point at which the Ireng River thunders over rock steps and terraces. Unlike the mighty Kaieteur Falls, this site is ideal for swimming and picnicking.

Potaro Gorge
Begins at the Ayanganna Mountain Range in the North Rupununi Savannah and extends 140 miles to the Essequibo River, including nine waterfalls. The most notable falls are Kaieteur and Tumatumari. Also includes a 1930 Suspension Bridge called Garraway Stream Bridge and Two Islands.

Essequibo River
This river is 21 miles wide at its estuary and approximately 270 miles long. There are 365 islands located on this river, the largest of Guyana's three main rivers.

Mount Roraima
This mountain straddles Guyana, Venezuela and Brazil. Guyana's portion of Mount Roraima is 9,094 feet in height and attracts dedicated mountaineers.

Shea Rock
An unusual outcropping of igneous rock in the South Rupununi Savannah, Shea Rock can be seen easily for miles and thus is a well known landmark.

[Source: http://www.sdnp.org.gy]

Despite all of these impressive natural features, and despite the designation of Kaieteur Falls as a National Park, Guyana has yet to put in place a protected area system. Guyana is the only member country of the Amazon Cooperative Treaty (ACT) without a system of national parks and protected areas. Lessons learned from countries that have successfully integrated ecotourism into their economic growth and development, such as

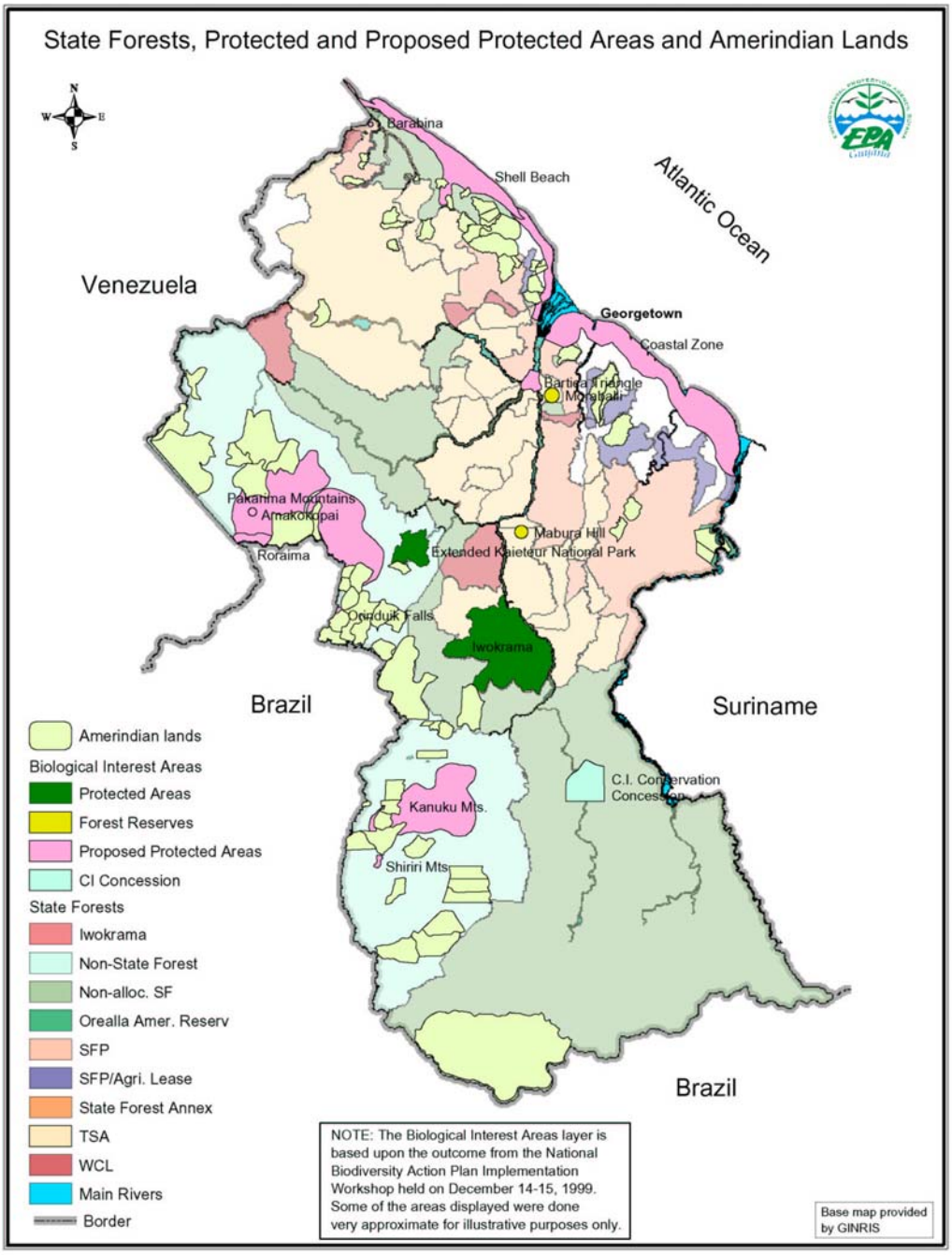


Figure 3.12 Map of State Forests, Protected Areas, and Proposed Protected Amerindian Lands. [Source: Guyana Environmental Protection Agency]

Costa Rica, Ecuador, Kenya and Belize, have shown that establishing a system of parks and protected areas is essential to the successful development of ecotourism. Without a system or parks and protected areas in place, there is no assurance that the pristine areas that would attract ecotourists would remain a permanent resource: parks and protected are a foundation of ecotourism.

The failure to establish a protected area system in Guyana has not been due to a lack of effort. The World Bank pledged US$7 million through the Global Environment Facility (GEF) to assist the GoG identify and implement a system [http://www.worldbank.org/]. However, these early attempts were soon embroiled in controversy and conflict due to unresolved land rights claims of the Amerindian settlements within and around areas proposed for designation as parks and protected areas. As a result, the Bank halted its funding for the project until these issues could be addressed. The spark that ignited the situation was a series of amendments to the Kaieteur National Park Act in 1999 that extended the Park boundaries from 45 to 242 square miles and suggested that Amerindians settlements in the surrounding area would be restricted from the expanded park. The furor that followed persuaded the Government in 2000 to amend the Kaieteur Act to reinstate the rights of Amerindians to freely use the resources of the area for traditional and subsistence purposes. The process clearly demonstrated that addressing indigenous peoples claims of land rights requires a consensus rather than top-down approach.

Today, many relevant stakeholders in Guyana are at least theoretically willing to work through a more participatory process to involve Amerindian communities and other stakeholder groups in the planning and management of Guyana's natural areas. The 2000-2010 National Development Strategy formally recognizes the importance of moving forward on this issue: "*The according of special status to areas known to posses unique natural characteristics is fundamental to the development of tourism in Guyana. Therefore the work that has already begun to establish a Protected Area System will be expeditiously concluded* (NDS, 2000)." Much of the forested interior with potential for ecotourism development is closely associated with Amerindian lands and thus open to potential conflict between proposed protected areas and indigenous communities. Mapping of settlement boundaries will be an important first step towards resolving Amerindian property rights and empowering these communities to participate in any ecotourism planning processes. Successful communication between the tourism industry and Amerindian communities will be critical to successfully developing the ecotourism potential of Guyana.

(6) What's needed to Develop Guyana's Ecotourism Potential?

(a) At the National Level

Tourism must be considered within the broader development agenda, as the sector has little chance of moving forward without sufficient improvement of the country's infrastructure, adequate protection of forests and other natural areas, strengthened civil society, decreased crime, and a more stable political climate. There remains much to be done to transform the country into a more favorable tourist destination and investment opportunity to promote tourism. The following recommendations have been drawn from a number of reviews and plans for Guyana's development as cited throughout this section.

Working outside the country:

(1) monitor the development of the tourism industry within the context of tourism development in the Caribbean;
(2) improve the reliability and quality of air transportation services; and
(3) develop a comprehensive destination marketing plan that is sustained and implemented over several years. (Currently, Guyana is not known as a tourism destination and what little international awareness does exist is often negative – for example, recollections of the historic Jonestown Massacre; awareness of more recent Omai Gold Mine mercury and cyanide spills; or reports of deforestation, illegal logging, trade in wildlife and drugs; crime and insecurity). Guyana's Tourism Authority and the Tourism Association of Guyana are well positioned to take on needed marketing and promotional activities.

Working within the country:

(4) identify tourism resources and facilitate their sustainable development, including facilitating investment in the tourism industry;
(6) improve the standards and the quality of service in the hospitality sector;
(7) provide training for industry stakeholders;
(8) negotiate more cooperative promotional programs with key alliance partners including Guyana Airways, BWIA (British West Indies Airline), American Airlines, and other service providers such as telephone and credit card companies; and
(9) build the prerequisite "urban base camps," (i.e., hotels for tourists when they first arrive in Guyana; shops, restaurants and medical facilities; interpretive facilities such as museums or visitor information centers; and supporting sidewalks, trails and facilities to help visitors move freely and safely around the city.)

(b) At the Sector Level – Specifically Ecotourism

Although it is not an entirely foreign concept, ecotourism is relatively new segment of the tourism industry in Guyana. The numbers of facilities are slowly increasing, but face an uncertain future. A successful example of promotion of ecotourism in Guyana is the Iwokrama Forest and Research Center, which has been a leader in designing and marketing the ecotourism potential of the Iwokrama forest (see Box 3.18).

As noted at the National level, there are organizational, physical, marketing, and security needs that must be met to develop Guyana's Tourism potential, and ecotourism presents several characteristics that are unique within the sector. Specifically, there is a need to:

Within the sub-sector (unique to ecotourism):

(1) initiate specialized marketing to attract travelers who are primarily interested in visiting natural areas;
(2) develop management skills that are particular to handling visitors in protected natural areas;
(3) establish guiding and interpretation services, preferably managed by local inhabitants, that are focused on natural history and sustainable development issues;

(4) design and encourage the establishment of government policies that earmark fees from tourism to generate funds for both conservation of wild lands and sustainable development of local communities and indigenous people;
(5) focus attention on local peoples, giving them the right of prior informed consent, full participation and, if they so decide, the means and training to take advantage of this sustainable development option;
(6) engage and mobilize both local and international conservation and social organizations to promote the ecotourism concept and development within Guyana; and
(7) establish a system of monitoring of both the environmental and social impacts and quality control, evaluation, and product development.

Box 3.18 The Iwokrama Experience – Demonstrating that it's Feasible

Iwokrama has viable infrastructure within the Iwokrama Forest including the field station, a canopy walkway, several satellite camps and a nascent trail system. The Iwokrama Forest presently attracts four major groups of visitors:

- **Nature visitors**, in groups of up to eight staying for between three and eight days
- **Educational groups,** of between 20 and 30 staying between one and three weeks
- **Adventure visitors** of up to 30 staying up to three months; using Iwokrama as a basis for traveling through the South America
- **High end nature tourists** in groups of up to eight staying from three to eight days

In addition, Iwokrama attracts the following groups of people in smaller numbers:

- International and national volunteers and researchers
- Guyanese and expatriate foreigners traveling along the Georgetown-Lethem road
- Local community members including wildlife clubs and school groups

[Source: Iwokrama, draft 2003]

(c) Promoting Nature Tour Operators and Ecolodges

Nature Tour Operations and Ecolodges are unique in the Tourism Industry because of their conservation and sustainable development objectives. As this segment of the Industry develops it will be critical that tour operators and owners of ecolodge facilities assure that the local community benefits through direct employment opportunities, providing food products, guide services, crafts for sale and transportation services. The key to the successful development of ecotourism in Guyana will be linking products and services to local economies and to long-term conservation. Additionally monies can be directed to a Community Development Fund that would be funded by ecolodge operators or funds can be routed to local conservation groups or to specific projects. Tourists can also contribute directly to such Funds through their individual and voluntary donations.

Nature Tour Operators: As noted above, there are no industry standards or accreditations for ecotourism. However, a carefully articulated set of principles (Box 3.19) and guidelines (Box 3.20) have been published as the "*Ecotourism Guidelines for Nature Tour Operators*" by The International Ecotourism Society, first published in 1993. The GoG and the Tourism Association of Guyana should encourage compliance with these guidelines and should promote a rating system based on independent reviews

and performance as a mechanism to promote ecotourism and develop a product that can be competitive on the international ecotourism market.

Box 3.19 Principles of Ecotourism

- minimize the negative impacts on nature and culture that can damage a destination
- educate the traveler on the importance of conservation
- stress the importance of responsible business, which works cooperatively with local authorities and people to meet local needs and deliver conservation benefits
- direct revenues to the conservation and management of natural and protected areas
- emphasize the need for regional tourism zoning and for visitor management plans designed for either regios or natural areas that are slated to become eco-destinations
- emphssize use of environmental and social base-line studies, as well as long-term monitoring programs, to assess and minimize impacts
- strive to maximize economic benefit fo the host country, local business and communities, particularly people living in and adjacent to natural and protected areas
- seek to ensure that tourism development does not exceed the social and environmental limits of acceptable change as determined by researchers in cooperation with local residents
- rely on infrastructure that has been developed in harmony with the environment, minimizing use of fossil fuels, conserving local plants and wildlife, and blending with the natural and cultural environment.

[Source: The International Ecotourism Society, 1993]

Box 3.20 Nature Tour Operator Guidelines

- Prepare travelers. One reason consumers choose an operator rather than travel independently is to receive guidance: How can negative impacts be minimized while visiting sensitive environments and cultures? How should one interact with local cultures? What is an appropriate response to begging? Is bartering encouraged?
- Minimize visitor impacts. Prevent degradation of the environment and/or the local culture by offering literature, briefings, leading by example and taking corrective actions. To minimize accumulated impacts, use adequate leadership and maintain small groups to ensure minimum group-impacts on destination. Avoid areas that are under-managed and over-visited.
- Minimize nature tour company impacts. Ensure managers, staff and contract employees know and participate in all aspects of company policy that prevent impacts on the environment and local cultures.
- Provide training. Give managers, staff and contract employees access to programs that will upgrade their ability to communicate with and manage clients in sensitive natural and cultural settings.
- Contribute to conservation. Fund conservation programs in the regions being visited.
- Provide competitive local employment. Employ locals in all aspects of business operations.
- Offer site-sensitive accommodations. Ensure that facilities are not destructive to the natural environment and particularly that they do not waste local resources. Design structures that offer ample opportunity for learning about the environment and that encourage sensitive interchange with local communities.

[Source: The International Ecotourism Society, 1993]

Ecolodge: The term was first introduced in 1994, at the First International Ecolodge Forum and Field Seminar held at Maho Bay Camps in the U.S. Virgin Islands. This meeting resulted in a key publication entitled "*The Ecolodge Sourcebook for Planners and Developers"* which was later published in 1995 by Hawkins et al. There is no universal definition and variation is great, from extremely rustic or very luxurious, although accommodations are generally mid-range in price. Recreational opportunities also vary greatly depending on the natural environment. Such activities include game drives, bird watching, canoeing, horseback riding, bicycling, beach trips and educational visits to locally run museums, zoos, butterfly farms, agricultural and livestock farms,

craft production areas and other natural history and cultural sights (Wood, 2002). In tropical forest habitats, lodges are also building jungle canopy walkways to attract clientele as a commercial draw by providing the unique opportunities to observe the unique biological diversity found in the tree-tops canopy of the rainforest.

It is the commitment to design and operate tourist lodge facilities in the most environmentally-sensitive manner that makes the ecolodge different from traditional or even the so-called "green hotels" (see Box 3.21). These design elements are described in Box 3.22.

Box 3.21 Characteristics of "Green" Hotels

"*Green Hotels*" are businesses that are taking steps to reduce their environmental impact by promoting conservation practices on the part of both the staff as well as their customers.

Examples of such practices include:
- asking hotel quests to use their towels and lines more than once (instead of having them washed daily)
- installing compact fluorescent light bulbs and occupancy sensors to maximize lighting and climate efficiency
- using low-flow showerheads and toilets to reduce water use
- replacing single-use, disposable bottles of soap and shampoo with refillable dispensers to help reduce solid waste
- operating courtesy vans and vehicles that run on alternative fuels
- using eco-friendly cleaning products
- setting up recycling bins
- selecting materials made from renewable materials and investing in renewable energy items

For more information visit the "Green Hotel Association" at www.greenhotels.com and Green Seal organization at www.greenseal.org

[SOURCE: Earthwise Vol. 5, No.3, Union of Concerned Scientist, 2003]

(d) Protected Area Management and Planning

As Guyana moves forward in identifying and designating sites for protected area status, these areas will have a significant influence on the Guyana's draw as a nature-based tourism destination. To fully realize its tourism potential from protected areas a closer working relationship between the EPA, Protected Areas Secretariat and the Ministry of Tourism and Industry and the Tourism Authority must develop. Criteria must be identified that defined the carrying capacity and guidelines, such as length of stay and mode of transportation, for human (tourist) visitations within these areas. In addition, incorporating trained naturalists or guides into the system of ecotourism will provide a critical first-line of protection to help control access to protected areas or critical habitat within these areas, and to regulate the potential disturbance or removal of flora and fauna. In fact, the requirement that trained naturalist guides accompany tour groups in the fragile island habitats of the Galapagos Islands has provided the model, and has provided ample evidence that ecotourism can be sustained when the conservation value of the natural resource is safeguarded in this manner. Appropriate entry fees can also help control visitor numbers and assure the protection of natural areas.

Box 3.22 Design and Operation of an Ecolodge

the design of ecotourism facilities should…

- include greywater treatment and rainwater catchment systems on roofs for site irrigation purposes;
- maintain an appropriate distance between unites at an ecotourism facility – provides corridors for wildlife transit, provides privacy and acoustical separation for guests;
- provide an opportunity to demonstrate to tourists how they can minimize their impact on the environment (if appropriate, technologies can be show-cased as part of a visitor education program);
- take advantage of potentials for passive solar gain (where appropriate), daylighting and natural ventilation;
- consider the use of alternative energy systems (these should utilize renewable resources – possible systems would include: wind turbines, micro-hydro, photovoltaics, biomass combustion);
- guarantee adequate space provided for recycling and for composing organic wastes;
- use non-toxic building materials;
- utilize recycled material products where possible (due to the difficulties and cost in transporting building materials to the interior, the use of local resources is likely to be required); and
- if local forest resources are used, care should be taken so that logging is done on a selective extraction basis (old growth timber resources should be avoided and reforestation efforts should assure that both the damage is offset and that replacement timber is available in the future);
- employ construction methods to minimize waste and control adverse impacts on the surrounding land;
- utilize low water use plumbing fixtures and appliances;
- employ composting toilets wherever possible;
- incorporate locally produced furnishing and artwork;
- prevent waste resulting from damaged building materials by careful storage, handling and proper installation methods
- be sensitive to the environment the initial construction process (i.e., in respect to site access, clearing, staking and enclosure should be handled in such a manner as to minimize disruption and damage to natural systems and maximize the survival of existing vegetation immediate to the building site); and
- in particularly sensitive areas, hand-work may be more appropriate than a mechanized approach to construction (while hand work may be slower, it provided more employment opportunities -- use of local labor should be a priority).

on-going operation should reflect the same values inherent in the design of ecotourism facilities…

- use of efficient appliances, solar water heating, waste reduction and recycling should be employed as appropriate;
- composting kitchen wastes and minimizing water usage should also be priorities;
- kitchen and laundry operations, in particular, should be targeted to minimize waste and energy consumption;
- staff should be trained an empowered to find new ways to conserve resources; and
- guests should also be encouraged to conserve by reusing towels and minimizing waste.

(7) Recommendations Related to the Tourism Sector

USAID has supported nature-based tourism activities as part of its biodiversity conservation programs in more than a dozen countries worldwide (CDIE, 1996). The Agency's ecotourism activities include support for developing national park systems, demarcating and equipping new national parks, recruiting and training park staff, and encouraging government reforms that promote regulated investments in private lodging,

guide service, and other tourism ventures. Box 3.23 lists the potential contribution USAID and other donors can offer based on experience from countries around the world.

Box 3.23 Donor Support toward Promoting Ecotourism Development

USAID can help promote nature tourism in a way that maximizes its contribution to both the economies and the ecologies of developing countries. Specifically, USAID, other donors, NGOs, and developing-country governments can work together to:

(1) Identify and mobilize funding for potential private nature tourism investments. (Ecotourism enterprises, like most business ventures, need operating capital. USAID and other donors can help identify promising funding sources.)

(2) Formulate fiscal policies to promote nature tourism and to maximize its economic and environmental benefits. (USAID can encourage public policies (such as visitor fees, regulations for tourism operations, and investment incentives and land-use zones for tourist facilities) that promote environmentally sound tourism as well as community involvement in providing services and products such as guides, lodging, transport, and crafts.)

(3) Encourage international exchange of information and know-how about nature tourism opportunities and operations. (USAID can foster participation by developing-country public agencies and private service providers in international nature tourism associations that can help them, through technical and management training, to meet the needs and interests of international and domestic nature tourists.)

(4) Monitor and certify the performance of ecotourism act ivies (USAID can support emerging international movements aimed at promoting 'green tourism'. Green tourism takes ecotourism a step farther, promoting environmentally responsible tourist operations that conserve energy, recycle waste, and instruct staff and tourists on proper behavior in parks and protected areas.)

(5) Fund research on ecotourism's developmental and environmental impact (Information is needed to demonstrate to decision-makers the economic contributions nature tourism can make. Better understanding of the impact of ecotourism (such as in resort development) is needed to regulate and enforce against environmentally damaging investments.

[Source: CDIE, 1996]

In Guyana, USAID can support this development as an alternative to extractive industries in key areas. Guyana is rich in both the quality and quantity of undisturbed forestlands and these areas hold great value, not as measured in terms of timber, but rather in terms of environmental services and aesthetic value. Exploiting the ecotourism potential of Guyana's forest interior also holds great potential as both a conservation and economic development strategy and the USAID Mission in Guyana can support ecotourism development through both its Economic Growth and Democracy programs.

Promoting ecotourism under the Mission's Economic Growth strategic objective will contribute to local economies and promoting rural livelihoods, and a will foster a greater awareness and appreciation of the multiple benefits that can be gained through conservation of the forests and natural resources. Ecotourism development stimulates a demand for food, lodging, souvenirs, and educational materials which funnel income to households and communities in and around national parks and other protected areas. The need for guides, transportation, and other food and hospitality services also creates jobs and generate revenues and foreign exchange.

USAID can also support ecotourism development under its Democracy Program by promoting actions to address the critical need to resolve lease/title of forest lands within the interior. The Government's failure or unwillingness to address this issue will continue to dissuade investors. Streamlining the Environmental permitting process to reduce the processing time within the EPA will also increase the attractiveness of investing in the sector. The development of ecotourism will also require support of the legal framework, especially those designed to encourage and promote sustainable uses of the natural environment and the identification and designation of protected areas. Conservation of the natural environmental assess is key to the development of ecotourism in Guyana and efforts to harmonize and effectively implement existing legislation (i.e., Forestry Act, Mining Act, Petroleum Act, National Development Strategy, National Land Use Plan, Town and Country Planning Act, and the Environmental Act) is needed if ecotourism is to have a chance to develop in Guyana.

Guyana, with its extensive forests, exotic species, and plentiful rivers and waterfalls, has tremendous potential as a destination for adventure, cultural, and ecotourists. USAID can help promote nature tourism in a way that maximizes its contribution to both the economies and the ecologies of developing countries in the following ways:

1. At the most basic level, USAID's economic growth program could work with the tourism industry to undertake a market analysis of the potential for adventure, cultural, and ecotourism.

2. More ambitiously, USAID could play a significant role in assisting the government, industry, and potential community enterprises in linking tourism into a broader vision for the equitable economic growth and environmentally sound development of the hinterland. A development plan for the Georgetown to Lethem road corridor could serve as a pilot for a nation-wide approach.

3. USAID's economic growth programs could work with the newly formed semi-autonomous Tourism Authority, with representatives from government and industry.

4. As identified through earlier reviews of USAID ecotourism support (Box 3.23), the Mission in Guyana can evaluate possible opportunities to help support the following activities:

   - Identify and mobilize funding for potential private nature tourism investments. (Ecotourism enterprises, like most business ventures, need operating capital. USAID and other donors can help identify promising funding sources.)

   - Formulate fiscal policies to promote nature tourism and to maximize its economic and environmental benefits. (USAID can encourage public policies (such as visitor fees, regulations for tourism operations, and investment incentives and land-use zones for tourist facilities) that promote environmentally sound tourism as well as community involvement in

providing services and products such as guides, lodging, transport, and crafts.)

- Encourage international exchange of information and know-how about nature tourism opportunities and operations. (USAID can foster participation by developing-country public agencies and private service providers in international nature tourism associations that can help them, through technical and management training, to meet the needs and interests of international and domestic nature tourists.)
- Monitor and certify the performance of ecotourism act ivies (USAID can support emerging international movements aimed at promoting 'green tourism'. Green tourism takes ecotourism a step farther, promoting environmentally responsible tourist operations that conserve energy, recycle waste, and instruct staff and tourists on proper behavior in parks and protected areas.)
- Fund research on ecotourism's developmental and environmental impact (Information is needed to demonstrate to decision-makers the economic contributions nature tourism can make. Better understanding of the impact of ecotourism (such as in resort development) is needed to regulate and enforce against environmentally damaging investments.

Literature Cited

Arnold, Catherine; Bynoe, Mark; Gomes, P.I.; Holden, Sarah; Solomon, Julier. 2002. An Analysis of Livelihoods in the Hinterlands of Guyana: Implications for the PRSP and the Guyana Forestry Commission. (Produced for DFID and the GFC). draft dated July.

Bird, N. M, and Dhanraj, K. 2001. SFP Rapid Assessment Procedure: Proposed Approach. Submitted to the Guyana Forestry Commission, June 2001.

Center for Development Information and Evaluation. 1996. Win-Win Approaches to Development and the Environment: Ecotourism and Biodiversity Conservation. PN-ABY-204. July.

Forte, Janette. 1995. Situation Analysis: Indigenous Use of the Forest, With Emphasis on Region 1, Amerindian Research Unit, University of Guyana. Document prepared for the British Development Division in the Caribbean and Overseas Development Administration.

Gascon, Claude; Williamson, G. Bruce; da Fonseca, Gustavo A. B. 2000. Receding Forest Edges and Vanishing Reserves. *Science* 288: 1356-1358.

Guyana Forestry Comission, 2002. Code of Practice for Timber Harvesting, 2nd edition. February.

Guyana Forestry Commission, June 1999, Forestry in Guyana – Market Summary 1998. Economics Section, Policy and Planning Division, Guyana Forestry Commission.

Guyana Forestry Comission, 2003. Forestry in Guyana Market Report. February.

International Tropical Timber Council, 2003. Achieving the ITTO Objective 2000 and Sustainable Forest Management in Guyana – Report of the Diagnostic Mission (Item 15 of Provisional Agenda). Executive Summary [Thirty-Fourth Session; 12-17 May 2003, Panama City, Panama.] ITTC(XXXIV)/8. 15 April 2003.

International Tropical Timber Organization. March 1999. Tropical Timber Market Report, 1-15 March 1999. International Tropical Timber Organisation.

Iwokrama. 2002a. Training Workshop for Community Consultations on the Wildlife Management and Conservation Regulations. (Draft report on the workshop held at St. Paul's Pastoral Centre, Georgetown, 11-15 Nov.

Iwokrama. 2002b. Forest Road Corridor Management Plan 2003-2007. (draft in review.)

Iwokrama. 2003. Iwokrama Tourism Development Strategy. draft (March 14).

Livan, Karen. 2002. Mining and Biodiversity. Guyana Geology and Mines Commission. July 25th report.

National Biodiversity Action Plan (1999).

National Biodiversity Strategy (1988).

National Development Strategy (Guyana, 2000-2010). (draft 1997, final 2000).

National Environmental Action Plans (1994 and 2001).

National Strategy for the Conservation and Sustainable Use of Guyana's Biodiversity (1997).

Nicol, Gavin; Singh, Jagdesh; Khan, Tasreef, draft 2003. Methods of Yield Regulations in Tropical Mixed Forests – Pilot Studies using MYRLIN and SYMFOR 1. Ituni Small Loggers Association, Guyana. Submitted to DFID and the Guyana Forestry Commission.

Organization of American States (OAS), Technical Assistance Team, The Andersen Group Architects, Ltd. 1997. National Plan for Ecotourism Development: The Cooperative Republic of Guyana. Submitted 5 December 1997.

Putz, FrancesE.; Redford, Kent H.; Robinson, John G.; Fimbel, Robert; Blate, Geoffrey M. 2000. Biodiversity Conservation in the Context of Tropical Forest Management. World Bank, Environment Department Papers. Paper No. 75. Biodiversity Series – Impact Studies.

Rubinstein, Wendy; Valdes-Fauli, Mariana; Gould, Kevin; Khan, Tauheed. no date. Ecotourism, Policy and Practice: Including a Case Study from the Maya Forest. University of Florida Conservation Clinic.

Smith, Zeric Kay; Smucker, Glenn; Myers, Roxanne. 2002a. Guyana Democracy and Governance Assessment. (Produced for USAID/Guyana by Management Systems International, Washington, D.C.) 2nd draft, May.

Smith, Zeric Kay; Schwoebel, Mary Hope; Trotman, Justice Donald; Heller, Sonya. 2002b. Conflict Vulnerability Assessment. (Produced for USAID/Guyana by Management Systems International, Washington, D.C.) Nov.

United Nations' Human Development Report – Adult literacy 1998.

Whitney, T. unpublished draft. Rapid Reconnaissance Survey: Export Potential of Lumber and Wood Products to Selected Caribbean Countries.

Wood, Megan Epler. 2002. Ecotourism: Principles, Practices & Policies for Sustainability. United Nations Environment Programme. Paris, France. First edition.

Wunder, Sven. 1999. Promoting Forest Conservation through Ecotourism Income? A Case Study from the Ecuadorian Amazon Region. Center of International Forestry Research, Occasional Paper No. 21. March.

Appendix I. Authors' Biographic Information and Scope of Work

Authors: Biographic Information

Jean Brennan serves as a senior biologist for the USAID/Washington Forest Team on issues related to forest biodiversity conservation and climate change. She received her doctoral degree in the area of population biology and forest ecology from the University of Tennessee and holds two Masters degrees (from the Yale University, School of Forestry and the University of Pennsylvania.) Prior to her employment at USAID, Dr. Brennan served as a science officer at the U.S. State Department's Office of Global Change, providing policy guidance and interpretation of scientific information related to the international convention and intergovernmental panel on climate change. She has taught and conducted research at the University of California at Davis and the University of Michigan, and has conducted long-term field research in Kenya, Madagascar, Malaysia, and Indonesia. Jean is an Associate Research Scientist at the University of Arizona assigned to USAID under a Support Services Agreement through the US Department of Agriculture, Foreign Agricultural Services Unit and is based in Washington DC.

Christy Johnson is an Environment and Natural Resources Advisor and Forestry Specialist for the Latin America and Caribbean (LAC) Bureau at the U.S. Agency for International Development (USAID), and a Research Fellow with the Harrison Program on the Future Global Agenda at the University of Maryland. In this position, Dr. Johnson advises USAID on forestry, biodiversity conservation, and other natural resource issues in the LAC region. Previously, she was an American Association for the Advancement of Science (AAAS) Diplomacy Fellow serving in the same office at USAID. Before coming to USAID, she was an AAAS Congressional Fellow, advising Senator Joe Lieberman on environmental issues. While completing a Masters in regional planning and a Ph.D. in forest ecology at the University of Pennsylvania, Christy conducted field research in Brazil, Chile, and Puerto Rico.

Safia Aggarwal is currently serving as a Diplomacy Fellow of the American Association for the Advancement of Science, and is assigned to the USAID/Washington Biodiversity Team. She received her doctoral degree in geography from the University of Hawaii and the East West Center. Her doctoral research was conducted in India and Nepal, focusing on issues of community-based natural resource management. Prior to joining USAID in September 2002, Safia worked for a US-based international conservation organization in the area of geographic information systems (GIS) and analysis.

Appendix II. Interview Schedule and Contacts

Organization	(Team/Date*) Interviewed: Contact Number
ENVIRONMENTAL NGOs	
▪ Conservation International	(2) Joe Singh, Executive Director (and team): 225-2978 (3) Clayton Hall, Sp. Projects Officer and Eustace Alexander, RAP Coordinator: 227-8171
▪ World Wildlife Fund-US	(1) Darron Collins and Stephan Kelleher: 202-778-9511
▪ World Wildlife Fund Guyana	(2) (3) Patrick Williams, Director: 223-7802
▪ Guyana Marine Turtle Conservation Society	(2) Annette Arjoon, Secretary: 225-4483/4
▪ Iwokrama	(2) (3) Dr. Kathryn Monk, Director-General: 225-7503 (3) Professor Ian Richard Swingland, Dir. Exec. Board (3) Dr. Graham Watkins, Acting Director-General: 225-1504
USAID MISSION/US EMBASSY	
▪ U.S. Embassy, Georgetown	(2) (3) Ambassador Godard
▪ USAID Mission	(2) (3) Dr. Mike Sarhan, Director USAID/Guyana; (2) (3) Dr. Charles Cutshall, Sr. DG Advisor; (3) Dhanmattie Sohai, DG Advisor; (2) Daniel Wallace, EG Advisor; (3) Winston Harlequin, EG Advisor; (3) Chloe Noble, Program Asst. (EG); (3) William Slater, HIV/AIDS Advisor: 225-7315
USAID/Gy CONTRACTORS	
▪ Chemonics-Washington, DC	(1) Dave Gibson and Guyana team: 202-955-7457
▪ Chemonics/GEO Project	(2) Tom Whitney, Chief of Party: 223-7144
▪ Carter Center, Gy	(3) Melanie Reimer: 225-5852
GoGy AGENCIES, COMMISSION, MINISTRIES	
▪ Environmental Protection Agency	(2) Bal Persaud, Executive Director (and team): 222-4224 (3) Indarjit Ramdass, Dir, NRM Div. and Dr. David Singh, Dir, Env. Mngmt: 222-2277
▪ Guyana Forestry Commission	(2) (3) James Singh, Commissioner: 226-7271
▪ Guyana Geology and Mines Commission (GGMC)	(2) Robeson Benn, Commissioner: 225-3047
▪ Environment Division, GGMC	(2) Karen Livan, Director: 227-1232
▪ Ministry of Amerindian Affairs	(2) Minister Carolyn Rodrigues: 227-5067
▪ Ministry of Tourism, Industry, and Commerce	(2) Minister M. Nadir (and asst.): 225-6710

▪ Ministry of Agriculture	(2) Minister Chandarpal (de facto Presidential Science Advisor): 227-5527
DONOR AGENCIES/FUNDING INSTITUTIONS	
▪ DFID	(2) Greg Briffa, Head of Country Program: 226-5881/4
▪ GTZ	(2) Ben ter Welle, GTZ Team Leader *(informal meeting):* 226-8530
▪ CIDA	(2) Murray Kam and Anna Iles: 227-2081 x3453
▪ Envir & Soc. Sustainable Dev. Unit, World Bank	(1) Loretta Sprissler: 202-473-0663
RESEARCH/ACADEMIC INSTITUTIONS	
▪ Biological Diversity of the Guianas Program, Smithsonian Institute	(1) Carol Kelloff: 202-786-2518
▪ Centre for the Study of Biological Diversity	(2) (3) Philip Da Silva, Manager (and team): 222-6004
PRIVATE INDUSTY ASSOCIATION	
▪ Forest Products Assn. of Guyana	(2) Exec. Comm. - John Willems, Toni Williams, and others: 226-9848
▪ Guyana Gold and Diamond Miners Association	(2) Edward Shields and others: 225-2217
▪ Tourism and Hospitality Association of Guyana	(2) (Exec. Committee): 225-0807
INDIGENDOUS PEOPLES ASSOCIATION	
▪ Amerindian Peoples Association	(2) Staff: 227-0275
▪ Guyana Organization of Indigenous Peoples	(2) Christine Lowe, President (and team): 225-4347
OTHER US GOVERNMENT AGENCIES	
▪ U.S. Peace Corps	(3) Earl M. Brown, Jr., Country Director: 225-5072

Interview Team/Dates:

(1) DC: C. Johnson and T. Allendorf – June/July 2002

(2) Guyana: C. Johnson and T. Allendorf – July 29th – Aug 9th 2002

- Trip to Lethem, Nappi, and Moco Moco – C.I.'s Community Resource Eval. and balata projects
- Meeting with Vincent Henry, Regional Director, Region 9
- Informal meeting with Shirley Melville, Member of Parliament

(3) Guyana: J. Brennan and S. Aggarwal – Mar 9th – March 24th 2003

Appendix III. Interview Guidelines

Section 1. Organizational Background/Profile and Program Description

1. Describe your organization's mandate and tenure in Guyana.

2. How were programs/projects identified (e.g., contracted or national assessments, academic or research reports, organizational staff survey or rapid assessment, etc.) and site selection (e.g., *significant regional, national and/or local value; anthropological or cultural significance; other features*) or specific species targeted?

3. Give an overview of the programs/description of major efforts your organization supports in the areas of biodiversity and tropical forest conservation and management.

a. Program/Project title(s):
b. Location, area, and land classification (protected area, multiple-use zone, etc.):
c. Threats/root causes and conservation objective:
d. Describe the project design process:
e. Describe the approach/interventions (e.g., organizational development, research, incentives, advocacy, training, restoration, alternative income opportunities, etc.)
f. Who are the players/constituency/partners (describe relationships/effectiveness):
g. Type of support (e.g., training, technical assistance, equipment, etc.):
h. Relative ranking and timeline (project initiated, projections):
i. Financial commitment (budget) or in-kind support (relative measures):
j. System of monitoring & evaluation (frequency, measures and indicators of success):
k. Has the project been replicated?
l. To what extent have local communities or other local actors taken over activities initiated by the program or project:
m. What has been the Lessons Learned?
n. Recommendations and future needs and direction.

4. Are there any Transboundary or Conflict issues and if so, what are the dynamics and impact of these on the conservation objective/how are these being addressed?

Section 2. National Level Assessment

5. **Policy and Legislative Framework:**
   a. Are there effective national and local policy and legislative framework in place, and working, for the protection of biodiversity and tropical forest resources (e.g., forestry, mining, water quality, in-land fisheries, system of protected area, etc.)?
   b. Describe efforts to address policy/legislative/regulatory issues that directly impact the environment sector and the protection of biodiversity and tropical forest resources.
   c. Are there other issues related to institutional capacity, trade, private sector growth, participation in international treaties, and the role of civil society and attempts at decentralization that influence the protection of biodiversity and tropical forest resources?

6. **Institutional Framework:**
   a. Identify the implementing agency, government or official local leadership, enforcement agency or institutions responsible for project management or oversight.
   b. Note strengths and weaknesses. (For example: *Do the institutions responsible for protection or oversight of biological resource or forest habitat have the capacity to enforce the law (personnel, equipment, other resources)? Do they have a sufficient number of trained professionals to effectively carry out its mandate? Do they have full support and political backing (legal/judicial support) to impose fines and prosecute illegal activities? etc.*)

7. **Corruption:** Is corruption an issue, and if so, has it had an impact on the protection of biodiversity and tropical forest resources in Guyana? Describe any efforts to address it.

8. **Macro-economic and Infrastructure Development or Political Influence:**
   a. Have macro-level economic (e.g., hyperinflation, exchange rates, trade agreements, national and international, economic diversification, structural adjustment) and infrastructure development (e.g. major road construction) affected the protection of biodiversity and tropical forest resources in Guyana?
   b. Have major political changes or dynamics, or policy changes in other sectors, had a direct impact on the protection of biodiversity and tropical forest resources in Guyana?

9. **Conservation Priorities:** What are the conservation priorities and needs in Guyana?
   a. Review: inventory of rare and endangered terrestrial and marine species, and evaluate pressures on these habitats – review efforts for protection of these species and identify direct threats and their underlying or root causes;
   b. Govmt and NGO institutional and education and training programs to preserve and augment biological diversity and tropical forests
   c. Status of gene banks (for crops and livestock species, native seed selection, and activities to support the sustained production of commercially important wild plant and animal species (e.g. for forestry production, hunting, fishing, or commercial trade), and *in-situ* conservation);
   d. recommendations/proposed actions; relative priority and length of implementation period and brief description of their objectives and anticipated benefits.

10. **What potential opportunities for USAID** to contribute biodiversity conservation, consistent with Mission program goals and objectives, through strategic objectives other than environment (e.g., under proposed Democracy and Governance; Economic Growth and Trade; and addressing the HIV/AIDS challenge)?

Appendix IV. Legislation Related to Environment and Access to Natural Resources

(i) Wild Birds Protection Act 1919 [Cap: 71:07] amended in1934, 1962, 1972

"An Act for the protection of certain Wild Birds"

Responsible government agency is the Wildlife Division. Originally the Wildlife Division was under the Ministry of Agriculture, but then moved under the newly created Environmental Protection Agency. Following charges of corruption within the Division, Wildlife was pulled out and is now required to report to the Office of the President once the Division's proposed actions are approved by the Minister of Agriculture.

The Act identifies specific birds to be fully protected, throughout the year (listed on Schedule One of the Act which makes it is an offence to knowingly wound or kill any of these birds or to offer to sell them or attempt to export) or seasonally protected, during part of the year designated as a "closed season" (listed on Schedule Two of the Act which makes it illegal to capture, wound, kill, purchase or sell any of these birds during the closed season.)

(ii) Kaieteur National Park Act 1930 [Cap: 20:02]

"An Act to constitute a certain area of land in the vicinity of the Kaieteur Fall on the Potaro River in the County of Essequibo a National Park and to provide for the control of the said park and for the preservation of the natural scenery, fauna and flora of the said park."

Responsible government agency the Kaieteur National Park Board established by the Commissioner of Lands, and operating under the Minister.

The Act recognizes the Amerindian people lived in proximity to the boundaries of the proposed park and maintained daily activities that within the designated park boundaries. As such, the Act therefore acknowledges the right, privilege or freedoms to continue to fish, hunt and generally to forage, and in a manner that promotes sustainable forest and wildlife management, and are granted unrestricted travel rights in and out of the Park. All other persons are restricted in their entry and travel within the park, and are not allowed to hunt, chase, catch, shoot at, kill or otherwise disturb any animal or cut, pluck or gather any of the flora or interfere with or disturb the soil by mining or other operations within the park or to remove anything whatsoever from the park. Violators are subject to fines and imprisonment, and forfeiture of anything taken.

The Minister is authorized to change the boundaries of the Park.

(iii) Amerindian Act 1951 [Cap:29:01] amended in 1961, 1976

"An Act to make provision for the good Government of the Amerindian Communities of Guyana"

Responsible government agency is coordinated at the National level by the Minister of Amerindian Affairs.

The Act applies to Amerindians, defined as a citizen of Guyana and is of a tribe indigenous to Guyana or neighboring countries. It identifies Amerindian villages by its geographic location and lays out provision of administrative oversight and considers issues of protection of property and legal proceedings on behalf of Amerindians. The Act does not contain any provisions specifically focused on the conservation and sustainable management of natural resources. It does however give Amerindian councils the power to make rules in certain matters and could be used to protect wildlife and wildlife habitats in Amerindian Villages, Districts and Areas. The Council can make rules to stop people from poisoning streams and rivers and to prevent fires. The Council also has the power to forbid some kinds of trapping.

The Amerindian Act is currently under review and revision. The new Act seeks to safeguard indigenous rights and to protect the integrity of the fragile interior environment and to promote sustainable economic development for both Amerindian communities as well as investors from outside.

(iv) Forests Act 1953 [Cap 67:01] amended in 1972

"An Act to consolidate and amend the law relating to forests"

Responsible government agency is the Guyana Forestry Commission, under the Minister of Agriculture.

The Minister may declare any area of State land to be a State forest and thereby exclude all land owned by any person in the area. All forest products from State forests remain the property of the State unless permitted and royalty has been paid. The Act requires an applicant to obtain a permit for exploration on State forest from the Commission. Forestry operations are required under to Act to ensure that timber harvesting or other extractive activities take all necessary precautions to prevent damage to surrounding trees and resources. Persons damaging the forest during tree cutting are liable on summary conviction to a fine. Trespassing on or unlawfully occupying State forest is also an offense subject to a fine or imprisonment. Grazing of cattle within the forest or clearing forest for conversion to pasture or cultivation is also subject to a fine. The Forest Act makes it an offence within State forest lands to light a fire without taking proper precautions to prevent the fire spreading. It is also an offence to negligently light or throw down any match or lighted or inflammable material or to do anything which means forest produce may be burned or injured. Both requirements of careful logging and prevention of forest fires serve to protect both forest habitat and biological diversity.

The issue of overlapping jurisdictions has been observed in cases where a company obtains a mining permit to carry out exploration within forest lands already permitted for timber production. The resulting conflict over competing land uses has served to frustrate the responsible management authorities, both operating within the mandates, and result in damage to valuable biological resources.

Criticism of the Forest Act include to need to update the penalties for violations to make them more effective and to address the issue resulting from failure to coordinate land use permits between Forestry, Mining, and Petroleum extraction. A new Forest Act has been drafted and is available for public comment.

(v) Fisheries Act 1957 [Cap 71:08]

> "An Act to regulate fishing in the waters of Guyana"

Responsible government agency is Fisheries Department within the Ministry of Fisheries, Crops and Livestock, implemented through Aquatic Wild Life Control Regulations. Currently the Department consists of one employee without any formal training or related experience in fisheries or natural resource management.

The Act defines "fish" to include all variety of marine, estuarine or fresh water fishes, crustacean, whales, porpoises, manatees, mollusks, or other marine animal and plant life or fresh water animal and plant life. This definition thus classifies animals not generally characterized as fish such as caimans, turtles and otters, in addition to all aquatic plants.

Any person who wants to capture, collect, remove or slaughter any of the plants or animals covered under this Act must first get a license from the fishery officer. To capture, collect, remove or kill such organisms, without a license, constitutes an offence, punishable by a fine and possibly forfeiture of equipment used in the commission of the crime. It also makes it a offense to buy, sell or have in ones possession fish taken, killed or injured in contravention of this act and as such, subject to a fine. Regulations also make it an offence for any person to injure, molest or do any act of cruelty to animals covered under by the Act. Fish export is possible but subject to the requirement to obtain a license from the Agriculture Officer.

A new Fisheries Act is currently under parliamentary review.

(vi) Mining Act 1991 [Cap 65:01]

> "An Act to make provisions with respect to prospecting for and mining of metals, minerals and precious stones, for regulating their conveyance and for matters connected therein."
>
> Responsible government agency is the Guyana Geology and Mines Commission, established under section 3 of the Act.

The Act clearly identifies the state as owner rights to minerals. Transfer of state lands it does not confer the rights to minerals; the Government retains all mineral right. Petroleum (exploration and production) is excluded under this Mines Act. The Act requires that the disposal of any mineral recovered, or to stack or dump any mineral or any waste product resulting from the mining operation must be in a manner approved by the Commission. In the case of gold mining, this would restrict the use of mercury and cyanide and require that water discharge, containing such poisonous or potentially toxic chemicals must not escape for holding sites or enter any river, creek, lake, reservoir or

stagnant water unless it has been rendered harmless. Mining operations must not interfere with fishing or navigation of waterways. Any damage to a parcel of land or to any cultivation or building due to mining activities shall be compensated by the mining licensee.

(vii) Iwokrama Int'l Centre for Rain Forest Conservation & Development Act 1996 [Cap 20:04]

> "An Act to provide for the sustainable management and utilization of approximately 360,000 hectares of Guyana's Tropical Rain Forest dedicated by the Government of Guyana as a Programme Site for the purposes of research by the Diorama International Centre to develop, demonstrate and make available to Guyana and the international community systems, methods and techniques for the sustainable management and utilization of the multiple resources of the Tropical Forest and the conservation of biological diversity; and for matters incidental thereto.."
>
> Responsible government agency a Board of Trustees of the Iwokrama International Center established under Article 11 of the Act, and operates under the Minister.

As stated in the terms of the agreement between the Government of Guyana and the Commonwealth Secretariat, the Iwokrama Center is authorized under the Act to conduct research, training and the development of technologies which will promote the conservation and the sustainable and equitable use of tropical rain forests in a manner that will lead to lasting ecological, economic and social benefits to the people of Guyana and to the world in general. The Act demonstrates the Government's commitment to the international community for the protection of biological and natural resources and to contribute to the world's knowledge of rain forest management and sustainable development.

The Act established formal linkage with the University of Guyana on the Turkeyen Georgetown campus. The Centre is authorized to apply for external, international donor support from bilateral and multilateral agencies and non-governmental organizations, and to organize a Donor Support Group, s Consortium of Collaborating Institutions, and an Advisory Panel on Sustainable Human Development.

The Act stipulates that approximately fifty per cent of the demarcated Iwokrama forest site to be allocated for sustainable utilization of the multiple resources, while also demarcating other areas a Wilderness Preserve areas. The Centre is authorized under the Act to make and carry out regulations including prescribing fees, levies or other charges for the utilization of the resources.

(viii) Environmental Protection Act 1996 [Cap 20:05]

> "An Act to provide for the management, conservation, protection and improvement of the environment, the prevention or control of pollution, the assessment of the impact of economic development on the environment, the sustainable use of natural resources and for matters incidental thereto or connected therewith."

Responsible government agency is the Environmental Protection Agency, established under section 3 of the Act, is governed by a Board of Directors and reports to the Office of the President (acting as the Ministry of the Environment).

The Act established the Environmental Protection Agency with administrative and scientific oversight responsibilities to ensure the environmental protection and conservation, protection, and sustainable use of Guyana's natural resources and to co-ordinate integrated coastal zone management (to establish, monitor and enforce regulations; formulate standards and codes of practice). The Act also establishes an Environmental Trust Fund which is used to fund the Agency in its environmental protection and natural resource conservation function, and to provide incentive measures to reduce pollution, and to fund public awareness and environmental education programs.

The Agency must deal with all major forms of environmental pollution (solid, water, and air at both the stratosphere/atmosphere and troposphere/ozone layer). The Environmental Protection Act makes it an offense for any person to carry out an activity that causes pollution unless the person takes all reasonable steps to prevent harm. Penalties for violations are a fine and imprisonment.

Oversight of natural resources include forest and mineral resources, the use of genetically modified organisms, and major construction projects including roads, harbors, airfields, hyrdo-electric and energy plants, dams, and hotels, guest houses and inn with capacity greater than 10 rooms. The Act also requires an environmental impact assessment (EIA) for projects which may significantly affect the environment. Each EIA must detail the direct and indirect effects of the project on flora and fauna and species habitats, the ecological balance and ecosystems. The EIA must also assess the project with a view to preserving the stability of ecosystems and the diversity of species.

The Agency is also charged with establishing and maintaining a national parks and protected area system. The Government of Guyana has committed itself to creating a National Protected Areas System. Such protected areas have been established through the passage of dedicated legislations. This includes both the Kaieteur National Park Act [Cap 20:02] and the Iwokrama International Centre For Rain Forest Conservation and Development Act [Cap 20:04]. The legislation creating the National Parks Commission [Cap 20:06] which serves under the National Parks Board does not refer to what is commonly considered a national park and protected areas. The legislation provides for the administration and oversight of the "National Park" which is a city park within Georgetown that also houses the Arboretum and National Zoo.

The Agency is also required to establish a wildlife management program. Currently relevant legislation focuses on establishing a permitting system for wildlife trade. (Guyana is one of only two South American countries that still support a trade in wildlife.) In 1999 the Species Protection Regulations were passed under the Act which considers the issue of wildlife trade. There is no legislative framework for the protection and scientifically-based management of wild populations. The proposed Wildlife Management and Conservation Regulations have been prepared in draft and are being

reviewed through a consultation process at national and community level which began in 2001.

(ix) Pesticides and Toxic Chemical Control Act, 2002 [Cap 68:09]

> "An Act to regulate the manufacture, importation, transportation, storage, sale, use and disposal of pesticides and toxic chemicals and to provide for the establishment of the Pesticides and Toxic Chemical Control Board, and for matters connected therewith or incidental thereto."
>
> Responsible government agency is through the oversight of the Pesticides and Toxic Chemicals Control Board, established under section 4 of the Act, and under the Ministry of Agriculture. The Board is made up of no more than seven members, and composed of representatives of the Environmental Protection Agency, and Ministries of Agriculture and Health and Labour, and persons from non-governmental organizations or private sector as chosen by the Minister.

The Act addresses issues of toxic chemicals, primarily focusing on agricultural application, in which it defined "agriculture" broadly to include the production and storage of any produce which is grown for consumption or any other purpose and includes the use of land for grazing, forestry, and woodland, fish culture, bee culture, market gardening, horticulture, and nurseries and animal husbandry.

The Act serves to track chemical substances through a registry and licensing system and to monitor health effects on humans through a reporting requirement through either the Ministry of the medical officials and through inspections of a work place in which workers may be exposed to risk from controlled chemical or associated products. It also established fines and imprison sentences for violations. It also grants an authorized inspector permission to examine any land or premises in which controlled products is being or has been, or is about to be used, manufactures, sold, packaged, stored, kept for sale or disposed of.

The Act also allows the Minister to enact regulations for the protection of owners, occupiers, or users of land or premises adjacent to land or premises on or on which controlled products are used, stored or manufactures. Regulations may also be established requiring keeping records of sales, stocks, and use or disposal of controlled products and for their surrender for inspection. Fines and prison terms are identified for violations under the Act. The terms and provisions of the Act are equally binding on the State.

Appendix V. List of Protected Species and Protection Status under CITES

[**From**: Community-Based Wildlife Management in the North Rupununi Report from a Workshop held at the Iwokrama Field Station 2nd-6th April 1998, August 1998, North Rupununi District Development Board, and International Centre for Rain Forest Conservation and Development]

Common Name	**Scientific Name**	**CITES Status**	**Guyana Status**
Amazonian Pygmy Owl	*Glaucidium hardyi*	II	Protected
Anteater, Silky		Unknown widespread	
Anteater, Giant	*Myrmecophaga tridactyla*	II	Protected
Anteater, Collared	*Tamandua tetradactyla*	II	
Aplomado Falcon	*Falco femoralis*	II	Protected
Arapaima	*Arapaima gigas*	II	Protected
Arawana	*Osteoglossum spp*		
Armadillo, Giant	*Priodontes maximus*	I	Protected
Armadillo, Six Banded	*Euphractus sexcinctus*	Common	Exportable
Armadillo, Nine Banded Long-nosed	*Dasypus novemcinctus*	Common	

Common Name	**Scientific Name**	**CITES Status**	**Guyana Status**
Armadillo , Great long-nosed	*Dasypus kappleri*	Population patchy, common in some regions rare or absent in others	
Armadillo, Southern Naked-tailed	*Cabassous unicinctus*	Unknown	Protected
Barred Forest Falcon	*Micrastur ruficollis*	II	Protected
Basha	*Plagioscion spp*		
Bat Falcon	*Falco rufigularis*	II	Protected
Black Caiman	*Melanosuchus niger*	I	Protected
Black Hawk Eagle	*Spizaetus tyrannus*	II	Protected
Black Nun Bird	*Monasa atra*		Protected
Black Perai	*Serrasalmus spp*		Second schedule
Black and White Hawk Eagle	*Spizastur melanoleucus*	II	Protected
Black Spider Monkey	*Ateles paniscus*	II	
Black-bellied Whistling Duck	*Dendrocygna autumnalis*	III	Game species
Black-eared Fairy	*Heliothryx aurita*	II	Protected

Common Name	**Scientific Name**	**CITES Status**	**Guyana Status**
Black-throated Mango	*Anthracothorax nigricollis*	II	Protected
Blue Poison Frog	*Dendrobates azureus*	II	Exportable
Blue winged Teal	*Anas discors*		Game species, Protected
Blue-chinned Sapphire	*Chlorestes notatus*	II	Protected
Blue-tailed Emerald	*Chlorostilbon mellisgus*	II	Protected
Brazilian Teal	*Amazonetta brasilensis*		Game species Protected
Brilliant-thighed Poison Frog	*Phyllobates femoralis*	II	Exportable
Brown Capuchin	*Cebus apella*	II	Exportable
Brown Violet-ear	*Colibri delphinae*	II	Protected
Brown Bearded Saki	*Chiropotes satanas*	II	Protected
Brown-throated Parakeet	*Aratinga pertinax*	II	Exportable
Burrowing Owl	*Speotyto cunicularia*	II	Protected
Bush Dog	*Speothos venaticus*	I	Protected
Caiman, Dwarf	*Paleosuchus palpebrosus*	II	Exportable
Caiman, Spectacled	*Caiman crocodilus*	II	Exportable

Common Name	**Scientific Name**	**CITES Status**	**Guyana Status**
Caiman, Wedge Headed	*Paleosuchus trigonatus*	II	Exportable
Capybara	*Hydrochaeris hydrochaeris*	Common	Exportable
Channel-billed Toucan	*Ramphastos vitellinus*	II	Protected, Exportable
Cinerous Tinamou	*Crypturellus cinereus*		Game species
Cock-of-the-Rock	*Rupicola rupicola*	II	Protected
Collared Forest Falcon	*Micrastur semitorquatus*	II	Protected
Crested Owl	*Lophostrix cristata*	II	Protected
Crested Eagle	*Morphnus guianensis*	II	Protected
Crimson Topaz	*Topaza pella*	II	Protected
Curassow (*Powis*)	*Crax alector*		Game species
Curumai	*Brycon spp*		
Cuyo cuyo	*Oxydoras spp*		
Dare	*Leporinus frederici*		Exportable

Common Name	**Scientific Name**	**CITES Status**	**Guyana Status**
Deer, Gray Brocket	*Mazama gouazoubira*	Uncommon but widespread in rainforest	Game species
Deer, Red Brocket	*Mazama americana*	III	Game species
Deer, White Tailed	*Odocoileus virginianus*	III	Game species
Dusky Parrot	*Pionus fuscus*	II	Exportable
Dyeing Poison Frog	*Dendrobates finctorius*	II	Exportable
Ferruginous Pygmy Owl	*Glaucidium brasilianum*	II	Protected
Fork-tailed Wood Nymph	*Thalurania furcata*	II	Protected
Fulvous Tree Duck	*Dendrocygna bicolor*		Game species Protected
Giant River Otter	*Pteronura brasiliensis*	I	Protected
Glittering-throated Emerald	*Amazilia fimbricata*	II	Protected
Golden-handed Tamarin	*Saguinus midas*	II	Exportable
Golden-winged Parakeet	*Brotogeris chrysopterus*	II	Exportable
Gray-breasted Saberwing	*Campylopterus largipennis*	II	Protected

Common Name	**Scientific Name**	**CITES Status**	**Guyana Status**
Green-tailed Goldenthroat	*Polytmus theresiae*	II	Protected
Grey-winged Trumpeter	*Psophia crepitans*		Protected
Guan, Spix's	*Penelope jacquacu*		Game species
Guan, Marail	*Penelope marail*		Game species
Guianan Saki	*Pithecia pithecia*	II	Protected
Harpy Eagle	*Harpia harpyja*	I	Protected
Hawk-headed Parrot	*Deroptyus accipitrinus*	II	Exportable
Iguana	*Iguana iguana*	II	Exportable
Jabiru Stork	*Jabiru mycteria*	I	Protected
Jaguar	*Panthera onca*	I	Protected
Jaguarundi	*Herpailurus yagouaroundi*	I	Protected
Kabadel	*Triportheus spp*		
Labba	*Agouti paca*	III	Game species
Lau-lau	*Brachyplatystoma sp.*		
Laughing Falcon	*Herpetotheres cachinnans*	II	Protected
Lined Forest Falcon	*Micrastur gilvicollis*	II	Protected

Common Name	**Scientific Name**	**CITES Status**	**Guyana Status**
Little Hermit	*Phaethornis longuemareus*	II	Protected
Long-billed Starthroat	*Heliomaster longirostris*	II	Protected
Long-tailed Hermit	*Phaethornis superciliosus*	II	Protected
Lukanani	*Cichla spp*		Second Schedule
Macaw, Scarlet	*Ara macao*	I	Protected
Macaw, Red-bellied	*Ara manilata*	II	Exportable
Macaw, Red-shouldered	*Ara nobilis*	II	Exportable
Macaw, Blue and Yellow	*Ara ararauna*	II	Exportable
Macaw, Red and Green	*Ara chloropterus*	II	Exportable
Manatee, West Indian	*Trichechus manatus*	I	Protected
Manatee, Amazonian	*Trichechus inunguis*	I	Protected
Margay	*Leopardus wiedii*	I	Protected
Mottled Owl	*Ciccaba virgata*	II	Protected
Muscovy Duck	*Cairina moschata*	III	Game species
Mussurana	*Clelia clelia*	II	Exportable

Common Name	**Scientific Name**	**CITES Status**	**Guyana Status**
Ocelot	*Leopardus pardalis*	II	Protected
Oncilla	*Leopardus tigrina*	I	Protected
Orange-breasted Falcon	*Falco deiroleucus*	II	Protected
Ornate Hawk Eagle	*Spizaetus ornatus*	II	Protected
Painted Parakeet	*Pyrrhura picta picta*	II	Exportable
Paku	*Colossoma spp*		
Pale-tailed Barbthroat	*Threnetes leucurus*	II	Protected
Parrot, Blue-cheeked	*Amazona dufresniana*	II	Game species
Parrot, Blue-headed	*Pionus menstruus*	II	Exportable
Parrot, Mealy	*Amazona farinosa*	II	Game species
Parrot, Yellow-crowned	*Amazona ochrocephala*	II	Game species
Parrot, Festive	*Amazona festiva*	II	Game species
Parrot, Black-headed	*Pionites melanocephala*	II	Exportable
Parrot, Orange-winged	*Amazona amazonica*	II	Exportable, Game species
Peregrine Falcon	*Falco peregrinus*	I	Protected

Common Name	**Scientific Name**	**CITES Status**	**Guyana Status**
Plain-bellied Emerald	*Amazilia leucogaster*	II	Protected
Puma	*Puma concolor*	I	Protected
Racket-tailed Coquette	*Discosura longicauda*	II	Protected
Red Howler Monkey	*Alouatta seniculus*	II	Protected
Red-rumped Agouti	*Dasyprocta agouti*	hunted, usually common	Exportable
Reddish Hermit	*Phaethornis ruber*	II	Protected
River Turtle, Side-necked	*Podocnemis unifilis*	II	Exportable
River Turtle, Giant	*Podocnemis expansa*	I	Protected
Rufous-breasted Hermit	*Glaucis hirsuta*	II	Protected
Rufous-throated Sapphire	*Hylocharis sapphirina*	II	Protected
Salipenta	*Tupinambis nigropunctatus*		Exportable
Shiny Perai	*Pygocentrus spp*		
Slaty-backed Forest Falcon	*Micrastur mirandollei*	II	Protected
Southern River Otter	*Lutra longicaudis*	I	Protected
Spotted-legged Poison Frog	*Phyllobates pictus*	II	Exportable

Common Name	**Scientific Name**	**CITES Status**	**Guyana Status**
Squirrel Monkey	*Saimiri sciureus*	II	Exportable
Straight-billed Hermit	*Phaethornis bourcieri*	II	Protected
Striped Owl	*Asio clamator*	II	Protected
Sun Parakeet	*Aratinga solstitialis*	II	Exportable
Tapir, Brazilian	*Tapirus terrestris*	II	Game species
Tawny-bellied Screech Owl	*Otus watsonii*	II	Protected
Three-striped Poison Frog	*Phyllobates trigittatus*	II	Exportable
Tiger Fish	*Pseudoplatystoma spp*		
Tinamou, Great	*Tinamus major*		Game species
Tinamou, Red-legged	*Crypturellus erythropus*		Game species
Tinamou, Little	*Crypturellus soui*		Game species
Tinamou, Variegated	*Crypturellus variegatus*		Game species
Tinamou, Undulated	*Crypturellus undulatus*		Game species
Toucan, Toco	*Ramphastos toco*	II	Protected, Exportable
Toucan, Red-billed	*Ramphastos tucanus*	II	Protected, Exportable

Common Name	**Scientific Name**	**CITES Status**	**Guyana Status**
Tropical Screech Owl	*Otus choliba*	II	Protected
Tufted Coquette	*Lophornis ornatus*	II	Protected
Turtle, Scorpion Mud	*Kinosternon scorpioides*		Exportable
Turtle, Side-necked	*Phrynops nastus*		Exportable
Turtle, Twist-necked	*Platemys platycephala*		Exportable
Turtle, Mata Mata	*Chelus fimbriatus*		Exportable
Turtle, Side-necked	*Phrynops gibbus*		Exportable
Turtle, Labarya	*Rhinoclemys punctularia*		Exportable
Vermiculated Screech Owl	*Otus vermiculatus*	II	Protected
Vulture, Savanna	*Cathartes burrovianus*		Protected
Vulture, Turkey	*Cathartes aura*		Protected
Vulture, King	*Sarcoramphus papa*	III	Protected
Vulture, Forest	*Cathartes melambrotus*		Protected
Vulture, Black	*Coragyps atratus*		Protected
Wedge-Capped Capuchin	*Cebus olivaceus*	II	Exportable
White-chested Emerald	*Amazilia chionopectus*	II	Protected

Common Name	**Scientific Name**	**CITES Status**	**Guyana Status**
White-chinned Sapphire	*Hylocharis cyanus*	II	Protected
White-eyed Parakeet	*Aratinga leucophthalmus*	II	Exportable
White-faced Tree Duck	*Dendrocygna viduata*		Game species
White-necked Jacobin	*Florisuga mellivora*	II	Protected
White-tailed Goldenthroat	*Polytmus guainumbi*	II	Protected
Wild hog - Peccary, White Lipped	*Tayassu pecari*	II	Game species
Wild hog - Peccary, Collared	*Tayassu tajacu*	II	Game species
Yakutu	*Prochilodus spp*		
Yellow-banded Poison Frog	*Dendrobates leucomelas*	II	Exportable

Appendix VI. Forest Certification Overview

What is forest certification?

Forest certification is a voluntary market-driven tool that links the harvest of forest products to sustainable management of the forest. The concept is simple: give the consumer the option to purchase forest products that have been certified to come from sustainably managed forests, and allow the demand for certified products to create the needed incentive for producers to adopt environmentally sound harvesting and management practices. In general, certification schemes promote environmentally sound forest harvesting and management practice that maintain or enhance the ecological, environmental, and cultural values of forests while simultaneously providing for the sustainable utilization of commercial timber.

Certification has grown in response to the global communities concern over the escalating rate of destructive logging and deforestation worldwide, and as an acknowledgement that consumer demand for forest products has contributed to this loss. It also reflects a change in attitude -- society's unwillingness to accept forestry practices that focus exclusively on commercial timber production (economic and silvicultural objectives) and society's demand that modern forestry activity accommodate and, if possible, enhance environmental and social objectives as well.

Certification refers to the management of the forest. It has been defined by the International Tropical Timber Organization (ITTO) as "*an established and recognised procedure which results in a certificate confirming the quality of forest management in relation to a set of predetermined standards, based on an independent third party assessment.*"

In general, certification schemes are developed around a set of guiding principles and standards or criteria. A set of recommended forestry practices, that complement the principles and standards can then be identified according to the particular country or regional demands specific to the legal framework, cultural history, and attitudes of forest operators and the affected stakeholders. Defining the principles and standards that are the backbone of certification are only the starting point as most certification schemes recognize are designed as a dynamic process -- establishing standards, monitoring the results, evaluation the impacts and outcome, and refining the standards and redefining the goal. This flexibility acknowledges the fact that forestry practices continue to change and improve over time as new information, techniques, and technologies become available, and that forest certification, like the concept of sustainable forest management, is most appropriately thought of as "a work in progress."

A certified forest is one that has been inspected and found to operate in accordance with defined principles and standards or criteria, and is subject to periodic audits and passing re-inspection. The certified forestry operation is thus granted permission to **label** their products (i.e., to label raw materials at the time of harvesting with some sort of certification scheme-proprietary mark, stamp, or certificate) that identifies its source to be a certified forest. A tracking system referred to as the **chain of custody**, involving physical evidence (label) and data recording, then tracks these materials from its point of origin (the certified forest), through processing and manufacturing, to wholesalers and finally to the retailer's shelf. From the consumer's perspective it is this combination of labeling and a chain of custody that provides the assurance that the timber or forest product comes from a well-managed and sustainably harvested forests.

Certification schemes worldwide

The UN Food and Agricultural Organization (FAO) current list more than 90 certification schemes worldwide which are either national or international in scope. National level schemes develop forestry performance and management standards for forest certification, but generally do not develop rules relating to environmental claims and for product labeling procedures. International level schemes develop rules and procedures for making environmental claims and forest products labeling. Currently there are two umbrella organizations that function at the international level: the Forest Stewardship Council (FSC) certification, operating worldwide, and the Pan European Forest Certification Initiative (PEFC) involving small forest owner organizations and operating in 16 European countries.

Many certification schemes share key design elements, including the requirement that land disputes must be resolved before a site is considered for certification and the development of a set of standards with multi-stakeholder involvement. Resolution of overlapping claims has promoted the recognition of land-tenure and traditional use rights of indigenous peoples. And, although developing the standards or criteria is one of the more contentious aspects of certification, it is also one of the most powerful. Including representatives for local indigenous groups, environmental, economic and social organizations, and including consultation with the public at large has lent credibility to the certification process and acceptance of certification in the region.

Current challenges facing certification in developing countries

Forest industry in many developing countries are pursuing forest certification because it is largely a niche market and viewed as a means of gaining market access. Producing certified raw materials or final products may be one way of gaining access to the international market which forestry operators in developing country have not historically had access to. Presently, certification does not higher prices in most international markets but producers pursue certification, in part, in an effort to capture greater market-share. The assumption as it that the proportion of certified products that reach the international market will increase in response to increasing consumer demand. There is an additional incentive for participants to pursue certification in developing countries because of the potential to realize greater profits by producing finished (value-added) products under a certified label is comparatively less costly.

The challenge to developing country producers to reach international markers centers on developing the export potential of companies and organizations those countries, both technically and from a business management perspective. Few developing country forestry exporters are currently able to meet delivery commitments and provide acceptable quality

and quantities in a reliable fashion. In addition, forest certification presents challenges to small landowners and community forestry operations in developing countries, due to financial impediments and lack of technical and managerial skills needed to initiate and maintain certification requirements. For many of the community forestry management operations there are additional costs associated with developing or hiring personnel with the necessary technical and business skills to comply with certification requirements. Creative ways to limit the cost of certification have been proposed for smaller units by certifying a group of small holding under an "umbrella" scheme that treats the combined units as a single management unit. Another approach has proposed less complex certification procedures for small independent operations.

US Position on certification and guidance to USAID missions

The United States Government recognizes the potential value of forest certification as an important market-base tool to encourage and create incentives for the sustainable management. The US supports certification under the provisions that it is (a) clearly defined, (b) voluntary and not imposed by either national governments or international organizations, and (c) any scheme which promote third party assessment respect a nation's sovereignty rights and responsibilities. Bilateral funding through USAID is being used for certification of sustainable forest management under the host-country's own nationally defined certification schemes.

Appropriate bilateral assistance include: (a) helping countries build their capacity to assess the sustainability of their forests, (b) facilitating discussions (including funding and convening workshops, conventions, other fora and publishing documents) on the subject of timber certification, its progress, details and implications, (c) funding projects and otherwise provide information that compares the various elements and other aspects of timber certification schemes; and (d) helping countries build their capacity to develop credible environmental auditing systems that may assist them in becoming certified.