

GUYANA

NATIONAL BIODIVERSITY ACTION  
PLAN

A PROGRAMME FOR ACTION BY STAKEHOLDERS  
TOWARDS THE CONSERVATION AND SUSTAINABLE USE  
OF BIODIVERSITY

ENVIRONMENTAL PROTECTION AGENCY  
GLOBAL ENVIRONMENT FACILITY/  
UNITED NATIONS DEVELOPMENT PROGRAMME

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## ACRONYMS AND ABBREVIATIONS

BDG	Biological Diversity of the Guianas Programme
CBD	Convention on Biological Diversity
CDB	Caribbean Development Bank
CHM	Clearing House Mechanism
CI	Conservation International
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CoP	Conference of the Parties (to the CBD)
CPCE	Cyril Potter College of Education
CSBD	Centre for the Study of Biological Diversity
EEZ	Ecological-Economic Zoning
EIA	Environmental Impact Assessment
EIT	Education, Information and Training Division, EPA
EPA	Environmental Protection Agency
GEF	Global Environment Facility
GFC	Guyana Forestry Commission
GRDB	Guyana Rice Development Board
IDB/IADB	Inter-American Development Bank
IUCN	World Conservation Union
MoE	Ministry of Education
MoU	Memorandum of Understanding
NARI	National Agricultural Research Institute
NBAC	National Biodiversity Advisory Committee
NBAP	National Biodiversity Action Plan
NBC	National Biodiversity Committee
NCERD	National Centre for Education Research and Development
NDS	National Development Strategy
NEAP	National Environmental Action Plan
NEEAC	National Environmental Education and Awareness Committee
NEES	National Environmental Education Strategy
NFAP	National Forestry Action Plan
NFP	National Forest Plan
NGO	Non-Governmental Organization
NPS	National Parks Commission
NPAS	National Protected Areas System
NTFP	Non-timber Forest Product
SBSTTA	Subsidiary Body on Scientific, Technical and Technological Advice
SCBD	Secretariat of the Convention on Biological Diversity
TAC	Treaty for Amazonian Cooperation
UG	University of Guyana
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
WRI	World Resources Institute
WWF	World Wide Fund for Nature

## GLOSSARY OF KEY TERMS

**Autecology** – the study of environmental factors and their effects on organisms.

**Biological Diversity** (or **Biodiversity**) - the variability among living organisms from all sources including *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

**Biological resources** - genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity.

**Biome** – a large naturally occurring assemblage of plant and animal species that are of the same general type, e.g. tropical rain forests, tropical savannas.

**Biosphere** – the whole of the region of the earth's surface, the sea, and the air that is inhabited by living organisms.

**Biotechnology** - any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific uses.

**Ecosystem** - a dynamic complex of plant, animal and micro-organism, communities and their non-living environment interacting as a functional unit.

**Endemic species** – species which are found only in a given locality, country or region.

**Ex situ conservation** - the conservation of components of biological diversity outside their natural habitats.

**Fauna** – animal population present in a certain locality, country or region.

**Flora** – plant population of a particular region or locality, country or region.

**Gene pool** – the totality of genes in a particular population.

**Genetic material** - any material of plant, animal, microbial or other origin containing functional units of heredity.

**Genetic resources** - genetic material of actual or potential value.

**Habitat** - the place or type of site where an organism or population naturally occurs.

**In situ conservation** - the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties.

**Protected area** - a geographically defined area, which is designated or regulated and managed to achieve specific conservation objectives.

**Silviculture** – the theory and practice of controlling forest establishment, composition and growth.

**Sustainable use** - the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.

**Synecology** – the study of communities of organisms and the interactions of the organisms therein.



**MAP 1 - GUYANA'S LOCATION**



## **ACKNOWLEDGEMENTS**

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The Executive Director; (Per Bertillon) the Directors of Operations; (Denise Fraser), Education, Information and Training; (Rovin Deodat), and Administrative Director; (Balgobin Persaud), played very direct and indirect roles in the execution of activities under the project. Vimla Roopchand, as Technical Assistant to the project, helped in the process throughout.

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Funding was provided by the Global Environmental Facility (GEF) through the Guyana Country Office of the United Nations Development Programme.

## **THE PROCESS INVOLVED IN THE DEVELOPMENT OF THE PLAN**

The development of this first National Biodiversity followed a participatory process of stakeholder consultation and involvement. There were four regional workshops in the following locations: Georgetown, Corriverton, Lethem, and Mabaruma. These workshops provided opportunities for stakeholders to raise issues relevant to planning and to comment on the first two draft versions of the Plan. A national workshop was held at the end of the planning process to present the Plan and requirements for its implementation.

Apart from workshops there were meetings with the National Biodiversity Advisory Committee (NBAC) and the Natural Resources and Environment Advisory Committee (NREAC) which provided overall advisory guidance. One sectoral meeting was held with private sector representatives.

The entire process of planning was supported by a parallel awareness programme which was aimed at helping the general public to understand the purpose of the Plan and issues relating to biodiversity so that public input will be more informed. These programmes were mounted in television, radio and the press and were interactive thereby providing for the public to contribute.

The Planning Team comprised the following:

Planning and Coordination:	Macsood Hoosein, Biodiversity Planner
Technical Planning Committee:	Reuben Charles, Chief Fisheries Officer

International Advisor  
Technical Support

Dr Leslie Munroe, Entomologist/Agriculturist  
Dr Indarjit Ramdass, Biologist/Forester  
Dr Joshua Ramsammy, Aquatic Biologist/NGO executive  
Yvonne St Hill, Consultant  
Vimla Roopchand, Technical Assistant

## **EXECUTIVE SUMMARY**

A continuing loss of biodiversity globally, increasing threats to biodiversity, and a recognition of the importance of biodiversity to the environment, economy and society have contributed to the placing of biodiversity on the agenda of nations. The Convention of Biological Diversity was adopted at the United Nations Conference on Environment and Development in Brazil in 1992, in an effort to place emphasis and take action on these globally and locally important but insufficiently known and understood resources. Countries agreed to develop (or adapt existing) strategies, plans or programmes for the conservation and sustainable use of biodiversity, and to integrate biodiversity into the agenda of various sectors and sub-national levels of administration and planning. The objectives relating to biodiversity, as subscribed to by nations, are three fold: (i) conservation of biodiversity (ii) sustainable use of its components, and (iii) the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

Biodiversity and biological resources are recognised as major components of Guyana's national patrimony. The *National Strategy for the Conservation and Sustainable Use of Guyana's Biodiversity* was completed in 1997 as an initial step to define the national position on biodiversity. The Strategy was preceded by the Country Study on Biological Diversity, which was undertaken in 1992. The study revealed a significant inadequacy in knowledge and information relating to the components of biodiversity and reported the existence of relatively low levels of threats to Guyana's biodiversity, a fact which has led to many examples of the components of that biodiversity to still be in relatively good state. The likely increase in these threats, and the emergence of new threats, arise out of the imperative for development. While the development imperative is understandable, its successful implementation will be configured by the resource base, on which it must depend. The use of biodiversity must therefore be carried out with responsibility and be accompanied by efforts to protect representative samples of the components of that diversity. Action would be necessary at all levels to ensure this.

This National Biodiversity Action Plan (NBAP) is a product of national policy to elevate concern for biodiversity to the level of planning and action. It recognises biodiversity as an important national asset that offers the country manifold economic options. The basis of the productive sectors of agriculture, fisheries, forestry and wildlife is biodiversity, in which the maintenance of diversity offers considerable opportunities and advantages.

The NBAP is intended to be consistent with the general direction of the National Development Strategy so that both documents will harmonise in respect of matters relating to place and use of biological resources for development activities. The Plan is intended to promote both the conservation and the responsible use of biodiversity and biological resources. It comprises a number of programme areas under which various actions are identified for execution. It proposes a number of strategic principles of guidance to the conservation and wise use of biodiversity; these principles being indicated below:

1. Biodiversity considerations are to become integrated into the agenda at the local, regional, sectoral, and national levels. This is by no means a simple task and requires commitment, time, resources, and skills. There are to be strong linkages between this Plan and those in other sectors and Regions. At the level of macro-development, the Plan should be seen in harmony with the National Development Strategy.
2. All planning and management efforts that either use or impinge on biological diversity should, as far as possible, consider and be based on four approaches/principles:
  - *The Participatory Approach*
  - *The Cyclical/Adaptive Planning Approach*

- *The Ecosystem Approach*
- *The Precautionary Principle*

The combination of the participatory, ecosystem and cyclical/adaptive approaches will make biodiversity planning a dynamic process, promoting the values of the biological patrimony of the country, involving and considering people, and evolving over time. Through the principle of integration, biodiversity planning will become a part of the planning efforts of the relevant productive sectors and administrative organs. The Plan, in addition to adopting a number of strategic principles, establishes targets relating to biodiversity conservation and identifies the roles of the stakeholders.

The Projects and other activities are clustered under Programme Areas to make up the Plan, which consists of a five year Cycle in two Phases. Many of the actions identified will require new and additional financial resources and technical support, both from external sources and from local inputs. The majority of the actions are project-oriented, but some are non-project in nature. The following summarises the Programme Areas comprising the Plan:

### **PHASE I: FOUNDATION PROGRAMMES**

Phase I stresses priority interventions that are essential in laying the foundation for sustainable biodiversity planning and management in Guyana; hence it focuses on filling critical gaps in existing activities, initiating capacity building, and raising awareness. This Phase includes the following Programme Areas:

#### **PROGRAMME AREA 1: MOBILIZATION OF FINANCIAL AND TECHNICAL RESOURCES**

The present level of Guyana's human and financial resources makes it necessary to seek additional financial and technical resources to develop the capacity necessary to implement the Convention and the Action Plan. The achievement of this target will require the mobilization of considerable financial and technical resources; hence this Programme Area is highly critical for the implementation of the entire Plan and will be given absolute priority in the early stages of this Phase. The Programme will seek to source funding for the activities making up the Plan and establish mechanisms for financing the conservation of biodiversity in the long run.

#### **PROGRAMME AREA 2: HUMAN RESOURCES AND INSTITUTIONAL CAPACITY BUILDING**

Guyana's public, private and NGO sectors experience an acute shortage of expertise in areas related to the management of biodiversity. Institutional capacity is weak throughout the sectors that make up this area. Together, these two realities combine to present a serious obstacle to the achievement of the national goals relating to the management of biodiversity.

The programme will address these weaknesses by developing human resources and institutional capacity for the management of biodiversity. This capacity development will be conducted at the central and Regional levels and will be complemented by a programme of public awareness and education, and career guidance efforts. A more fundamental purpose of the activities under this programme is to help ensure that capacity is available for the implementation of the Action Plan.

#### **PROGRAMME AREA: RESEARCH AND INFORMATION ON BIODIVERSITY**

Lack of local expertise and weak institutional and financial capacity have contributed to a generally low level of research undertaken locally. Also, the identification of areas for research has not been conducted in any systematic way, so that many of the national priorities are still not addressed. This weakness in

research achievement has contributed to a low level of information on Guyana's biodiversity. Research and information are integral to planning, management, identification and monitoring, and are identified as a priority area for action. This Programme Area will set priorities for biodiversity research, indicators for monitoring, and identify mechanisms for the collection, analysis and dissemination of information.

#### **PROGRAMME AREA 4: CONSOLIDATION OF THE POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK**

The policy framework on biodiversity at the sectoral level is incomplete, with policy absent in many areas. The legislation relating to biodiversity is old, incomplete in coverage, and inadequate in so far as recent developments in the field of biodiversity are concerned. The policy and legal foundations are basic to the development of other initiatives and, therefore, would require priority attention.

The programme involves actions that will address protection and compensation of local knowledge on biodiversity, access and benefit sharing, biosafety, and the comprehensive review and reconciliation of national legislation on natural resources with a view to making them compatible with national needs and concerns relating to biodiversity.

#### **PROGRAMME AREA 5: PUBLIC AWARENESS AND EDUCATION**

Levels of public awareness in Guyana are very low and pose a serious threat to the realization of the general objectives relating to biodiversity. Increased public awareness is needed, not only for the wider understanding of biological diversity, but also for reducing threats to it, and for human resources development.

The programme will support activities leading to the preparation of instructional material, formal and informal training of citizens, the training of trainers, and career guidance efforts.

#### **PROGRAMME AREA 6: *IN SITU* AND *EX SITU* CONSERVATION OF BIODIVERSITY**

Priority attention to the *in situ* conservation of biodiversity is highlighted in the CBD, which advises that species are best studied and conserved in their natural or naturalised habitats. Attention is needed towards maintaining species in these habitats.

The programme encompasses the *in situ* conservation of biodiversity through the establishment of a national system of protected areas and measures for expanding the *ex situ* conservation of biological diversity.

#### **PROGRAMME AREA 7: INCENTIVE MEASURES AND ECONOMIC ALTERNATIVES**

Incentive measures can complement legislative and administrative measures for the conservation of biodiversity by utilizing the reward objective. The Guyana context of difficult enforcement makes the use of incentive measures particularly attractive. Whereas incentives can be used to encourage conservation of biodiversity, some existing policies may contribute to biodiversity loss and therefore become disincentives. Viable economic alternatives can also help to reduce poverty-based threats to biodiversity and thereby serve as incentives in their own right.

The programme involves initiatives leading to the review of national policies relating to biodiversity with a view to identifying and removing perverse incentives and to examining the possibility of using incentive measures as a mechanism to encourage the conservation of biodiversity. It would also lead to the identification of economic alternatives that could replace poverty-driven practices that threaten biodiversity.

### **PROGRAMME AREA 8: MEASURES FOR THE SUSTAINABLE USE OF BIODIVERSITY**

The philosophy of sustainable use is at the core of the Convention on Biological Diversity and reflects the many priorities facing the biodiversity-rich but economically poor developing countries. Under this Programme Area, criteria and indicators for sustainable use will be developed.

### **PROGRAMME AREA 9: MONITORING, EVALUATION AND REPORTING OF THE IMPLEMENTATION OF PROGRAMME AREAS 1 TO 8 ABOVE**

The successful implementation of the Plan and its appropriateness to changing circumstances and needs will depend on monitoring and evaluation of implementation. Monitoring and evaluation are seen as essential parts of the cyclical and adaptive planning approach.

This area of action will lead to the institution of a programme for monitoring and evaluation of the implementation of the Plan, national reporting, and the submission of recommendations for modifications/improvements to the CBD. These would be achieved through the National Report and attendance at CoP and SBSTTA.

### **PHASE II: CONSOLIDATION OF PHASE I AND INITIATION OF ADDITIONAL INTERVENTIONS**

The specific details of Phase II will be defined based on the findings of Programme Area 9: Monitoring, Evaluation and Reporting, of Phase I. In Phase II, consolidation of Phase I Programme Areas is given priority. In addition, Programmes in new areas will be initiated. Programme Areas highlighted in this Phase include:

#### **PROGRAMME AREA 1: MOBILIZATION OF FINANCIAL AND TECHNICAL RESOURCES**

Actions in this programme area will involve the identification and accessing of new sources and the continuation of existing support

#### **PROGRAMME AREA 2: HUMAN RESOURCES AND INSTITUTIONAL CAPACITY BUILDING**

The programme will involve actions for the strengthening of agencies involved in biodiversity management; strengthening of human resources capacity for undertaking biodiversity projects; and the development of a programme of support for national biological collections.

#### **PROGRAMME AREA 3: RESEARCH AND INFORMATION ON BIODIVERSITY**

In this Phase, research on the genetic characterization of economically important species of Guyana, valuation of biodiversity and habitats, and a revision of the Country Study on Biological Diversity will be undertaken.

#### **PROGRAMME AREA 4: PUBLIC AWARENESS AND EDUCATION**

This programme area will involve a continuation of public awareness initiatives from Phase I.

#### **PROGRAMME AREA 5: *IN SITU* AND *EX SITU* CONSERVATION**

Under this Programme Area the initiative to establish a national system of protected areas will be continued.

**PROGRAMME AREA 6: MONITORING, EVALUATION AND REPORTING OF THE IMPLEMENTATION OF PROGRAMME AREAS 1 TO 6 ABOVE**

The actions in this area will continue from those of Phase I and complete the Monitoring and Evaluation functions for the Plan.

**PROGRAMME AREA 7: PLANNING BIODIVERSITY ACTION PLAN CYCLE 2**

This Programme Area will involve the initiation of planning for the second cycle of the Plan.

Overall responsibility for coordinating the implementation of the Plan will rest with the Environmental Protection Agency, which will benefit from capacity-building support during Phase I. It is envisaged that in the second planning cycle, and based on the findings of the Monitoring and Evaluation exercises, active integration of biodiversity into the agendas at the sub-national levels (i.e. sectoral, municipal and local) will begin. Capacity building support at these levels is proposed for Phase II of the first cycle (i.e. this Plan).



## SUMMARY OF ACTIONS AND RECOMMENDATIONS

### ACTIONS

Programme/Action	Implementing Agency	Time Frame (Yrs)			Estimated Budget (US\$)
		1-2	3-5	>5	
<b>PHASE 1</b>					
<b>Mobilization of Financial and Technical Resources:</b>					
1. Ensuring short and long term financing and sustainability of the Biodiversity Action Plan	EPA	X			86,350.
2. Mobilization of financial resources from the regional and international donor community	EPA	X			24,200.
3. Mobilization of financial resources from national inputs	EPA	X			27,500.
4. Mobilization of financial resources from the sustainable use of biodiversity and other new and innovative mechanisms	EPA	X		X	28,600.
5. Mobilization of technical resources from regional and international sources	EPA			-	-
<b>Human Resources and Institutional Capacity Building:</b>					
6. Strengthening of the Environmental Protection Agency's capacity for administration and integrated planning of the biodiversity sector	EPA	X			132,880.
7. Strengthening of the National Biodiversity Advisory Committee	EPA	X			-
8. Strengthening of Regional Institutions	Regions	X			23,100.

<b>Research and Information on Biodiversity:</b>	EPA/NBAC		X		19,200.
9. Preparation and implementation of a prioritised programme of biodiversity research for Guyana					
10. Preparation and maintenance of a national database on biodiversity	EPA, CSBD, etc.		X		7,480.
11. Development and implementation of a national clearing house mechanism for biodiversity	EPA	X			-
12. Developing a capacity for the genetic characterization of economically important species of Guyana	UG	X			121,000.
<b>Consolidation of the Policy, Legal and Administrative Framework:</b>	EPA, Min. Amerindian Affairs	X			22,000.
13. Developing a legal framework for promoting the protection, compensation for local knowledge, innovations and techniques relating to biodiversity					
14. Comprehensive review and updating of national legislation relating to biodiversity, access and benefit sharing	EPA, Amerindian representatives	X			22,000.
15. Comprehensive review and updating of national legislation on natural resources	EPA, Sectoral agencies	X			121,000.
16. Developing national policies on wildlife, fisheries and biodiversity	Wildlife Unit, Fisheries Dept.	X			30,250.
17. Fortifying the national quarantine and biosafety processes	Min. Agriculture, NARI, EPA	X			24,200.
<b>Public Awareness and Education:</b>	MoE, NCERD, CPCE	X			72,050.
18. Incorporating studies on environment and biodiversity into the curricula of schools					
19. Training of teachers to teach courses on environment and biodiversity	CPCE, EPA		X		58,850.

20. Preparation of instructional material for biodiversity education and awareness programmes	EPA, NCERD, CPCE, CI			X	343,750.
21. Developing non-formal methods of promoting biodiversity education and awareness	EPA, Regions, CI			X	132,000.
<b><i>In situ and ex situ conservation:</i></b>	GNRA, EPA	X			-
22. Developing a national system of protected areas					
23. Coordination and expansion of <i>ex situ</i> activities	NARI, Guysuco, GRDB, NPC	X			3,300.
<b>Incentive Measures:</b>	EPA, Min. Finance, Sectoral Agen.		X		7,920.
24. Review of incentives and disincentives for conservation and sustainable use of biodiversity and the identification of sustainable economic alternatives to activities that threaten biodiversity					
<b>Measures for Sustainable Use:</b>	NBAC, Sectoral Agen.		X		14,520.
25. Criteria and indicators for sustainability of biological resources					
<b>Monitoring, Evaluation and Reporting:</b>	EPA Board, Implementing Agen.		X		18,205.
26. Monitoring, Evaluation and Reporting of the implementation of Programme Areas					
26. Advance recommendations on modifications/improvements to the CBD through CoPs and SBSTTA	NBAC	X			-
<b>Phase II – Mobilization of Financial and Technical Resources:</b>	Sectoral Agencies			X	12,000.
28. Strengthening of agencies and groups involved in biodiversity management					
29. Strengthening capacity of other institutions to undertake biodiversity projects	Local communities			X	23,100.

<b>Research and Information on Biodiversity:</b>	UG, NARI, GFC			X	222,860.
30. Support for the establishment of a national centre for biological collections					
31. Pilot Study on Economic valuation of biodiversity	UG, GNRA,			X	115,500.
32. Revision of the Country Study on Biological Diversity	EPA, UG			X	-
<b>Monitoring, Evaluation, and Reporting:</b>	EPA Board			X	18,200.
33. Evaluation of implementation of the initial cycle of the National Biodiversity Action Plan					
<b>TOTAL BUDGET</b>					<b>2,930,995.</b>

## **RECOMMENDATIONS**

Apart from the above actions, additional recommendations arose out of the assessment of biodiversity management nationally. These recommendations are extracted from Chapters 3 and 4 and are summarised below, in the order in which they appear in the text:

### IDENTIFICATION OF THE NATIONAL COMPONENTS OF BIODIVERSITY

1. The number of species in the vast arthropod group is deeply underestimated due to the relatively small percentage of this group that has been studied. Taxonomic studies of this group must therefore be intensified.
2. The vast array of “farmers varieties” of cassava should be catalogued and these “varieties” genetically described and, where necessary, considered for improvement work.
3. Similar genetic characterization is needed for commercially important timber species.
4. Additional effort and information is necessary for purposes of delineating and classifying the natural ecosystems of the country.

### INLAND AQUATIC AND MARINE BIODIVERSITY

5. As part of the ecosystem approach to biodiversity management sectoral entities should be encouraged to adopt integrated land and watershed management and prepare integrated watershed management plans.
6. In support of the recommendations of the National Development Strategy, efforts should be made to reduce harvesting pressure on certain species of marine fish.
7. There is need for a national fisheries policy. Current efforts to develop, adopt and/or revise legislation and sectoral planning would be complemented by the development of a national policy.

### BIOSAFETY

8. Biosafety is of significant concern internationally arising out of potential harm to human health and agriculture from certain applications of biotechnology. While the effort to negotiate an international protocol on biosafety is on-going, there is an urgent need to take steps nationally to develop some policy and regulatory positions relating to biosafety. National guidelines on biosafety should also be developed, learning from the UNEP Guidelines on the subject, and a national committee or oversight/advisory body should be established.

### POTENTIALLY HARMFUL ALIEN SPECIES

9. Consistent with the policy of the NDS to take steps for “the prevention of entry into the country of new pests and diseases”, proposals for the importation and use of alien species of organisms should receive careful study as to the potential harmful impacts of such species on local species and ecosystems. As far as possible, and in accordance with the precautionary principle, indigenous species should be promoted over the use of exotic species, where there is a possibility of harm. Much investment is required, involving collaboration of public agencies, research institutions, and the private sector, in support of the development of methods for the sustainable use of native species in the various sectors.

## SCIENTIFIC COOPERATION AND TECHNOLOGY TRANSFER

10. In support of the national needs relating to biological resources, and considering the major potential these resources have for national development, the draft National Science and Technology Policy should recognise the importance of research and development in the area of biodiversity, and the provisions of the CBD on technology transfer and scientific and technical cooperation.

## MONITORING AND IMPACT ASSESSMENT

11. The monitoring of biodiversity status and of activities in that field are important for achieving conservation. Baseline data and conditions need to be collected and adopted as a basic requirement for monitoring biodiversity. As part of the development of monitoring programmes, procedures, guidelines, and policies relating to biodiversity need to be included as a requirement of Environmental Impact Assessment procedures. Additionally, ways and means of incorporating the EIA procedure into monitoring of biodiversity need to be considered.

## WILDLIFE MANAGEMENT

12. The absence of either a wildlife policy or plan is a setback to the sector. This reality is compounded by the weak administrative and regulatory capacity present throughout the history of the national management authority. Present plans to upgrade national wildlife legislation and conduct demographic surveys should be given impetus.

Any national policy and plan for the sector should encourage integrated wildlife management and administration, and a detailed economic assessment of the industry.

## SUSTAINABLE USE

13. In addition to the specific recommendation in 9 above, consideration should be given to traditional methods that may serve as appropriate examples of sustainable use. Efforts should be taken to ensure in the long term that guidelines and regulations relating to the impact of certain activities on biodiversity are implemented (for example, mining and tourism).

## RECOMMENDATIONS ARISING FROM CONSIDERATION OF POLICY, LEGAL AND ADMINISTRATIVE ASSESSMENT.

14. A policy document on biodiversity should be developed in order to inform future strategy and plan development
15. A policy should be prepared in relation to all aspects of protected areas (establishment, management, revocation, private protected areas, international designations, etc). In this regard the NPAS Outline Strategy would be a significant building block.
16. Some action is required to increase the staff at the Attorney General's Chambers so that needed legislation could be produced in a shorter time span
17. There is need for enforcement agencies to identify a system or individuals to which or whom authority could be delegated for enforcement of legislation in remote or outlying areas
18. The actions of Indigenous people on ancestral lands are exempted from most regulations. The situation could result in Amerindians not deriving maximum benefit from the use of biodiversity in these lands and can also contribute to the loss of biodiversity. Such exemptions need to be reviewed.
19. It would seem more practical for the current legislation on natural resources to make provision for biodiversity rather than developing specific legislation on biodiversity. This is an issue that could be

considered in the comprehensive revision of the natural resources legislation (see Programme Area 4).

20. Biodiversity is not among the subject areas treated in the NDS, which, being the highest level of national strategic planning, should include consideration of biodiversity.

## **CHAPTER 1 INTRODUCTION**

### **1.1 WHAT IS BIODIVERSITY?**

A vast diversity of living organisms share with us that part of the earth where life is possible. This area is called the *biosphere*. These organisms include those that fly, swim, live on land, or that cannot be seen with the naked eye. Living organisms exhibit a wonderfully large variety in form, structure, and function. This variety is the basis for the distinguishing of organisms into different groups. The basic group or unit is called the *species*. Hence, there is an immense variety of species of living organisms. The diversity spoken of is not restricted to species for, within each species there is *genetic* variability causing each organisms from the same species group to be different. An example of this would be the human species, in which each person is genetically different from the other, even that person's parents and other family members (except of course in the case of certain types of twins). At another level, the living world shows natural variability in the *ecosystems* or environments in which organisms are found. The sum total of variety of life on earth, including the variation in ecosystems is referred to as *biological diversity* or *biodiversity* in short. Biodiversity therefore encompasses all *genes*, *species* and *ecosystems* and actually comprises these three as its components.

Biodiversity is defined in the Convention on Biological Diversity as:

*“The variability among living organisms from all sources including, inter alia, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems.”*

Humans are a part of biological diversity, though by our very actions we have become a major threat to that diversity. It should be pointed out that biological diversity is not static but that it changes over time. These changes are due to two factors: the forces of nature (this process is called *evolution*), and the intervention of man (for example breeding of crops). Both of these processes lead to increase in variability. However, some of man's intervention in nature (such as economic activity) can and do result in loss of variability.

### **1.2 THE CONVENTION ON BIOLOGICAL DIVERSITY**

In June 1992, in the city of Rio de Janeiro, Brazil a total of 153 countries, including Guyana, signed the Convention on Biological Diversity during the United Nations Conference on Environment and Development. The Convention came into force on December 29, 1993 and since then more than 175 countries have ratified it making it one of the most widely supported international agreements. Guyana ratified the Convention on August 29, 1994.

The Convention serves as an international framework instrument for signatory countries to develop actions and take steps to achieve and implement the objectives of the Convention in their own countries, taking into consideration the particular circumstances of each country. The Convention has three objectives:

- (i) *conservation of biodiversity*
- (ii) *the sustainable use of its components, and*
- (iii) *the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.*

Article 6 of the Convention calls on states to develop national strategies, plans or programmes for the conservation and sustainable use of biodiversity or to adapt existing strategies, plans or programmes for this purpose. Additionally, it commits contracting parties to the integration of conservation and



sustainable use of biological diversity into relevant sectoral and cross-sectoral plans, programmes and policies. The Convention advocates not only a modification of current approaches to viewing and using biodiversity, but the taking of new initiatives to bring about the three objectives. A determining factor of the extent to which a country could implement the additional obligations under the Convention is the availability of additional capacity and resources. This is a need resulting directly from the Convention and applies both to developing and developed countries. In the case of developing countries, the Convention recognises the need for the availability of new and additional financial resources and calls on developed-country Parties to provide such resources to enable developing country Parties to meet the incremental costs to them in implementing their obligations under the Convention. This requirement is based on the recognition of the limited financial wherewithal of developing countries. The obligations of developed-country Parties extend from provision of financial resources to facilitating technology transfer, whereas those of developing countries extends to the granting of access to biodiversity under fair and equitable terms to all parties involved.

The Convention allows for flexibility in its implementation within states in accordance with national circumstances. It also provides for the exchange of information, expertise and experiences in areas relevant to the Convention. This is achieved by means of the establishment of a Clearing House Mechanism. The Convention established a Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) to provide the Conference of the Parties (CoP), which is its highest forum, with technical advice on its implementation. This body is multi-disciplinary and is comprised of representatives of member countries.

The articles of the Convention address a number of themes relevant to the objectives of the Convention. To these have been added a number of other themes endorsed by the CoP. Box 1 enumerates these thematic areas.

### **Box 1. THEMATIC AREAS OF THE CONVENTION ON BIOLOGICAL DIVERSITY**

Policy and planning for biodiversity conservation and sustainable use at the national, sectoral and other levels

- Identification and monitoring of the components of biological diversity
- *In situ* conservation
- Rehabilitation and restoration of degraded ecosystems
- Threatened species (recovery, protection)
- Biosafety (including the regulation, management and control of risks associated with living modified organisms (LMOs), and alien species harmful to native biodiversity)
- Preservation and maintenance of traditional know-how and practices of indigenous and local communities
- *Ex situ* conservation
- Sustainable use (including cooperation between governments and the private sector in the development of methods for sustainable use of biological resources)
- Providing of incentive measures
- Research and training
- Public Education and Awareness
- Environmental Impact Assessment
- Access to genetic resources
- Access to and transfer of technology
- Technical and scientific cooperation
- Financial mechanism and funding

Themes adopted by the CoP:

- Agricultural biological diversity
- Forest biological diversity
- Biological diversity in inland water ecosystems
- Marine and coastal biological diversity

## **1.3 CONSERVATION AND SUSTAINABLE USE**

### **1.3.1 Conservation**

Nature Conservation can be defined as the preservation, protection and management of an environment. Its objective is to preserve as much as possible of the natural *flora*, *fauna* and *habitats* thus maintaining the largest possible *gene pool* of that environment. Simultaneously, it takes into account recreational and aesthetic needs, as well as allowing for the harvesting of natural resources and agriculture.<sup>1</sup>

<sup>1</sup> Hale, W.G. and Margham, J.P. 1988. Dictionary of Biology. Harper Collins Publishing, Glasgow.

For a better understanding of the concept, this definition can be expressed in the form of a number of objectives and/or values of conservation and relevant actions as follows:<sup>2</sup>

- safeguarding the evolutionary process; action - preserve large, relatively self-contained natural areas in each of the world's major ecosystem types
- safeguarding the great diversity (biological and geological) of the biosphere's natural ecosystems, hence ensuring the preservation of the genetic pool they contain; action - protect representative areas of the biosphere
- ensuring the continuance of the normal regulatory functions of the biosphere without irreversible disruptions; action - protect representative areas of the biosphere
- pursuing basic/applied environmental research and education including baseline and monitoring studies, which would contribute to ecologically sound planning and management of land and water resources; action - provide representative and unique natural ecosystems for research
- maintaining high water quality and preventing serious flooding; action - protect watersheds from erosion or down-stream sedimentation, and pollution
- ensuring the protection of fish and wildlife; action - protect areas of ecosystems and formulate/apply legislation
- safeguarding the values of plant species as recreation resources, timber products, sources of genetic material for plant breeding, medicinal use, climate enhancers and ecosystem regulators; action - protect plant species
- providing aesthetic and recreational opportunities, including development of eco-tourist economies; action - establishment of a wide spectrum of undisturbed areas

The above-mentioned items deal more or less with conservation at the ecosystem and species levels but there is the third objective of biodiversity conservation, namely conservation at the genetic level. This is best done through *in situ* and *ex situ* conservation methods.

### 1.3.2 Who are responsible?

The responsibility for conservation lies with various parties: the government, the people of the country, and the aid agencies. Private conservation organisations can serve as “watchdogs” and pressure groups raising conservation consciousness of the public and politicians. The more recent arguments favour a larger share of responsibility for conservation in developing countries to be with people, communities and governments. The main argument is that the cycle of rapidly growing populations, increasing poverty, and environmental degradation should be tackled at more decentralised levels, hence there should be a shared responsibility between various groups in a country.

### 1.33 Sustainable Use

“Sustainable use” is defined by the Convention on Biological Diversity (1992) as “the use of components of biological diversity in a way and at a rate that does not lead to the long term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations”.

This concept has been interpreted to imply that the methods required to attain sustainable use are *economically*, *socially* and *ecologically* sustainable, all three elements being operative at the same time. Sustainable use is therefore a goal to be attained. It utilizes the three elements of social equity, economic growth and environmental conservation. A synergy of these elements is mutually reinforcing but an

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<sup>2</sup> UNESCO/UNEP/FAO. 1978. Tropical Forest Ecosystems. A state of knowledge report. Natural Resources Research. XIV. UNESCO, Paris.

opposition can undermine the attainment of the goal. Decision-makers must be properly informed so they can weigh the costs and benefits of the elements and develop required planning procedures to obtain as much synergy as possible. For the three elements to be implemented, the important aspect of institutional and legislative mechanisms must be incorporated into the concept. These mechanisms include fulfillment of International Agreements and Conventions, fulfillment of national legislation, institutional presence and commitment, and legal framework to guarantee long-term tenure<sup>3</sup>.

Of assistance to decision-making is the use of indicators, of which there are two main types. Firstly, there are indicators of state which measure the quantity, quality or status of the resource (e.g. total forest area, total carbon storage). Secondly, there are indicators of pressure which quantify the factors that lead to changes in the state of the resource base (e.g. volume of wood production from well-managed forests; air pollution in forested areas)<sup>3</sup>. The latter type of indicator can be set up in a Pressure - State - Response (PSR) framework which links pressures on the environment from human activities and changes in the state/condition of the environment (land, water, forests, fisheries, etc) to policy responses which feed back to, reduce, or mitigate pressures on the environment<sup>4</sup>.

The attainment of the goal of sustainable use, like conservation, is faced with a vicious circle of interdependence in the developing countries. The case of the Amazon can be illustrative where there is a whole web of interdependence in the technological, economic, social and political spheres, as well as heterogeneity in ecology and geography<sup>5</sup>. It is suggested that public participation, governmental and non-governmental entities, bilateral and multilateral organisations should join in a comprehensive approach to this problem of national and international dependencies for sustainable development of the Amazon.<sup>5</sup> This scenario is similarly applicable to the case of Guyana.

#### **1.4 GUYANA'S COMMITMENT TO BIODIVERSITY AND ENVIRONMENTAL MANAGEMENT**

Recent policies and practices in Guyana are leading to the building of a tradition in support of participatory decision-making and a policy to conserve and sustainably use the country's natural resources. These policies are reflected at the international level in the signing of a number of international and regional treaties, conventions and other instruments relating to the conservation and sustainable use of natural resources. At the national level, guidelines, policies and laws are being prepared in relation to the use of biodiversity and the maintenance of environmental quality. Further, a precedence has been set for participatory involvement in the development of the national strategy and action plan, which have followed an inclusive process throughout. While the importance of these early steps cannot be overstated, the portion of the task to be completed in respect of involving society in the conservation and sustaining of biodiversity is a larger one. A real challenge lies in motivating appropriate decision-making and action at the local and regional levels in so far as biodiversity is concerned.

A tangible symbol of this commitment is in the granting of 360,000 ha of pristine forest for studies on methods of sustainable forestry and for biodiversity conservation.

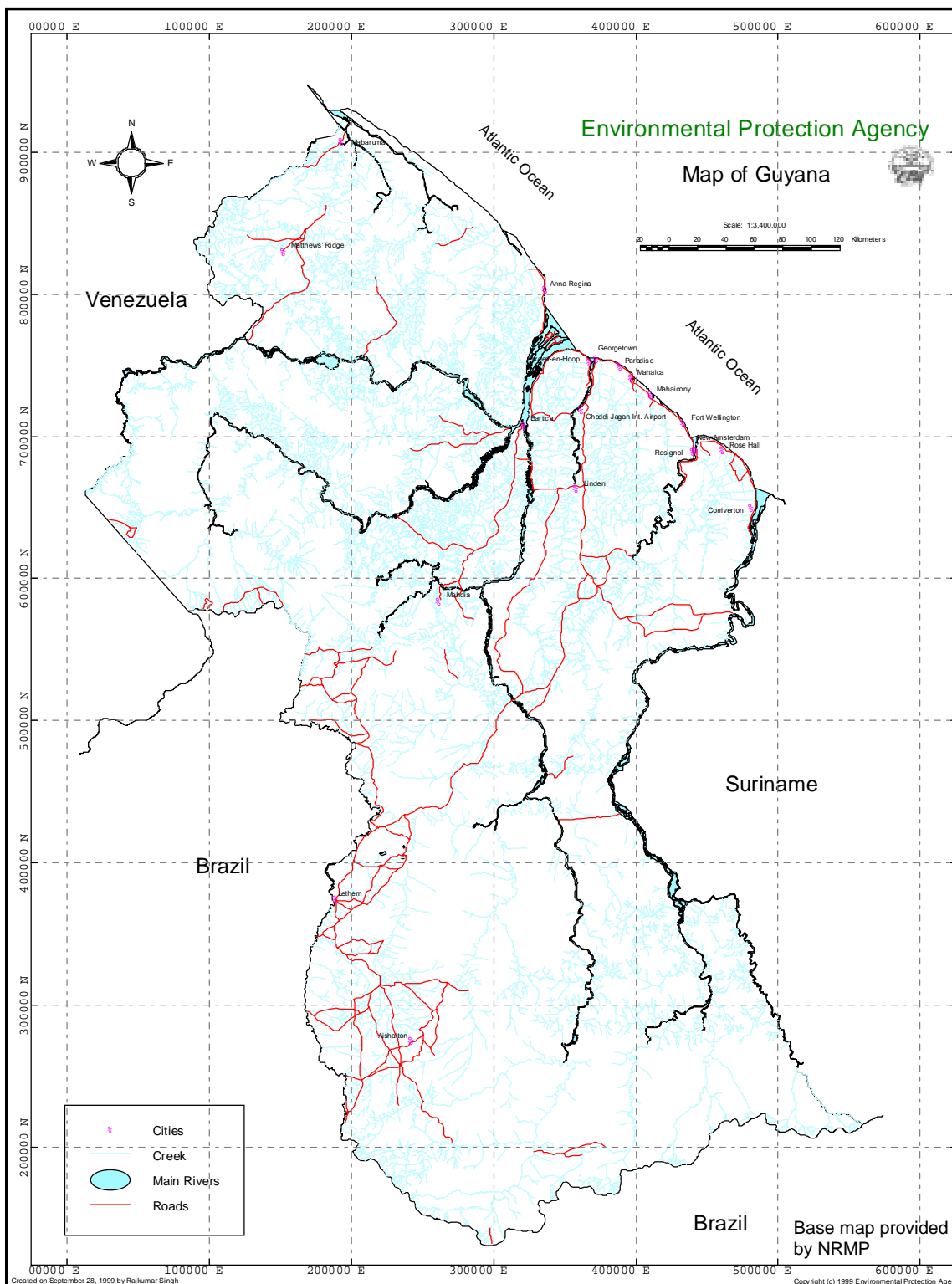
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<sup>3</sup> ACT, 1995. Proposal of criteria and indicators for sustainability of the amazon Forest. Results of the Regional Workshop, Lima. p 149. Pro Tempore Secretariat of the ACT, Lima.

<sup>4</sup> FAO, 1998. Report of the Ad Hoc expert meeting on indicators and criteria of sustainable shrimp culture. p 76. FAO, Rome.

<sup>5</sup> IDB/UNDP/ACT, 1992. Amazonia without myths. p 99. Commission on Development and Environment for Amazonia.

# MAP 2 – GUYANA'S MAJOR GEORGETOWN FEATURES



## **CHAPTER 2 CONTEXT AND OBJECTIVES**

### **WHY CONSERVE BIODIVERSITY?**

The justification for conserving biodiversity lies in its value and the impacts of its loss on ecosystems, the biosphere and man. It is worth repeating that, apart from the countless kinds of genetic materials, there are myriad species of micro-organisms, plants, animals, habitats and ecosystems. The organisms contribute vitally to the productivity of ecosystems and provide a wide range of essential services to the biosphere as a whole and to man, such as the formation of soil and the cycling of nutrients and water.

Some values of biodiversity are of direct economic importance to man in terms of food, medicine, industrial raw materials, beverages, construction materials, etc. Certain essential services include the production of food by photosynthesis (the process by which plants make food), absorption and breakdown of pollutants, regulation of climate, and recreation and aesthetics (the science of the beauty of nature).

The value of biodiversity is enormous and its conservation is essential. While similar information is not available for Guyana, it would be useful to illustrate the range of uses of biodiversity by giving an example from the Peruvian Amazon. It is relevant in that a similar range of usefulness can be expected given the similarities between the geographies of Guyana and the Amazon basin (number in brackets refer to number of species):

Oils and waxes (34), ornamental (84); pottery (10), utensils and tools (77), varnish and tar (3), beverages (30), amulets and chamaneria (33), scents and cosmetics (22), tanning (17), foods (446), soaps (15), fodder (10), smoking materials and incense (14), paper (1), wood (318), fuels (9), caustic agents (7), latex (20), rubber (3), agro-forestry products (7), cloth (3), coloring products and dyes (65), condiments (21), construction materials (22), toxic agents (308), and medications (2449). There is a total of 764 unclassified species for this list, all making a total of 3,213 useful plants<sup>5</sup>.

There are also products from other organisms including birds, wildlife and fishes which would add considerably to the list of uses.

It is important to emphasize that the peoples of this country need the biodiversity of the country. Without the biodiversity, the peoples and the economic development of the country would suffer. Not only the present generation would be impoverished but future Guyanese generations as well. Maintaining the biodiversity at critical levels is therefore a task for each individual of this country. A further reason for conserving biodiversity lies in the following: Future needs of the Guyanese society, along with local conditions, are not predictable over the long term. Our knowledge of the number of species within our national jurisdiction, as well as our understanding of the way they and the ecosystems in which they are a part play their roles is not complete. Therefore we cannot be certain of the impact of removing any species or altering the ecosystem in which it lives. The physical environment in which we live is dynamic and in a situation of changing conditions, greater diversity would be advantageous, both within and between species, as this diversity will allow greater ability for adaptation to these changing conditions. The alternative result (failure to adapt) would make life and living very harsh, economically costly, and even lead to disease and injury. Further, conservation efforts help maintain populations at viable levels, below which the population normally will die out. Greater diversity means greater options available to the nation, region or community.

## 2.2 CONTEXT OF THE ACTION PLAN

The *National Strategy for the Conservation and Sustainable Use of Guyana's Biodiversity* of 1997 identified the national position relating to biodiversity (Box 2). It laid the basis for the development of actions to promote the national objectives relating to biodiversity through the identification of priorities and the enunciation of policies and strategies.

**Box 2. THE GENERAL OBJECTIVES OF THE NATIONAL POLICY ON BIODIVERSITY (from *National Strategy for the Conservation and Sustainable Use of Guyana's Biodiversity, 1997*)**

- to sustainably use Guyana's renewable natural resources, including biodiversity
- to develop institutional capacity and capability to execute all aspects of environmental management, especially the management of biological resources
- to integrate the conservation agenda into the national development agenda
- to equitably share benefits which will arise from research, conservation and sustainable use of components of biological diversity
- to take all necessary actions to achieve these goals

Given the important role that biodiversity plays in Guyana's environment, economy and society it would be wise to plan, manage and control the use of this resource in order to guarantee the various services, goods and values derived from it, either in actuality or potentially. Additionally, while having sovereign rights over its biological resources, Guyana has international obligations relating to the use and protection of this biodiversity. Some of these obligations were formally adopted with the ratification of the Convention on Biological Diversity.

The legal mandate for biodiversity conservation and management resides with the Environmental Protection Agency, conferred by the Environmental Protection Act of 1996. This agency is also the National Focal Point for the Convention on Biological Diversity. The effort to develop a national action plan for biodiversity is both a step towards the execution of the mandate of the EPA and a step in furtherance of the national biodiversity strategy. In consideration of the importance of the objectives of the plan to the various national interest groups, and in recognition of the importance of public support and commitment to its implementation, this Plan must of necessity be developed through a participatory process, involving inputs from non-governmental, community, private sector, civic, governmental agencies and other entities. The effort was led by a Technical Planning Team commissioned by the Environmental Protection Agency and was completed over a period of seven months. This Plan is intended to be the first in a cyclic process in which adaptation and further experience will help improve the process. The exercise of developing this Plan, as in the case of a number of other countries, has led to capacity building and increased public awareness. The Plan is not intended to be exhaustive, but to be modest, yet realistic, attempt at addressing some of the issues relating to biodiversity that are of greater priority. It is envisaged that subsequent cycles of planning will add to the actions aimed at addressing the issues relating to biodiversity in Guyana.

In designing the planning cycle the team took into consideration the guidelines for national biodiversity planning developed by the UNEP/WRI/IUCN.

## 2.3 GOALS AND OBJECTIVES OF GUYANA'S NBAP

The development of the NBAP constitutes a significant step in the process of national biodiversity planning. It is informed by a number of other outputs in the planning cycle, such as the diagnostic survey (Country Study on Biodiversity; Stocktaking and Assessment) and national strategy on biodiversity (see Figure 1). It is a key component of Guyana's strategy to achieve sustainable development. The underlying element of the action plan is a recognition of the importance of biodiversity to the environment, economy and society and the need to take action to safeguard the availability, quality and functional value of biodiversity to the development process and the maintenance of the quality of the natural environment in Guyana. The objectives of the National Biodiversity Action Plan are set out in Box 3.

### **Box 3. OBJECTIVES OF GUYANA'S NATIONAL BIODIVERSITY ACTION PLAN**

Overall goal: To promote and achieve the conservation of Guyana's biodiversity, to use its components in a sustainable way, and to encourage the fair and equitable sharing of benefits arising out of the use of Guyana's biodiversity.

The objectives of the Plan are as follows:

- Evaluate the state of capacity nationally to achieve the above goal
- Identify gaps and needs relating to achieving the above goal
- Propose actions to achieve this goal and close the gaps
- Develop activities in a number of priority areas relating to the overall goal
- Identify the roles and responsibilities of the various stakeholder groups in the implementation of the plan
- Obtain and harness stakeholder involvement and support for the development and implementation of the plan
- Increase public awareness of biodiversity

With regard to the fourth objective listed in the Box, some programmes and projects would be short or long-term, and the degree of importance or urgency would vary somewhat among them. However, within each Phase of the Plan, each Project of Action has roughly the same priority.

It is also necessary, as implied in Section 1.3, for a shared responsibility in implementing the Plan in order to attain the objectives enumerated above. The overall goal is based on an interpretation of terminology that has been variously interpreted by different parties, such as "sustainable use", and "fair and equitable sharing".



## **CHAPTER 3 THE STATUS OF GUYANA'S BIODIVERSITY**

### **3.1 OVERVIEW OF GUYANA'S BIODIVERSITY**

The number of species in the world is *estimated* to be between 5 and 30 million. The range is large because of the difficulty of estimating certain groups of organisms, e.g. insects and micro-organisms. For example, it is estimated that there are between 5-10 million insects. Of the total number of species on the globe, about 1.4 million have been identified, of which 850,000 are insects, 40,000 are vertebrates, 250,000 are plants, and 360,000 are microbiota.<sup>5</sup>

The Amazon region, of which Guyana is a part, covers about 7% of the earth's surface but its tropical forests are estimated to contain about one-half of all species found on the planet. The following figures have been generally accepted for the Amazon region: 60,000 species of higher plants, 2,500,000 species of arthropods, 2,000 fish species, 2,750 species of reptiles and amphibians, and 300 mammalian species.<sup>5</sup>

From the information presented in the following sections, it would be evident that efforts would need to be intensified by the relevant agencies to document both the flora and fauna of the country at the species level, identify and map the types of ecosystems, and characterise the genetic diversity of the country, especially for commercial and potentially important species. Studies also must be conducted on the *autecology* and *synecology* of species in order to better understand ecosystem processes and the role of organisms in these processes. Without knowledge of the quantities of species that are in the country, conservation and utilization efforts would be uncertain.

Guyana's relatively rich biological diversity and high endemism are due to four factors: (i) its location at the edge of the biologically outstanding Amazon basin (ii) its overlying position on the geologically old Guiana Shield (iii) its position on the Atlantic seaboard of South America, and therefore its marine/coastal environment, and (iv) its history of low incidence and intensity of conversion of natural habitats. The true extent of Guyana's biodiversity is still, however, a matter of conjecture. The *Country Study of Biological Diversity* of 1992 provides the only consolidated documentation on the country's biological diversity. This document is now out of date, since several initiatives have since been taken to inventorise the country's biota which have provided additional data that has substantially updated the information available. The study's current utility is that it can be used as a baseline and, seen against the backdrop of the rich biodiversity of the region, indicates that there is a substantial amount of work to be done in cataloguing the country's share of that richness.

Even with the limited knowledge of the country's biodiversity richness, it is safely suggested that this biodiversity has been reasonably well preserved. This, notwithstanding the fact that there have been no formal or institutional conservation programmes. The country's low population, its low level of industrialization, and the technology applied in most sectors, are factors which would have contributed to the preservation of this biodiversity. However, current increase in entrepreneurial activity in the natural resources sectors places pressure on the biological resource base and raises real possibilities of increased threat to biodiversity.

### 3.1.1 Ecosystem diversity

There is no ecological classification system that has been applied to Guyana and therefore there is no formal bio-geographical classification of the national territory. Reasonable induction would identify some broad classes of ecosystems, whereas Ramdass and Hanif<sup>6</sup> suggested a biogeographic classification for the country. The following is a modification of the latter classification:

#### Forest ecosystems

- a) moist lowland
- b) dry evergreen scrub
- c) white sand forest
- d) brown sand forest
- e) swamp
- f) lower montane
- g) montane

#### Agro-ecosystems

- a) Coastal
- b) Riverine
- c) Forest patch
- d) Savannah – Berbice; Rupununi

#### Inland Aquatic

- a) Riverine
- b) Lacustrine

#### Marine/Coastal

- Marine
- Littoral
- Estuarine
- Mangrove
- Palustrine

### 3.1.2 Species diversity

The last country study on Guyana's biodiversity was done in 1992 and is in need of revision, as indicated above. However, it is currently the only basis on which an analysis of the national biodiversity can be conducted. Overall, as shown in Appendix 1, there are 6,300 plant species in the country. This value has varied upwards, although incrementally, over the past six years, and may now be around 6,500.

Assuming that higher plants are those mentioned under Plantae in the table, then this group has 5,667 species. Assuming an upper value of 6,000, species then approximately 10% of higher plants in the Amazon region can be found in Guyana. The rest would comprise species that are found in the Guiana Shield, Atlantic zone, or are endemic.

For comparison of a large group such as the arthropods, the figure of 873 in Appendix 1 is not significant (less than 0.1%) but this is a huge underestimate of insects in the country. Only this year (1999), 800 new species were added to the collection at the CSBD from one study at Mabura Hill. Studies of insects must therefore be intensified.

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<sup>6</sup> Ramdass, I. and M. Hanif. 1990. Priorities for Conservation of Amazonia. Guyana Country Paper, Manaus.

For fishes, taking only the bony fishes (352), this represents about 18% of Amazon fishes, and for amphibians and reptiles (186), they represent about 7% of the Amazon's stock. For mammals (123), this represents about 41% of Amazonian species.

The above comparisons involve the Amazon as a terrestrial and freshwater region. However, Guyana's location on the Atlantic seaboard of the continent must be noted and the resources of marine and brackish water fishes contribute significantly to the diet and economic well-being of many Guyanese. Fishbase (1996), a data base of the fish resources of countries of the world, puts the number of marine fishes in Guyana at 501 species. Globally, there are more than 13,000 species of marine fishes, 9000 of which are being exploited commercially. Hence, about 4% of the global marine fish species are found in Guyana.

### **3.1.3 Genetic diversity**

Genetic description and cataloguing has been singularly absent in the case of Guyana's biodiversity. Genetic work, motivated by plant breeding needs, has been carried out mainly in the case of economically vital plant species such as sugarcane and rice, both of which are ironically introduced species. In the case of native species, cassava immediately calls attention since a number of "farmers varieties", or land races, have been identified, but have not been genetically described or tested. As a staple crop, cassava has been relatively little studied in Guyana and there is much potential for research work in this area. This gap can be addressed as part of the research prioritization to be conducted in Project 9 of Programme Area 3. Likewise, the need for work on commercially important wild species, such as many of those important in forestry, can be identified for investigation.

### **3.1.4 Endemism**

Endemism, or the extent of representation of species restricted only to Guyana, allows another view at assessing the biological wealth of the country. The UNEP (1992) report gives values of 173 endemic plant species and 10 animal species, but these numbers are not final because the inventory of the country is incomplete, as well as those for neighbouring countries. Future information may well cause an increase in these values through discovery of new species unique to the country, but on the other hand, future surveys may cause a reduction of these values.

However, it can be noted that Guyana is a part of the Guiana Shield, which is over 2,000 million years old, hence it is one of the oldest land formations on the globe. It is obvious that evolution would have had a longer time to operate here, hence the flora and fauna of this region is very old indeed, thus contributing to the uniqueness of the flora and fauna of both the region and the country. Studies of the number and distribution of endemic species are required so that the number of such species can be determined and their distribution mapped. Areas of endemism cannot be protected if this type of information is not available. The collection of additional information on endemism should be one of the focuses of Project 9.

### **3.1.5 Regional and global importance of Guyana's biodiversity**

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 number of species and number of endemics (shared and unique). The relative size of the country's biodiversity in regional terms contrasts between that of the Caribbean and the wider Amazon regions. Within the context of the Caribbean, the country is in foremost ranking where biodiversity is concerned. The situation is different in the context of the Amazon region where the majority of countries are larger in physical size and have a greater diversity of ecosystems. While the level of endemism in Guyana may not be comparable to other countries of the Amazon region,

some of which (e.g. Brazil, Colombia, Peru) rank among the megadiverse nations of the world<sup>7</sup>, the regional status of the country's biodiversity lies in its sharing of many species which, though not endemic to the country are endemic to the region. Some of these are giant representatives of their taxa and include the Anaconda, Arapaima, Capybara, Giant Otter, Giant River Turtle, and the Victoria lily.

A marked feature of Guyana's natural ecosystems is that they are relatively intact due mainly to low population pressure and to limited commercial activity. The importance of the Amazon basin lies in its holding of more than half of the world's biodiversity, its collective magnitude of endemism, its role in ameliorating global climate and in the hydrology of a large part of South America.

Guyana is also part of the geologically old Guiana Shield. A characteristic of the Guianas is the high (natural) forest cover, with both Guyana and Suriname ranking among the top five most forested countries of the world. Due to the geological age of the Guiana Shield, the region is important for its endemism, in which case the level of naturalness found in the Guianas is an important safeguard for these unique organisms. The Guianas combine with the contiguous Amazon basin to regulate regional climate, water, and secure biodiversity in a very major way.

### **3.1.6 Social and economic role of our biodiversity**

The economic role played by biodiversity in Guyana is dominated by the contribution of agricultural crops and livestock. Not only are rice and sugar two of the major revenue earners but they are also important in the cultural life of the large majority of rural people. Steps are being taken to increase the role of other crops through efforts to diversify the agricultural base and to increase the share of forest products in the GDP. Lack of knowledge of the present usefulness of many of the species found in Guyana makes it difficult to gauge with precision the true value of the biodiversity of the country.

Apart from its economic role, biodiversity plays an important social role – as informal or “bush” medicine on the coast and as part of the belief and therapeutic systems of Amerindian peoples. Biodiversity plays a critical role in food security and is a major influencing factor in culinary practice in Guyana. The country is well known for its outstanding cultural diversity. People from the several Indigenous cultures, Europe, Africa, India and China are a part of the Guyanese nation. Each of these cultures evolved with a close relationship to the natural environment and its biodiversity. These perspectives and traditions generally have a spiritual and moral basis which are actually integrated into religion. They generally stress that actions will be rewarded or punished at the end of a given lifetime and that all forms of life are to be valued.

Modern society in Guyana therefore has this rich background to draw upon when managing biodiversity today. The country's cultural diversity creates excellent opportunities to integrate the best of eastern and western thinking, modern and ancient concepts and spiritual/metaphysical tools with economic, legal and scientific instruments. Much of the practices and principles relating to culture and religion are probably of complementary value to mainstream scientific management, but they are being lost due to pressures on cultures and the lack of a system of recording and preserving/handing them down to future generations. It is recommended that as part of the priority studies on biodiversity (Programme Area 3 of this Plan), investigations into the role of culture in the conservation of biodiversity be investigated.

### **3.1.7 Culture, Spirituality and Biodiversity**

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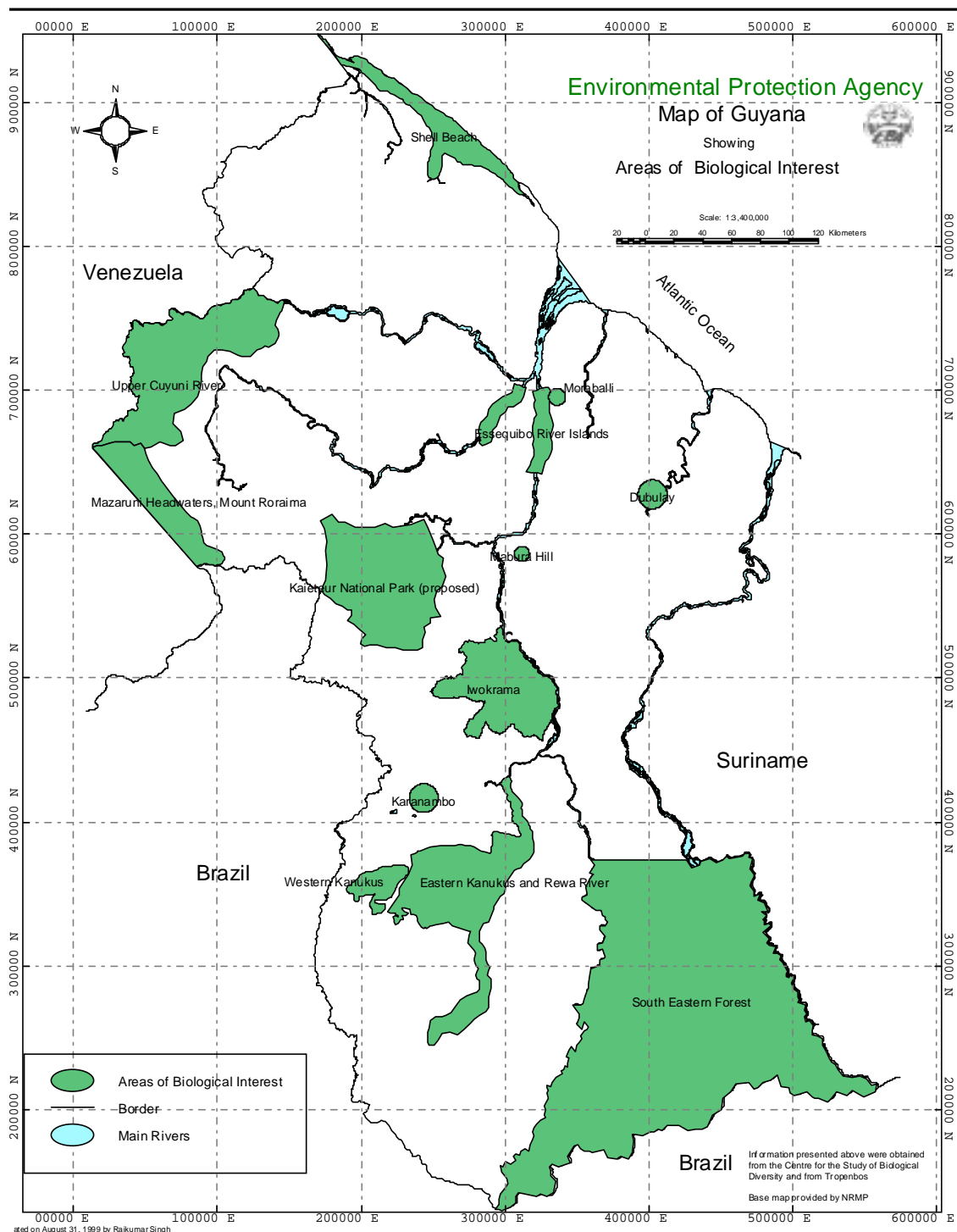
<sup>7</sup> Mittermeier, R. A., et al. 1997. Megadiversity: Earth's biologically wealthiest nations. CEMEX, Agrupación Sierra Madre, Mexico.

Guyana is well known for her outstanding cultural diversity. People from the several Indigenous cultures, Europe, Africa, India and China have made their home in Guyana.

Each of these cultures have been managing their environments and biodiversity for thousands of years. Each has an ancient tradition with an extremely profound relationship between humans and the natural resource base. Hence, they have long established perspectives on and traditions for the conservation and sustainable use of biodiversity. These perspectives and traditions generally have a spiritual and moral basis which are actually integrated into religion. They generally stress that actions will be rewarded or punished at the end of a given lifetime and that all forms of life are to be valued.

Hence modern society in Guyana has this extremely rich background to draw upon when managing biodiversity today. The country's cultural diversity creates excellent opportunities to integrate the best of eastern and western thinking, modern and ancient concepts and spiritual/metaphysical tools with economic, legal and scientific instruments.

# MAP 3 – AREAS OF BIOLOGICAL INTEREST IN GUYANA



### **3.2 THREATS TO GUYANA'S BIODIVERSITY**

The threats posed to biodiversity are those activities which affect its individual components, i.e. ecosystems, species and genes. The country's developmental thrust, combined with people's desire to obtain a better standard of living, create conditions which can threaten biodiversity.

In the last decade or more biodiversity has come under increasing threat both at the global and national levels. The loss of biodiversity globally occurs mainly as a consequence of certain activities of man, including habitat fragmentation and destruction, over-harvesting of resources, settlements and cattle production, mining and pollution, and the introduction of alien species into habitats.

The impacts of the loss of biodiversity are manifested in a number of ways. For example, the loss of tropical forests can lead to changes in regional climate, loss of biological productivity, acceleration of soil erosion, disruption of watershed stability, increase in the global atmospheric temperature and global change in climate dynamics.<sup>8</sup> Along with such impacts, the potential value of some of the species in pharmaceuticals, *silviculture*, crop and livestock breeding, etc, can also be lost if a species becomes extinct.

In respect of Guyana, it is not known that any species has become nationally extinct, this presumably due to low human interference, but the ever-increasing need to utilize resources could well lead to extinction of species if appropriate precautions are not taken. There are, nevertheless, certain practices that threaten biodiversity in Guyana. For example, it is inferred that the absence of the Sun Parakeet from the Rupununi savannas, which was once a natural habitat for the species, is an indication both of it having become extinct in that part of the country and the result of overharvesting. This inference is based on the fact that the bird was native of those savannas and that its natural host (the Ité Palm) is still fairly abundant in the moist areas of the savanna.

The respective biodiversity components and the major associated threats are listed below:

#### Forests and savannas:

- Large scale selective logging ("high grading") of certain species
- Fuel wood collection in natural forests
- Unregulated chainsaw operations
- Conversion to agriculture and other uses
- Unregulated and unmanaged exploitation of forest resources in Amerindian communities
- Indiscriminate burning

#### Agro-ecosystems:

- Use of agro-chemicals
- Soil erosion

#### Inland aquatic:

- Loss of aquatic biodiversity resulting from land and river mining
- Degradation of water quality due to agricultural practices
- Introduction of potentially damaging exotic species
- Over-harvesting of mangle (mangrove vegetation)

#### Marine/Coastal:

- Excessive targeting of certain marine species of fish

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<sup>8</sup> Smitinand, T. 1994. Overview of the status of biodiversity in tropical and temperate forests. In: Measuring and Monitoring Biodiversity in Tropical and Temperate Forests. Proceedings of IUFRO Symposium, Chiang Mai (eds. Boyle, T.J.B. and B. Boontawee), p 1-4. IUFRO, Jakarta.

- Degradation of water quality due to contamination from solid and other wastes

Species:

- Abuse and exemption of Amerindians from related legislative provisions, and unconditional usufruct rights
- Poverty- and affluence-related pressures
- Fish poisoning

Genes:

- Undermining of local breed characteristics and varietal gene pools due to out-breeding and substitution



## CHAPTER 4 ASSESSMENT OF BIODIVERSITY MANAGEMENT IN GUYANA

### 4.1 OVERVIEW OF NATIONAL CAPACITY

Within the field of biodiversity in Guyana there is a scarcity of persons trained and skilled in many of the areas which are essential for the necessary development of the sector. In this context, some of the human resources weaknesses occur in the following sectoral and thematic areas: agriculture, forestry; fisheries; wildlife; biosafety; biosystematics; information, public awareness and training; intellectual property; *in situ* and *ex situ* conservation, and biotechnology. With the exception of agriculture and, to some extent, information and public awareness, there is a severely limiting shortage of skilled human resources to address relevant problems and perform planning, management and monitoring. While biodiversity has emerged internationally as a unified area of focus, many developing countries are still grappling with pre-existing problems of inadequate expertise in the sectoral areas and fall well short of the requirement for adequate professional capacity in some of the “new” areas falling within the realm of biodiversity. Guyana’s situation is no better; in fact it is worse than in many other countries. In Guyana’s circumstances the need for biodiversity conservation and planning are met by drawing on the limited pool of specialists in many of the sectoral areas listed above. Even in the traditional sectoral areas, however, the expertise is very limited, to the extent that it threatens the ability of the country to address what ought to be her long- term strategic needs for planning the use, management and conservation of her biodiversity resources.

One of the critical skills which is so important at this nascent stage of biodiversity development and which is lacking, is in the area of systematic biology. Other critically important areas include fisheries and wildlife management, conservation biology, resource and ecosystem valuation, innovative business management, intellectual property law, biosafety and biotechnology.

The human resources weakness is exacerbated by low institutional capacity to carry out the traditional mandates. A significant part of this weakness relates to the remote location of sites in the country where most of the use, threats and likely needs relating to biodiversity occur. This weakness could prove to be a significant undermining factor in efforts to carry out the transformation to integrated planning, management and monitoring of biodiversity in the relevant sectors and at the various administrative levels.

In so far as the goal of conservation and sustainable use of biodiversity is concerned, human resources development and institutional strengthening would rank as priority issues to be addressed in Guyana. The overall responsibility for biodiversity conservation resides with the Environmental Protection Agency which is presently benefiting from institutional strengthening from the Inter-American Development Bank, but whose capacity to implement and further the execution of its mandate in the rapidly expanding area of biodiversity is inadequate. The EPA receives advisory and some administrative support from the National Biodiversity Advisory Committee (NBAC) which is a cross-sectoral committee established to support it in the administration of biodiversity matters nationally (See Appendix 6 for the functions of the NBAC). Awareness of “new” global biodiversity issues (e.g. biosafety) is low throughout the spectrum of natural resources agencies, and the viewing of issues such as living resources, habitats and local knowledge from a biodiversity perspective is very much not a reality as yet.

## 4.2 POLICY, LEGISLATIVE AND ADMINISTRATIVE OVERVIEW

National policy in the biodiversity area and its component sub-sectors is an area that has not received regular attention, or if it did, hardly yielded new or revised policy positions. While the following indicate some policy and planning in particular sectors, the same is not true for other sectors, in which there is a pattern of gaps in planning over a long period of time. Integrated policy and planning, such as is required for the unified area of biodiversity, would be novel to many of the sectors as well as the regional and sub-regional organs. For this reason training, centralised coordination by the EPA and adaptive planning, all proposed in the Plan would appear appropriate.

### 4.2.1 General biodiversity

#### 4.2.1.1 The National Biodiversity Strategy

Guyana's current policy on biological diversity is contained in the document "*National Strategy for the Conservation and Sustainable Use of Guyana's Biological Diversity*" of 1997 which articulates the national policy and strategy relating to the study, conservation and sustainable use of biodiversity. The Preamble of the Strategy document makes some important policy statements, which are indicated below.

#### **Box 4. THE NATIONAL POLICY RELATING TO THE VALUE AND USE OF BIODIVERSITY**

*(from National Strategy for the Conservation and Sustainable Use of Guyana's Biological Diversity, 1997)*

- Biological diversity and its components have value for agricultural, genetic, social, economic, scientific, ecological, cultural and aesthetic purposes
- Measures must be taken to:
  - a study and use genes, species, habitats and ecosystems in an equitable and sustainable manner and protect them from domestic and foreign predatory activities;
  - b avoid waste or misuse of biodiversity, and;
  - c provide opportunities for sustainable management of biodiversity
- There is need for a cross-sectoral and multidisciplinary approach to the management and conservation of biodiversity
- Awareness and appreciation of the values and benefits of conservation and sustainable use of biodiversity by all stakeholders must be increased
- The conservation and sustainable management of biodiversity represents an investment that can yield substantial benefits for indigenous people, local communities and the population as a whole
- The prescriptions contained in the strategy document provide an appropriate basis for the further development and implementation of a policy framework and legal and other actions to foster the conservation and sustainable use of Guyana's biodiversity.

The inclusion of policy statements in the national strategy document may have been due to the absence of a national policy on biodiversity. The biodiversity planning cycle (see Fig. 1) proposed in this Plan views national policy on biodiversity as the subject of a separate document which would precede the national strategy in the sequence of steps in the process. Both are related, though, with the policy advising the strategy. In some situations it may be necessary to change one of the two without intervening in the other; hence the advantage of separating the two.

There is no unified legislation on biodiversity; in actual fact the various pieces of natural resources legislation were drafted well before the adoption of the biodiversity strategy and therefore make no reference to biodiversity. It would seem more practical for the current legislation on natural resources to make provision for biodiversity rather than developing specific legislation on biodiversity. This is an issue that could be considered in the comprehensive revision of the natural resources legislation (see Programme 4).

The administration of commercially important biological resources has been undertaken under the mandates of the various agencies with responsibility for renewable resources. Biodiversity management was not a focus of such administration, however. The policy and administrative responsibilities of the EPA have been supported through the work of the NBAC which was set up to assist it in these areas.

#### **4.2.1.2 The National Development Strategy**

The draft National Development Strategy represents the highest level of national planning. It is an integrated document outlining the national strategy and policy in a number of areas, including agriculture, environment, forestry, fisheries, mining, and tourism. The document represents a ground breaking attempt at developing a national strategy which can serve as a frame of reference for policy and planning in the respective sectors. In view of the position and purpose of the NDS, there ought to be a certain degree of consistency and synergy between the Strategy and all national policy and planning documents. This Plan, in its interpretation and execution, is expected to be in harmony with general direction and targets of the NDS.

Biodiversity is not among the subject areas treated in the NDS, which, being the highest level of national strategic planning, should include consideration of renewable resources with a biodiversity focus.

#### **4.2.2 Agricultural biodiversity**

Chapter 25 of the draft National Development Strategy constitutes the most recent policy document on agriculture. The Strategy does not, however, identify a relationship between agriculture and biodiversity and the object of its focus is economic, institutional, and legislative development in the sector. Chapter 27 of the document identifies a number of objectives relating to crops, livestock, animal health, genetic improvement, plant protection and quarantine, all of which are areas relevant areas of biodiversity consideration.

Agricultural resources are the most widely used biological resources in Guyana. Some of the most critical needs in this sector would be in relation to the preservation of genetic diversity for breeding purposes, characterization of the genetic diversity and the protection of local species and habitats from potentially damaging invasive and disease species. There is no prepared plan for the agricultural sector.

Some agricultural legislation, such as the Plant Protection Act of 1942 and the Animal Diseases Act of 1936 together address issues of plant protection and animal diseases but, due to their age, would require revision in order to address important recent developments such as biotechnology and biosafety.

## 4.2.3 Forest biological diversity

### 4.2.3.1 The National Forest Policy

The National Forest Policy of 1997 is a significant upgrading of previous attempts at drafting a national policy for the sector. The Policy aims to achieve certain goals which are consistent with the objectives of

#### **Box 5. OBJECTIVES OF THE NATIONAL FOREST POLICY RELATING TO BIODIVERSITY**

- the conservation, protection, management and utilisation of the nation's forest resources, while ensuring that the productive capacity of the forests for both goods and services is maintained or enhanced.
- Achieve improved sustainable forest resource yields while ensuring the conservation of

conserving and sustainably using biodiversity. The Policy also recognises the intrinsic genetic, ecological, recreational, and cultural importance of forested ecosystems and the importance of identification and monitoring (in the form of inventory work). The National Forest Policy Statement diversifies the national policy objectives relating to forestry. It provides, for example, for the granting of concessions for non-timber forest products and for the designation of forest conservation areas. It constitutes the taking of a step closer towards the conservation of forest ecosystems and forest biological diversity. It represents the first sectoral policy document to integrate consideration of biodiversity. The Policy stops short of directly addressing the threat of forest and environmental damage in forests within Amerindian communities.

### 4.2.3.2 National Forestry Action Plan

The National Forestry Action Plan (NFAP) for 1990-2000 aimed to achieve the sustainable and efficient use of the forestry resources (of Guyana) for purposes of social and economic development, taking into consideration the multiple uses and values of these resources. Among the actions contained in the project are: identification (forest inventory), conservation (*in situ* and *ex situ* conservation through protected areas and wildlife management), public education and awareness (public environmental education), and research and training (establishment of an international research centre for forestry). Most of the actions relating to biodiversity have either already been put into execution or have been incorporated into the National Environmental Action Plan (NEAP).

### 4.2.3.3 The National Forest Plan

The draft National Forest Plan (NFP) of July 1998, proposes a range of activities under five programme areas, including: land use, forest management, research and information, and forestry training and education. The Plan provides specifically for liaison between the Forestry Commission and the National Biodiversity Advisory Committee in relation to biodiversity use and management in the forestry sector, and the development of guidelines for best practice on intellectual property rights in the sector.

Despite the above development, there is room for further upgrading of current legislative/administrative requirements to include provisions for wildlife and watershed management in Forest Management Plans and/or specific reference to these in Timber Sales Agreements. This could be an area for consideration in the comprehensive review of the natural resources legislation (see Programme Area 4).

#### **4.2.3.4 Forestry Legislation**

The Forestry legislation of Guyana is currently under revision. One of the underlying objectives of the changes is to transform forestry practice to achieve a management that is more efficient, is consistent with sustainability objectives, respects biodiversity and the rights of local communities, and upgrades fees to reflect an integrated value of forests. The latter ought to lead to better pricing of forest ecosystems and its constituent biodiversity resources.

#### **4.2.4 Inland aquatic and marine biodiversity**

A significant part of the natural patrimony of Guyana consists of waterscapes, both inland and marine. Their constituent ecosystems are important components of the total biodiversity asset of the country. National policy and action must therefore recognise these ecosystems as present and potential suppliers of a range of goods and services. Decision IV/4 of the CoP urges countries to:

- encourage the adoption of integrated land and watershed management approaches and the preparation of integrated watershed, catchment and river basin management plans based on the ecosystem approach
- investigate, where possible, the processes contributing to the loss of biodiversity in inland water ecosystems, through targeted research such as impacts of harmful substances and alien invasive species

In addition, it recommends:

- the use of indigenous species for aquaculture
- promotion of the development of criteria and indicators for the evaluation of impact on inland water ecosystems from agriculture, forestry, mining, physical alteration, etc.

Where coverage of the above action areas is concerned Guyana has much ground to cover. A key element of the above recommendations is the integrated nature of the task. The preparation of integrated watershed plans will also be a novelty in the Guyana context, there being no precedence of such exercises. An approach to this challenge could learn from the example of the Forest Management Plan which is required in the forestry sector. Indeed, watershed management plans could also be required of timber concessionaires, either separately, or as components of forest management plans. It is a change for which the understanding, support and commitment to its implementation will be required of the private sector, however.

##### **4.2.4.1 Fisheries Policy**

The fisheries sector also has not had a tradition of policy setting and plan development. Chapter 31 of the draft National Development Strategy presents a fairly comprehensive overview of the fisheries sector. Factors which threaten the resource base, such as over-harvesting of particular groups of marine fisheries, the under-utilization of some types, as well as pollution due to mining activities and the use of chemicals and pesticides are identified as issues for attention. Reference to fisheries in the NDS ought not to substitute for a national fisheries policy, however, as the former is not a full policy statement. Its emphasis, too, is more on marine fisheries than on inland aquatic fisheries.

#### **4.2.4.2 Fisheries Management And Development Plan**

A draft Fisheries Management and Development Plan for the period 1994-2004 has been prepared but has not been finalised to date. Notwithstanding, elements of this plan have been incorporated into the National Development Strategy, Chapter 31. The finalization of the plan could offer an opportunity to consider and provide for a number of the recommendations made at the level of the CoP with respect to inland and marine ecosystems and their resources, as quoted above.

#### **4.2.4.3 Fisheries legislation**

Fisheries resources utilization in Guyana is regulated under the Fisheries Act of 1957, the Fisheries Regulations of 1959, the Fisheries (Pin Seine) Regulations of 1962, the Fisheries (Aquatic Wild Life Control) Regulation of 1966 and the Maritime Boundaries Act of 1977. Draft new legislation, namely an Aquaculture Bill, the Fisheries Bill (revised), and revised fisheries regulations seek to help improve the legislative framework and expand the breadth of provisions for management of fisheries resources. The latter two pieces of legislation include aquatic wildlife (in the regulations), and constitute a significant upgrading of the current Act and regulations by addressing a number of important areas either previously not provided for, or inadequately so.

### **4.3 Biosafety**

Biosafety comprises one of the “new” thematic areas identified under the Convention. Biosafety is a real issue, considering the rapid pace of the development and applications of biotechnology in recent years, such as the use of modified organisms for the production of food, medicine, etc. The use, handling and movement of living modified organisms present risks since their release into the natural environment may cause damage to ecosystems, organisms or humans, or threaten the health of humans, crops, livestock, or cause economic dislocation.

The Environmental Protection Act constitutes the first attempt to specifically address biosafety as an issue. Under this Act, Environmental Impact Assessments are automatically required for all projects that involve the importation of living modified organisms. Apart from this requirement, there is no national legislative provision specifically on biosafety. The Plant Protection Act, the Animal Diseases Act and the Public Health Ordinance serve to protect agriculture and public health, but given that these pieces of legislation were crafted more than a decade ago they do not address the issue of biosafety.

Currently there is an effort to draft biodiversity regulations for inclusion under the Environmental Protection Act. If primacy in biosafety matters will be given to the Environmental Protection Act, other legislation that address the protection of public health and agriculture should make reference to the regulations under the Act, to which it might be appropriate to defer.

Apart from the need for regulations, there is a need for guidelines and a regulatory/advisory mechanism to address biosafety as an issue of national security.

### **4.4 POTENTIALLY HARMFUL ALIEN SPECIES**

The draft National Development Strategy addresses this area, albeit to limited extent. It recognises that “the inadequate monitoring of ports places the country’s agriculture at risk” and that “Guyana’s plant health capabilities are inadequate...” It identifies as a national objective “the prevention of entry into the country of new pests and diseases”. Additionally, it advocates that “Legislation provided by the Food and Drug Act of Guyana must be updated to conform with international standards for chemical and disease free food (fresh and processed).” The issue of the use of alien species capable of invading or damaging natural ecosystems is a specific area of concern in the Convention. The potential harm of such species is

not only ecological, but it can have far reaching economic and social impacts, including impacts on human health and agriculture. While environmental impact assessment is required for the introduction of genetically modified organisms, the same does not apply for alien species. This is potentially an area for consideration in any future upgrading of the national legislation relating to protecting and conserving the environment or natural resources.

Alien species have been and are being introduced into Guyana for forestry, agriculture, fisheries and aesthetic/recreational purposes. Some legislative provision exists for regulating this, such as in the Plant Protection, Animal Diseases, and the Importation of Bees Acts, but these are not extensive and far reaching enough to give effect to current needs. Even with improved legislation, there is an apparent problem of enforcement and compliance which is a weakness in the regulatory mechanism.

#### ***4.5 INDIGENOUS KNOWLEDGE AND INTELLECTUAL PROPERTY***

Current national policy, as articulated in the national biodiversity strategy, is to promote, under equitable terms, the sharing of knowledge and benefits resulting from the use of biodiversity. This policy was developed well after the passage of the current applicable legislation which does not provide a sufficiently supportive mechanism for the protection of intellectual property relating to biodiversity. The current legislation on intellectual property protection was drafted in the distant past and is not consistent with present reality. The current legislation is inadequate for the protection of local and indigenous knowledge and for enforcing equitable sharing of benefits arising from the utilization of knowledge, innovations and practices of local communities. While access to and use of knowledge, technology and innovations of indigenous communities can be indirectly regulated through the mechanism of permit requirements currently in place for travel to Amerindian areas, this mechanism cannot be a comprehensive or long term solution. Draft regulations for biodiversity are to be developed, which should address intellectual property and the sharing of benefits from the use of biodiversity and knowledge pertaining thereto.

#### ***4.6 PROTECTION OF THE ENVIRONMENT***

##### **4.6.1 National Environmental Action Plan**

The National Environmental Action Plan (NEAP) of 1994 was the second national plan of action in the environmental area, with the first being the National Forestry Action Plan. The NEAP summarises the national environmental policy which, among other things, seeks to promote the objectives indicated in Box 6.

### **Box 6. OBJECTIVES OF THE NATIONAL ENVIRONMENTAL ACTION PLAN RELATING TO BIODIVERSITY**

**maintain ecosystems and ecological processes essential for the functioning of the biosphere, to preserve biodiversity and to observe the principle of optimum sustainable yield in the use of renewable natural resources and ecosystems, both on land and from the sea**

- rehabilitate damaged ecosystems where possible and reverse any degradation of the environment
- ensure prior environmental assessments of proposed activities which may significantly affect the environment
- ensure that conservation is treated as an integral part of the planning and implementation of development activities
- raise public consciousness and awareness on environmental implications of economic and social activities

The NEAP recognises the role of the private sector and non-governmental organizations as relevant stakeholders in environmental management. It proposes actions in the areas of wildlife, protected area management, protection of indigenous knowledge, promotion of incentive measures, and public awareness. Of the actions proposed in these areas, completion has been reached in the latter while draft documentation exists on protected areas and the protection of indigenous knowledge.

#### **4.6.2 ENVIRONMENTAL LEGISLATION**

The 1980 Constitution of Guyana provides for the wise use of biological resources in the following way:

In 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.

The passage of the Environmental Protection Act in 1996 brought into being unified legislation on environmental protection in Guyana. The Act identifies and confers responsibilities in various areas of environmental management, including monitoring, public information, enforcement, and conservation of natural resources. The implementation of the Act is the responsibility of the Environmental Protection Agency, which the Act established, as well as other agencies, sub-national administrative organs or authorised persons. Under the Act the EPA is mandated with a number of responsibilities related to the conservation of biodiversity, as indicated in Box 7.



### **Box 7. ROLES OF THE ENVIRONMENTAL PROTECTION AGENCY THAT RELATE TO BIOLOGICAL DIVERSITY**

- take such steps as are necessary for the effective management of the natural environment so as to ensure the conservation, protection, and sustainable use of its natural resources
- promote the participation of members of the public in the process of integrating environmental concerns in planning for development on a sustainable basis
- coordinate the environmental management activities of all persons, organizations and agencies
- ensure that any developmental activity which may have an adverse effect on the natural environment is assessed before such activity is commenced and that such adverse effect be taken into account in deciding whether or not such activity should be authorised
- coordinate and maintain a programme for the conservation of biological diversity and its sustainable use
- coordinate the establishment and maintenance of a national parks and protected area system and a wildlife protection programme
- promote and encourage a better understanding and appreciation of the natural environment and its role in social and economic development
- play a coordinating role in the preparation and implementation of cross-sectoral programmes of environmental contents
- establish, monitor and enforce environmental regulations

The EPA executes its mandate through inter-sectoral and participatory mechanisms, which include broad-based committees, boards, the development of memoranda of understanding, the delegation of functions and the granting of authority.

Guyana's obligations relating to biological diversity derive from biodiversity-related conventions to which it is a signatory. Guyana is a party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the International Plant Protection Convention, and of course the Convention on Biological Diversity. Other international instruments relating to biodiversity for which proposals for ratification have been made include the Convention on Wetlands (Ramsar), the World Heritage Convention, and the Convention on the Conservation of Migratory Species (Bonn Convention).

## **4.7 RESEARCH**

### **4.7.1 Identification of the national biodiversity components**

Current efforts in the taxonomic identification and description of Guyana's biodiversity are largely through collaboration with external institutions, on account of the lack of taxonomists in the country and of institutional capacity. The Amerindian community has a parallel and restricted system of identification of species or species groups based on their cultures and customs, but this type of field identification, though helpful, is limited in terms of systematic precision.

One of the major research collaborations is with the Smithsonian Institution which operates a Biological Diversity of the Guianas Programme (BDGP), a part of which is based in Guyana. The local partner is the University of Guyana. This programme has resulted in the establishment of the Centre for the Study for Biological Diversity (CSBD) located on the UG campus. The programme for the study of the flora of the country operates within a larger framework of another initiative which began in 1983. This is the

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

The Smithsonian Institution has recently expanded its efforts from the study of the flora to the study of the fauna of the country. In this respect, a separate arrangement has been put in place.

There are other collaborative efforts between the University of Guyana and TROPENBOS, a programme dedicated to forest research and operated through an agreement between the Government of Guyana and the Tropenbos Foundation based in the Netherlands. Most of the primary research is done at Mabura Hill and specimens, both flora and fauna, which require taxonomist treatment are also processed as described above, except that specimens are shared between the University of Guyana and the foreign institution involved in the research (e.g. Utrecht University, Imperial College, etc.).

In the agricultural sector, the National Agricultural Research Institute (NARI) and the rice research station at Burma have similar arrangements with foreign institutions whenever difficulties of identification arise. NARI is responsible for research on agriculture. It conducts research on soils and is presently involved in the establishment of gene banks for agricultural crops. It has institutional capability in plant tissue culture, though lacks the expertise to undertake activities in that area, and has capability in entomological and plant pathological research. It houses the largest agricultural insect collection in the country.

While rice breeding, plant protection research, trials and germplasm collection work are conducted at the Burma rice research station for the rice sector, research on sugar is conducted by the Guyana Sugar Corporation (GUYSUCO), which conducts sugarcane breeding and protection research at the Guysuco Agricultural Research Unit. The Unit maintains germplasm and entomological collections on sugarcane. In the forestry sector, botanical specimens of timber species are held in the herbarium of the Guyana Forestry Commission. This herbarium is in poor state but has been identified for upgrading, which, in principle, is a laudable move. However, there should be careful consideration of whether the upgrading of this herbarium to hold more than wood specimens would duplicate the collection efforts of the University of Guyana. It would be very advisable, in light of the existence of collections at NARI, Guysuco, Burma, Guyana Forestry Commission, and the National Museum, to move towards the development of an integrated national biological collection for purposes of rationalising scarce resources and reduce the onerous cost of maintaining the national collection of biological specimens.

With the establishment of the EPA and its advisory arm on biodiversity, the NBAC, the thrust towards identification and monitoring has been more regularized and centralized. Guidelines have been put in place for the processing of applications, collection of specimens and dissemination of information. Current initiatives are aimed at developing and implementing Academic Research Agreements, and Commercial Research Agreements. The latter encompasses the areas of bioprospecting and intellectual property rights.

The initiatives described above operate at the species level of biodiversity. Enough information has not been collected as yet to be synthesized for the purposes of scientifically delineating ecosystems in the country. Also, not enough studies have been directed at the genetic level in order to understand the importance of gene pool diversity and determine the genetic base of species. Therefore, these are some gaps in our approach to the study of biodiversity which urgently require redress. A feature of all of the above programmes is that they operate in the absence of a research strategy or plan. The choice of research topics is primarily a result of factors such as the interest of the researcher, the funding agency/institution and the resources available to the former. In like manner, taxonomic coverage of the country has not been systematic, with the most collected areas being those close to rivers, roads, airstrips and human settlements.

#### **4.7.2 Methods for sustainable use**

Studies on methods for the sustainable use of biodiversity are partly the object of research programmes in Guyana. The Tropenbos programme is oriented towards the identification and understanding of methods for sustainable use of forests and forest resources, though mainly in the scientific sense. There remains, still, much room and need for research into sustainable methods for use of the components of biodiversity in the productive sectors. Research into methods for sustainable use, including traditional methods, require long term investment and commitment. In this regard collaboration of partners is necessary, in which local institutions should develop capacity.

#### **4.7.3 Socio-economic research**

Research on traditional methods of resource use and the cataloguing of ethno-biological information relevant to resource use have been undertaken. Additional research on social aspects of biodiversity knowledge and use have been conducted by the Amerindian Research Unit and the Institute of Development Studies of the University of Guyana. The need exists for a more concerted approach to research in this area either involving priority setting or through cooperation and collaboration. Local sponsorship of research by directly relevant private sector entities can play a role in promoting progress in this area of research. Such support could be provided independently or in collaboration with other partners.

Recognition of the importance of economic valuation efforts is contained in Recommendation II/9 of the Conference of the Parties. It suggests that:

Future work should include regular review and synthesis of current information, case studies of economic value, research into appropriate and cost-effective methodologies for determining these values, and means of facilitating access to this information.

While more information on economic values is needed, the lack of this information need not delay the implementation of economically and socially sound incentive measures to sustainably manage biological diversity.

#### **4.7.4 Relationship to science and technology development**

There is a natural relationship between a research plan for biodiversity and national research policies in the area of science and technology. The draft National Science and Technology Policy for Guyana identifies a number of national priority areas. In identifying these areas the policy document has, with the exception of the area of information technology, adopted a focus on the “traditional” areas of science and technology. Some of these areas which relate to biodiversity and are included, are agriculture, forestry, research and development, technology transfer and information technology. Absent are areas such as fisheries and wildlife management. The policy has a shortcoming in not recognising the rapidly expanding area of biodiversity as a newly identified field of scientific focus in which some of the Policy’s stated national priority areas will fall or apply. Policies in science and technology should take into consideration biodiversity priorities and the wide range of research and development, information, technology transfer and education needs in this area. Biodiversity encompasses a wide segment of the natural resources field, and intersects the sphere of non-renewable resources through the component of ecosystems in which many of these resources are found. This Plan recognises that the execution of many of its proposed activities falls under a number of the national priority areas set out in the National Science and Technology Policy and anticipates technology transfer, if and when the provisions of the Convention in this regard are implemented, in partnerships in which Guyana is a part. On the basis of these, it seeks to identify a link with the national science and technology policy.

#### **4.8 MONITORING AND IMPACT ASSESSMENT**

A combination of factors such as isolation of the hinterland of the country from industrial-scale resource exploitation, low levels of pressure and limitations of human and other resources contribute to a situation in which there has been little monitoring of biological diversity in Guyana. The circumstances relating to the first two factors have changed significantly and the need for monitoring the status of biodiversity and pressures upon it are greater than before. The historic reality of a lack of monitoring makes it difficult to establish benchmark positions and therefore the need exists for the adoption or establishment of baseline conditions for the monitoring of biodiversity. The passage of the Environmental Protection Act in 1996 introduced the requirement for environmental monitoring, including impacts on biological diversity, by means of mandatory environmental impact assessment procedures. The need for developing procedures, guidelines and policies for monitoring of biodiversity, including results/findings obtained through Environmental Impact Assessment (EIA) procedures is a potential collaborative opportunity for public regulatory agencies and research institutions. The Environmental Impact Assessment process is viewed with much importance is so far as the management of biodiversity is concerned. This process will meet the critical need for screening development projects based on the use of either biodiversity or other natural resources, in a way that will ensure sustainability in biodiversity use, as well as its conservation. The process is considered important in helping to regulate the types of activities that are undertaken which might have an impact on biological diversity.

#### **4.9 PUBLIC AWARENESS AND EDUCATION**

To date, the level of activity in conservation awareness has been low and the level of public awareness on the subject of biological diversity is equally low. Public understanding of biodiversity as a major resource is nearly non-existent and as such attitudes towards biodiversity are still largely uninformed and misguided. For example, there are a number of unfounded beliefs and misconceptions that nature, including its living components, is harmful and hostile to human beings. In addition, public conception of the value of biodiversity is largely one that is based on direct use of biodiversity. The natural outcome of this is that biological diversity that is not of immediate direct utility is seen to have no value. This perception can be viewed as an indirect driving force of biodiversity loss since it provides the “justification” for converting ecosystems, and undervaluing the resource. To safeguard biodiversity, and to help remove threats to it, improvement of public education on the importance of biodiversity and the cultivation of a conservation ethic are urgently needed. This has already been acknowledged in the National Environmental Action Plan, and by the entities involved in awareness building.

Within the last few years some steps have been taken to address the need for awareness building and to change public perception of the wider environment. Some bold steps at building capacity for promoting conservation awareness have been undertaken, especially by the EPA. Capacity to achieve this objective remains low and insufficient at all levels, however. One positive indication resides in the interest at the level of NGOs and the University of Guyana to promote awareness activities and programmes at the local and national levels. Attempts to address the national needs in an integrated way have resulted in the drafting of a National Environmental Education Strategy and the establishment of a broad-based National Environmental Education Advisory Committee. For these latter two, material and financial resources limit their ability to pursue the set goals.

The EPA was given a national mandate for environmental education and awareness through the Environmental Protection Act and in 1998 it formally established an Education, Information and Training (EIT) Division. The EIT Division, utilizing part of the funds provided as preparatory assistance for the development of the national biodiversity action plan, prepared a limited programme of public awareness on biodiversity to support public participation in the consultation process. The Unit intends to build upon and subsequently expand the programme through additional internal initiatives and external inputs.

Conservation International, an international NGO based in Guyana, has shown a commitment to promote conservation awareness in Guyana. The interest and involvement of NGOs is a positive development that best could be nurtured as part of an integrated strategy in this area.

In the area of training, there has been little adjustment nationally in response to the increased focus on biodiversity and the patterns of threat to it. It is only at the University level, where awareness of these issues is highest in the educational sector and where it is easier to adjust, modify and create syllabi and course material, that the subject of biodiversity is taught. The latter is accomplished in a number of programme areas such as biology, environmental studies and forestry. There is still the need to expand this focus to other areas such as agriculture, mining, education and tourism.

The situation is much different at other levels of the education sector. Biodiversity is currently not part of the curriculum of the Caribbean Examinations Council (CXC) and for that reason, there is no need to teach it in schools since it is neither required as an option nor is there any chance of it being examined even if innovatively included in the syllabus by local teachers. No adjustment has been made at the level of teacher training and in vocational training programmes such as those in agriculture, animal health or forestry.

#### **4.10 INCENTIVE MEASURES**

Guyana's national biodiversity strategy states that:

*National policies which provide for incentives for unsustainable use of biological diversity will be identified, reviewed and reformed. It further states that the EPA will develop incentives for sustainable use and disincentives for non-sustainable use of biodiversity.*

These statements imply a recognition of the likelihood that some national policies can serve to threaten the conservation and rational use of biological diversity, a deduction which would be hard to challenge. Appropriate areas of action would be to identify and phase out policies that serve as incentives working contrary to the conservation and sustainable use of biodiversity and to develop fresh incentives for conservation and sustainable use. The development of incentives for the sustainable use of biodiversity would require knowledge of the value of biological diversity. This can only come from exercises that determine the value of the components of biodiversity. Such valuation is itself the subject of study by resource economists and is a developing area. Efforts aimed at determining economic value of biodiversity components are needed for Guyana and some work should be directed in this area. Valuation would better advise policy making and help in the pricing of components based on the true value of the component.

#### **4.11 WILDLIFE MANAGEMENT**

Currently there is no official wildlife policy or plans of any type. The laws of Guyana that address wildlife are relatively old. A number of weaknesses in the legislation such as major gaps in the coverage of the wildlife groups, unrealistic penalties, the absence of regulations for licensing or managing various consumptive and non-consumptive uses point to the need for additional or revised legislation. Current legislation consists of the Wild Birds Protection Act of 1987 and the Fisheries (Aquatic Wild Life) Regulation. Current reality requires the designation of a single institution with primary responsibility for wildlife management and protection, though there should probably be an integrated approach to monitoring and enforcement across sectors. The adoption of an integrated approach to enforcement and monitoring does, as an administrative strategy, have advantages given the remoteness of wildlife harvesting areas and limited resources at the disposal of the management agencies. In addition, the scope of the legislation should be expanded to provide for and regulate alternative uses such as farming, the use of extractives, and tourism use.

The state of wildlife management in the country is that there is no management of the resource. Activities in the sector constitute harvesting only. It is necessary to take steps to move the sector towards effective management of the resource if the latter is to be used in a sustainable way and for protection of species and habitats where this is necessary.

#### **4.12 LAND USE PLANNING**

Land use planning plays an important role in the conservation and wise use of natural resources such as biodiversity by creating a suitable framework within which these uses can occur. A draft national land use policy has been prepared and is currently being considered at Cabinet level. This document provides a policy context for all land uses, including conservation land uses. The consideration of the national biodiversity strategy in the drafting of the Policy was appropriate. The Policy should, in recognition of the importance of biodiversity conservation, provide the enabling environment for the protection of critical habitats as part of national land use planning. It is noteworthy that Guyana has officially adopted the region-wide Methodology for Ecological-Economic Zoning (EEZ) proposed under the Treaty for Amazonian Cooperation. This methodology provides for a common methodology for land planning and use in the wider Amazon region based on bio-physical (abiotic and biotic) and socio-economic variables. It aims to promote the integrated use of these variables into a method of planning based on units called “Integrated Terrain Units”, and is consistent with the Ecosystem Approach adopted in this Plan. Ultimately, the elements of land use methodologies adopted in Guyana should take into consideration the EEZ Methodology, the Ecosystem Approach herein proposed, and the experiences and lessons derived from the on-going pilot land use planning exercise.

Relevant land use instruments in Guyana include the Town and Country Planning Act, the State Lands Act, the Drainage and Irrigation Act, the Forests Act, the Amerindian Act and the Kaieteur National Park Act. There is no specific land use legislation in Guyana. All of these Acts govern and regulate access to and use of land and associated resources. The Amerindian Act, the State Lands Act and the Forests Act grant concessionary and usufruct rights to Amerindians. Recent developments have brought into question the appropriateness of exemptions from liability and the wide usufruct rights to Amerindian communities, as these have been abused for commercial purposes, affecting protected species in some cases. Linked to this issue is that of the provision of incentives and alternatives which can serve to curtail some of these threats.

Land administration is expected to be improved in Guyana through initiatives under projects in Public Land Administration and Natural Resources Management. Both of these projects will lead to the collection and analysis of land use data, revised policies and legislation, and integrated administration of land use. A significant outcome of these initiatives is the coming on stream of legislation and a semi-autonomous agency that will provide an institutional and legal setting for land use planning.

#### **4.13 BIODIVERSITY AND TOURISM**

Biological diversity comprises an important resource for nature-based tourism in the Guyana context. Tourism can serve as an economic incentive for conservation by giving economic value to the conservation of biodiversity. On the other hand, if not properly planned, implemented and monitored, tourism can have damaging impact on biological diversity.

The National Tourism Policy document of 1998 sets out a number of guidelines for a national tourism policy. In specific terms of biological diversity it suggests and supports the development of a national system of protected areas as an essential step in the development of a national eco-tourism industry, and further, the development of a programme of environmental education, and the “diffusion of the conservation ethic”. The National Plan for Ecotourism Development of the same year identifies actions in

a number of areas for the development of a national ecotourism-based industry. It is based in part on the establishment of a national protected areas system, though is lacking in its identification of the roles of species, habitats, natural areas and particular species in the definition of the tourism product. A medium term objective would be the development of tourism guidelines and regulations which address the conservation of biodiversity.

## **CHAPTER 5 THE NATIONAL VISION FOR BIODIVERSITY**

### **5.1 THE VALUE OF BIOLOGICAL DIVERSITY**

Guyana's policy position on the value of its biodiversity, as contained in the National Strategy for the Conservation and Sustainable Use of Biodiversity, gives some guidance on how this resource is viewed:

Biological diversity and its components have value for agricultural, genetic, social, economic, scientific, ecological, cultural and aesthetic purposes (Preamble of the Strategy; Box 4 herein)

This Plan recognises and supports the values identified in the Strategy. While not intending to differentiate between or subordinate any of the values identified, the economic role of biodiversity in Guyana (both real and potential) places it high among the group of natural resources with which Guyana is endowed. Biodiversity is therefore viewed as an essential component of the engine of growth. For it to contribute to national development it would be necessary to use it in a way that would allow its continued availability into the future with viable representative units of its components being conserved as part of the country's development strategy.

The following reflects the national perspective on the role and importance of the country's biodiversity:

Biodiversity and its components provide a wide range of benefits to society, representing life support and existential value, in addition to those already articulated in the national strategy for biodiversity. The importance of biodiversity lies in its use and non-use values, both known and unknown, tangible and intangible.

While it is acknowledged that some of these values are presently difficult to define fully in economic terms and that there is a severe paucity of information on some of these values of the country's biodiversity, these ought not to delay the use of policy, administrative and other measures to safeguard or maximise the retention of the total value of biodiversity (the precautionary principle). For example, removal of incentive measures that have a negative impact on biodiversity can proceed, even in the absence of information on the economic value of biodiversity. (The issuing of economic incentives for promoting conservation, on the other hand, will be aided by valuation of biodiversity and its components).

### **5.2 NATIONAL TARGETS FOR BIODIVERSITY**

The commitment to conserve and to sustainably use Guyana's biodiversity dictates that information on the threats to biodiversity be identified, on the one hand, and information on the country's biodiversity be available to inform efforts to use the resource in pursuit of sustainability, on the other hand. The national targets for biodiversity are based on the raising of awareness, development of capacity, generation and dissemination of information, and the development of policy, legislative, and financial environment to achieve these targets. Accordingly, the targets relating to the conservation and use of the national biodiversity patrimony are as indicated in Table 1 below. These targets will be met by actions identified for execution under the Plan. The actions listed in Table 1 constitute a sample of the total programme proposed. The four principles of the Plan are intended for the medium to long term, subject to change resulting from different circumstances.



**TABLE 1. THE MEDIUM TERM TARGETS FOR BIODIVERSITY MANAGEMENT AND INSTITUTIONAL STRENGTHENING IN GUYANA**

BROAD OBJECTIVE	TARGETS	CORRESPONDING ACTION
1. A high and supporting level of public awareness of the country's biological diversity and its role and values.	<ul style="list-style-type: none"> <li>▪ Biodiversity integrated into existing school curriculum by year 2002</li> <li>▪ Implementation of a multi-agency public awareness programme on biodiversity by 2000</li> </ul>	<ul style="list-style-type: none"> <li>▪ Projects 18,19 &amp; 20</li> <li>▪ Project 21 (complementing current initiatives)</li> </ul>
2. The creation of an enabling environment for the conservation and use of biodiversity through the development of a policy, legislative and administrative framework for achieving desired improvements	<ul style="list-style-type: none"> <li>▪ Incorporation of biodiversity into policy and planning of relevant sectors/regional organs by 2006</li> <li>▪ Revision and drafting of legislation in relevant areas; completion of sectoral policy statements by 2005</li> </ul>	<ul style="list-style-type: none"> <li>▪ Projects 8,28 &amp; 29</li> <li>▪ Projects 13,14,15 &amp; 16</li> </ul>
3. An adequate level of institutional capacity to execute biodiversity research, development, management, and conservation programmes	<ul style="list-style-type: none"> <li>▪ Development of institutional capacity at EPA for coordinating national biodiversity initiatives by 2002</li> <li>▪ Improvement of skills pool by training specialist personnel in key areas of expertise by 2006</li> </ul>	<ul style="list-style-type: none"> <li>▪ Projects 6 &amp; 7</li> <li>▪ Projects 12 &amp; 21</li> </ul>
4. The generation of information on national biodiversity through research activities	<ul style="list-style-type: none"> <li>▪ Initiate strengthening of the CSBD by 2002</li> <li>▪ Development and implementation of prioritised research activities in Guyana by 2001</li> <li>▪ Establishment of integrated national herbarium and museum collections by 2002</li> </ul>	<ul style="list-style-type: none"> <li>▪ Project 30</li> <li>▪ Project 9</li> <li>▪ Project 30</li> </ul>
5. The compilation, dissemination and analysis of biodiversity information for planning, management, conservation and monitoring	<ul style="list-style-type: none"> <li>▪ Creation of evolving national databases on key areas of biodiversity by 2005</li> </ul>	<ul style="list-style-type: none"> <li>▪ Project 10</li> </ul>
6. Using economic measures to conserve biodiversity	<ul style="list-style-type: none"> <li>▪ Initiation of innovative long term financing by 2002</li> <li>▪ Review of incentives and implementation of alternatives by 2003</li> </ul>	<ul style="list-style-type: none"> <li>▪ Projects 1,2,3, &amp; 4</li> <li>▪ Project 12</li> </ul>

<p>7. The ultimate achievement of the conservation and responsible use of the country's biological diversity in support of the national objective of sustainable development and to protect the national biodiversity from misuse, degradation and depletion</p>	<ul style="list-style-type: none"> <li>▪ Guidelines/Code of Practice of sustainable resource use adopted for relevant sectors by 2006</li> <li>▪ Initiation of process of planning second cycle of NBAP by 2005</li> <li>▪ Natural forest cover of Guyana maintained above 60%</li> <li>▪ 10% of Guyana under protected status by 2010*</li> <li>▪ Establishment of mechanism to address biosafety and benefit sharing by 2002</li> </ul>	<ul style="list-style-type: none"> <li>▪ Extension of current forest sector initiative to other sectors</li> <li>▪ Project 13</li> </ul>
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\* using this general rule of thumb, protected areas will be established under various categories to meet various objectives and be representative of ecosystem type.

## **5.2 THE APPROACH TO ATTAINING THE BIODIVERSITY TARGETS**

The long term plan for achieving biodiversity conservation is based on the informed, concerned and participatory involvement of the relevant stakeholders and the general public in the task of conserving and wisely using biodiversity. This objective will in part be achieved through the promotion of multiple uses and values, the encouragement of the philosophy of sustainable use, the implementation of incentives and disincentives, and the development of integrated planning, management and monitoring through the adoption of an inter-sectoral approach. An essential element of the plan is the adoption of and commitment to meeting the targets by government and other parties.

The generation of information on biodiversity through research, the facilitating of access to information for decision making, the improving of conservation awareness, and support from legislation and incentives are also part of the national plan to conserve and use biodiversity. The long term plan will see the undertaking of new initiatives where necessary, and the adaptation of current approaches in furtherance of the objective to conserve and use biodiversity.

## **5.3 THE FOUR PRINCIPLES OF THE PLAN**

The Convention on Biological Diversity affirms that the conservation of biological diversity is of common concern to all. Further, it recognises the need for substantial interventions by all countries in order to conserve biological diversity, and acknowledges the importance of biological diversity to the environment, economy and society. The Convention, either implicitly or explicitly, suggests certain principles for advancing towards the goals of conservation, sustainable use, and fair and equitable sharing of benefits from the use of biological diversity. Among these are the greater involvement of the citizenry and the private sector, the creating of an enabling environment, the use of incentives, and the adoption of the precautionary principle.

Across the areas of activity of the Plan four underlying principles, namely (i) the participatory approach, (ii) the ecosystem approach, (iii) the cyclical/adaptive planning approach, and (iv) the precautionary principle, will be encouraged and adopted. Each of these principles is addressed in the succeeding section. In each of the actions proposed in this document, and those to be undertaken in the future, it is recommended that wherever appropriate, and to the extent possible, consideration be given to the adoption of these approaches.

### **5.3.1 The participatory approach**

The participatory approach is based on the recognition that conservation and responsible use of biodiversity requires collaboration and commitment from individuals, groups, agencies and sectors are stakeholders in biodiversity. These entities either:

- use or depend on biodiversity
- impact on biodiversity through their activities
- are responsible for planning and regulating the use of biodiversity
- are interested in or affected by biodiversity in some other way

**Box 8. The various levels of biodiversity planning conceived within the national biodiversity action plan**

- National level
- Sectoral level
- Regional level
- Local level

The participatory approach was adopted in the process of preparing this plan. The value of this approach lies in the fact that it strengthens the planning process and draws from the wisdom of the various stakeholders. A further advantage is that it supports understanding and acceptance by the total stakeholder group and a commitment from them to partake in relevant actions identified in the plan. Understanding and commitment are particularly important for the successful implementation of biodiversity

conservation plans and measures at various sub-national levels such as the administrative regions and local communities.

Already some precedence of integrated, participatory decision-making exists. For example, this principle is enshrined in the strategy document for the development of national system of protected areas. It has also been the route chosen in recent years for refining a number of national policies.

Apart from the implementation stage, participation of the relevant stakeholder groups is important at other phases, including those of information gathering, and monitoring and evaluation. It is the objective that the plan will engender a sense of ownership by the relevant stakeholders whose involvement and commitment will increase with each planning cycle.

The adoption of the participatory approach is linked also to the objective of introducing inter-sectoral, regional and local planning of biodiversity use and conservation. These are processes which are new in the Guyana context, but are necessary in any integrated approach to realising the national goals relating to biodiversity. These processes will not be free of challenges such as those posed by the newness of biodiversity planning as an exercise, a small pool of biodiversity specialists, and logistical difficulties associated with organizing for the participation of the various interest groups, sectors and other actors. Despite all of these, and bearing in mind the likelihood of improvement in planning with experience, the processes are considered too critical to be ignored.

### **5.3.2 The cyclical/adaptive planning approach**

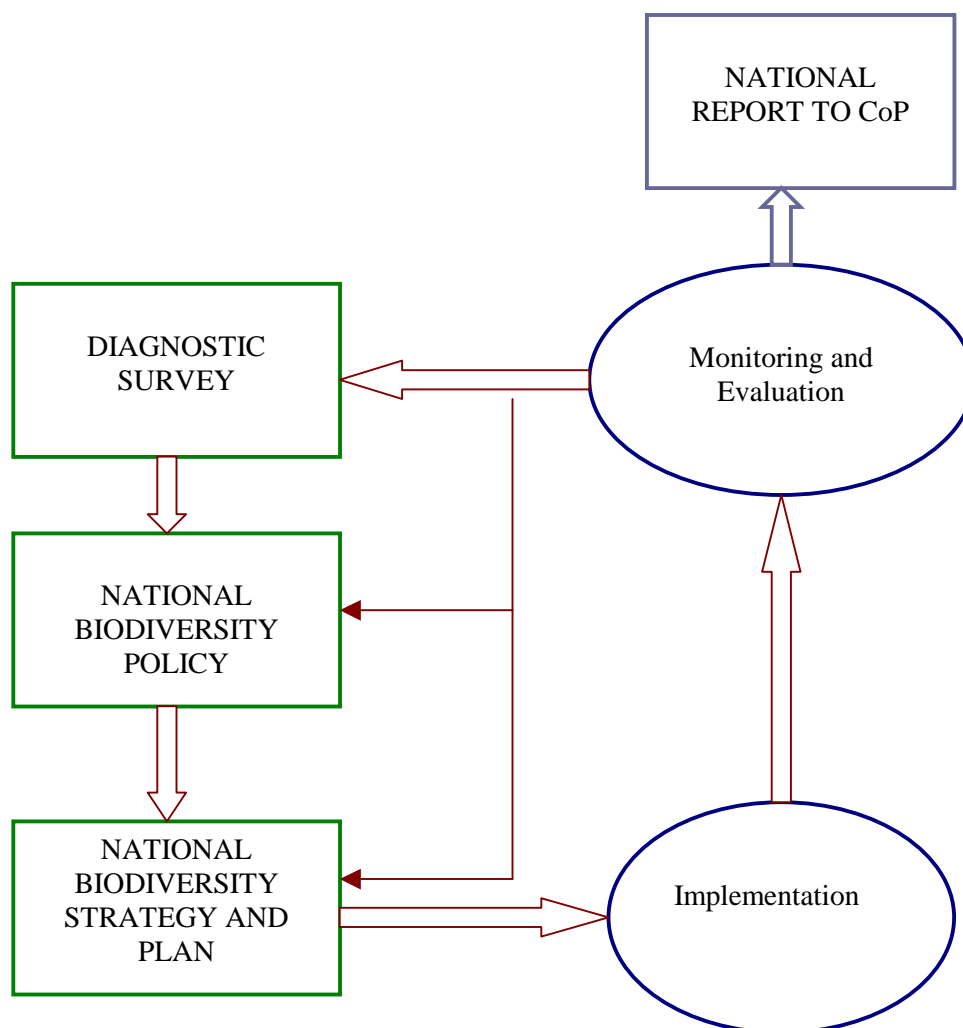
National-level planning addresses medium-term development requirements of a country. Cyclical/adaptive planning is an approach to planning which is designed to meet this medium-term objective but has the distinction of two essential mechanisms – it is cyclic in nature and it is adaptive to change in circumstances and national policy. An additional feature of the cyclical planning approach is that it allows for the inclusion of new information and lessons learned from implementation into the planning process.

In cyclical planning, each plan is for a given implementation span, which is followed by evaluation of the implementation of activities during that period. After this evaluation, a new plan is developed and executed, to be followed by evaluation exercises and the crafting of a new plan, thereby continuing the cyclic process.

Given that this Plan represents the first attempt to be made in the development of a national plan for biodiversity, and likewise in the development of a national cross-sectoral plan, adaptive planning is seen as a suitable approach. In following such an approach, national planning can still be undertaken despite the absence of adequate information on biodiversity. Implicit in adaptive planning is the expectation that

successive planning cycles will lead to progressive improvement because each exercise will be adjusted on the basis of experience gained during its predecessor.

The process can be represented by the cyclical diagram in Figure 1. The cycle includes assessment of the state of biodiversity nationally. This assessment will advise adjustment of the national strategy or plan from time to time during the cyclic process, and will contribute to monitoring and the periodic national reporting to the CoP. The assessment (such as the Country Study exercise) will also be an element of the cyclic process of periodic occurrence.



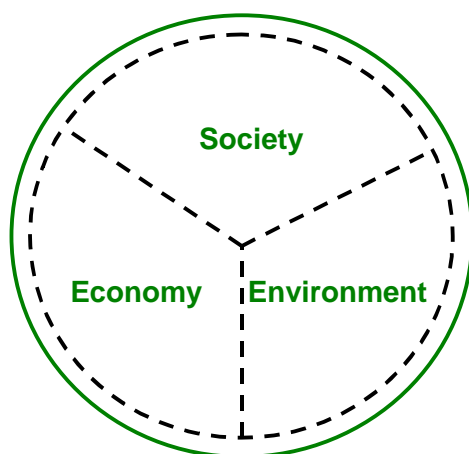
**FIG. 1. THE NATIONAL BIODIVERSITY PLANNING CYCLE**

This Plan recognises the limitations of first-instance planning and supports the view that the first Plan should not be too ambitious. Many other actions may be necessary in biodiversity but not all can realistically be undertaken in the first five years. The achievement of adequate capacity for the implementation of a national plan on biodiversity will require time and resources, the strengthening of institutional capacity and the gaining of experience.

### 5.3.3 The ecosystem approach

The Ecosystem Approach to biodiversity planning and management is based on the identification of the ecosystem as the basic unit of planning and management. It is also based on the linking of the social, economic and environmental aspects of biodiversity management. It is applicable across sectors and can be adopted at the regional and local levels for purposes of both planning and management.

The Ecosystem Approach can be illustrated by the diagram in Figure 2. It is shown as a circle with three equal segments representing social, economic, and environmental interests. The broken lines between the segments, and that of the inner circle, show that the parts are open to exchange of information, energy and matter with each other. The closed outer circle represents the biosphere within which are the various ecosystems of the globe.



**FIGURE 2. GRAPHICAL REPRESENTATION OF THE ECOSYSTEM MANAGEMENT APPROACH**

Among the supporting reasons for the use of the Ecosystem Approach are the following:

- Ecosystem functioning is vitally important to people, the economy, biological diversity, overall environmental quality, and economic development.
- The influence and role of biological diversity are not merely site-specific, but extend to the dynamic, functional complex that is the ecosystem. Biological diversity is inextricably linked to ecosystem processes and contributes to their functioning and resilience.
- The ecosystem approach allows for integrated planning and use of natural resources in functional rather than arbitrary units in which the role of humans is integrated.
- This approach to management is compatible with integrated watershed management

- The ecosystem approach allows for the conservation and use of all of the components of biodiversity – ecosystems, species and genes

Integrated watershed management is included as an element of the ecosystem approach. The definition of a watershed would depend on the scale of its interpretation. On the one hand watersheds can constitute an ecosystem, e.g. the lowland tropical rain forests in the country with numerous watersheds, or a watershed can contain a number of ecosystem types, e.g. the Essequibo River watershed contains forests, swamps, riverine, lacustrine, and other ecosystem types. In either case, the ecosystem approach constitutes the fundamental approach to planning and management.

Integrated watershed management has three main elements:

- ▶ water resources: management for the best combined use and conservation of water resources for upstream and downstream purposes
- ▶ land resources: consideration of all relevant types of land utilisation
- ▶ biological/human resources: the achievement of the well-being and integrity of these, both upstream and downstream

It is evident that these elements are related to those of the ecosystem approach, hence the commonality of these systems of planning and management, and their application to the NBAP.

### 5.3.4 The precautionary principle

The precautionary principle is introduced in the Convention on Biological Diversity in the following terms: *“where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimise such a threat.”* Already, this principle has been incorporated into the Environmental Protection Act which, in detailing the establishment and functions of the agency describes the “precautionary principle” in the terms – *“where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing measures to prevent environmental degradation.”*

The case for applying the precautionary principle hinges especially on Guyana’s present state of knowledge in which the risks or magnitude of loss of biological diversity from not acting to conserve it are unknown. The values of Guyana’s biodiversity have not been quantitatively determined, nor have the risks associated with certain activities, or the impacts of loss of biodiversity been studied. The precautionary principle is based on a recognition of the fact that loss of biodiversity can be an irreversible process and that forfeiture of significant future benefits and opportunities could accompany that loss of biodiversity when certain risks are taken. The exercising of caution in cases of uncertainty is intended to prevent such irreversible processes.

## 5.4 ROLES OF STAKEHOLDERS IN BIODIVERSITY CONSERVATION

Biodiversity accounts for the largest component of the natural resources of Guyana. It underpins the economy at all levels, is a source of cultural, spiritual, aesthetic and recreational well-being, and is an important part of the Guyanese identity. Biodiversity is an integral part of the lives of each Guyanese, though it may not prominently be in the consciousness of the large part of the population as yet. Each citizen is a stakeholder in biodiversity either because he depends on biodiversity in a variety of ways, it shapes or affects his life in some way or the other, or his livelihood is impacted upon by biodiversity. This is true irrespective of whether that person is a farmer, miner, fisherman, Amerindian, or other member of society. The involvement of each individual, corporation, government organism, or group in taking action

and responsibility would therefore contribute in significant ways towards maintaining, safeguarding and responsibly using this major part of the national patrimony. By extension of this responsibility, each stakeholder will have a role to play in supporting the implementation of the Plan, and his/her own contribution towards the achievement of the objectives of national policy relating to biodiversity (Boxes 1 and 3).

#### **5.4.1 Public Agencies**

Public agencies have a responsibility to promote and facilitate the development of policies, programmes, and plans relating to biological resources and ecosystems over which they have responsibility. These agencies are expected to take legislative and administrative steps to ensure that biodiversity conservation as an objective is met, and to facilitate the creation of an enabling environment for other partners to play their part. Public institutions also play an important role in the area of monitoring and enforcement.

#### **5.4.2 The Private Sector**

The private sector has been singled out for mention in the Convention [Article 10 (e)], which calls for the encouraging of partnerships between governments and the private sector. Sections of the private sector owe their existence in part to the living resources which form a part of the patrimony of a nation.

At a meeting held with the private sector in the lead up to the compilation of this document, there were clear signs of interest from the private sector in areas in the Plan that would allow for them to participate and to benefit. These include financing; institutional and human resources capacity building; research, information and monitoring; and incentive measures.

#### **5.4.3 Regional Authorities**

As part of the integration objectives of the Plan, Regional authorities will be responsible for integrating biodiversity into Regional planning. These authorities can play a very important role in the effort to bring about higher awareness, conservation and responsible use at the fundamental levels of resource use. People in the Regions are physically closer to certain ecosystems and components of biodiversity.

#### **5.4.4 The General Public**

Arising from the Participatory Principle, each citizen would have a role and responsibility to contribute to decisions on the sustainable use of biodiversity. The public is the largest stakeholder group and has a powerful voice which can be made very effective in achieving the goal of conserving biodiversity.



**TABLE 2. NATIONAL STAKEHOLDERS, THEIR INTERESTS AND ROLES IN BIODIVERSITY**

<b>STAKEHOLDER GROUP</b>	<b>INTEREST IN BIODIVERSITY</b>	<b>ROLE IN BIODIVERSITY</b>
General public	As part of national patrimony biodiversity is an asset to each citizen	Taking action at the local and other levels to conserve and wisely use biodiversity; support various actions in the Plan
Natural resource public agencies	Granting of access to biodiversity and other resources that affect biodiversity	Conservation of biodiversity resources; minimizing of impact of use activities on biodiversity; national level planning
Environmental regulatory agency	Monitoring impact of development activities on biodiversity; regulating access; developing policy, legislation, and administrative mechanisms; promoting public awareness	Establishing framework for sustainable biodiversity use and conservation; improving public knowledge and attitudes towards biodiversity; national level planning
Regional and local administrative authorities	Maintenance and use of biodiversity resources	Conservation of biodiversity; local and Regional planning; promotion of public awareness
Private sector entities	Utilization of biodiversity and other resources; supporting research and planning	Implementing conservation and sustainable use of biodiversity; supporting various actions in the Plan
Local communities	Subsistence and commercial use of biodiversity	Conservation of biodiversity; provision of information and sharing of knowledge
Academic community	Research, training and public awareness on biodiversity	Providing scientific information on biodiversity; improve public awareness
Funding agencies	Conservation, research and sustainable use of biodiversity	Providing financial and technical support for biodiversity action
Media entities	Information on biodiversity as natural resource and national patrimony	Improving public awareness on biodiversity
Non-Governmental Organizations	Promoting action towards conservation and use of biodiversity; public awareness	Supporting action on biodiversity; conservation advocacy; improving public awareness

## **CHAPTER 6 PROPOSED PROGRAMMES IN BIODIVERSITY**

This Plan considers the process of national biodiversity planning as a long-term one which will be institutionalised, cross-sectoral and multi-level in nature. This Plan is therefore the first of several of a repeated process in which the EPA, and other authorities, will develop and commit capacity and experience over a period of time in planning, implementation and monitoring. It is not the objective of this Plan that all of the national needs in the area of biodiversity will be addressed in the first planning cycle; rather this will be achieved over the longer term through a number of planning cycles. Continuous, cyclic planning is proposed because of various advantages associated with it. The Plan takes the view that full and successful adoption of the principles described in Chapter 5, and the integration of biodiversity into planning at various levels can only come with time. Likewise, the accumulation of experience, the taking of stock, and the execution of monitoring and adaptation require time which the opportunity of repeated, cyclic planning offers.

The additional cost resulting from the adoption of the cyclical and participatory approaches has not escaped consideration. This Plan is advised by the view that this increment in cost will pay dividends in the long term. Succeeding planning cycles could, as a cost saving strategy, utilise a more targeted approach to consultation, in which specific stakeholder groups are involved in a more direct way. In time also, planning will be carried out as part of the substantive responsibilities of institution staff who would have gained experience during earlier cycles. Apart from this, if the planning habit is adopted at various levels the extent of consultation and the time required for the preparation of a national plan will be lessened because ultimately the planning process will be transformed to a bottom-up process. Basically, if people, agencies and enterprises at the regional and sectoral levels know what their needs are they can collectively agree on a set of actions to satisfy those needs. This task can be accomplished without needing a project, particularly if there was some previous experience in planning and assuming a certain level of knowledge and information on biological resources and biodiversity.

In the case of regional administrations, it is envisaged that by the end of the first planning cycle (i.e. five years), they would be in a better position to decide on the incorporation of biodiversity considerations into their planning and administration work, if not already done. These Regions will, in the first instance, need technical assistance to do so. Current efforts at the level of Region Nine to prepare an Agricultural and Regional Development Plan, and the expressed wish to incorporate biodiversity through the input of biodiversity planning expertise can be seen as an encouraging sign of future regional-level planning. This initiative could be a potential pilot experience.

At the sectoral level, the establishment of a Policy and Planning Division at the Guyana Forestry Commission is an example worth emulating in other sectors. This sector has been able eventually, to agree on a code of practice for forest management and adapt policy, legislation and planning for the sector to present circumstances and needs. It is expected that hereon, sectoral agencies will incorporate biodiversity considerations into their plans and adopt a combined strategy of conservation with responsible resource use. These sectors include agriculture, fisheries, forestry, mining, tourism and wildlife. Forestry has so far taken some steps in this direction, even prior to the development of this Plan.

In the Plan, a number of projects or other activities are clustered under individual programme areas in a five-year cycle consisting of two phases. Many of the actions identified in the Plan will require additional financial resources and technical support, both from external sources and from local inputs. The majority of the actions are project-oriented, but some are non-project in nature.

## **6.1 PROGRAMME AREAS**

Within the five-year time frame of this Plan there are two phases. The first, Phase I, is for a period of two years and Phase II goes for three years.

### **6.1.1 PHASE I: FOUNDATION PROGRAMMES**

Phase I stresses priority interventions that are essential in laying the foundation for biodiversity planning and management in Guyana; hence it focuses on filling critical gaps in existing activities, initiating capacity building, and raising awareness. This Phase includes the following Programme Areas, under which a number of corresponding Project Profiles are clustered:

#### **Programme Area 1: Mobilization of Financial and Technical Resources**

Given the present status of Guyana's human and financial resources significant additional financial and technical resources will be required to develop the capacity necessary to implement the Convention and the Action Plan. The achievement of this state will require the mobilization of considerable financial and technical resources to develop the required capacity; hence this Programme Area is highly critical for the implementation of the entire Plan and will be given absolute priority in the early stages of this Phase.

The Programme will seek to source funding support for the activities making up the Plan and establish mechanisms for financing the responsible management of biodiversity on the long term.

#### **Programme Area 2: Human Resources and Institutional Capacity Building**

Guyana's public, private and NGO sectors experience an acute shortage of expertise in areas relevant to the management of biodiversity. Institutional capacity is weak throughout the sectors that make up this area. Together, they combine to present a serious obstacle to the achievement of national goals relating to the management of biodiversity.

The programme will address these weaknesses by developing human resources and institutional capacity for the management of biodiversity. This capacity development will be conducted at the central and regional levels and will be complemented by the programme on public awareness and education, as well as career guidance efforts. A more fundamental purpose of the activities under this programme is to help ensure that capacity is available for the implementation of the Action Plan.

#### **Programme Area 3: Research and Information on Biodiversity**

Lack of local expertise and weak institutional and financial capacity have contributed to a generally low level of research undertaken locally. Also, the identification of areas for research has not been conducted in any systematic way, so that many of the national priorities are still not addressed. This weakness in research achievement has contributed to a low level of information on Guyana's biodiversity. Research and information are integral to planning, management, identification and monitoring and are identified as a priority area. The programme will set priorities for biodiversity research, indicators for monitoring, and mechanisms for the collection, analysis and dissemination of information.

#### **Programme Area 4: Consolidation of the Policy, Legal and Administrative Framework**

The policy framework on biodiversity at the sectoral level is incomplete, with policy absent in many areas. The legislation relating to biodiversity is old, incomplete in coverage, and inadequate in so far as recent developments in the field of biodiversity are concerned. The policy and legal foundations are basic to the development of other initiatives and therefore would require to be addressed as a matter of priority.

The programme involves actions that will address protection and compensation of local knowledge on biodiversity, access and benefit sharing, biosafety, policies in fisheries and wildlife, and the comprehensive review and reconciliation of national legislation on natural resources with a view to making them compatible with national needs and concerns relating to biodiversity.

#### **Programme Area 5: Public Awareness and Education**

Levels of public awareness in Guyana are very low and pose a threat to the realization of the general objectives relating to biodiversity. Such awareness is needed, not only for the wider adoption of the conservation ethic, but also for reducing threats to biodiversity, and for encouraging human resources development in the area.

The programme will support activities leading to the preparation of instructional material, formal and informal training of citizens, the training of trainers, and career guidance exercises.

#### **Programme Area 6: *In situ* and *Ex situ* Conservation of Biodiversity**

The need for priority attention to the *in situ* conservation of biodiversity is highlighted in the Convention. Species are best studied and conserved in their natural or naturalised habitats, it acknowledges, so that attention is needed towards maintaining species in these habitats.

The programme encompasses the *in situ* conservation of biodiversity through the establishment of a national system of protected areas and measures for expanding the *ex situ* conservation of biological diversity.

#### **Programme Area 7: Incentive Measures and Alternatives**

The use of incentive measures is complementary to legislative and administrative measures for the conservation and sustainable use of biodiversity. Whereas incentives can be used to encourage conservation of biodiversity, some policies may serve as perverse incentives contributing to biodiversity degradation or loss. On the other hand, the development of viable economic alternatives can serve to reduce poverty-based threats to biodiversity.

The programme contains initiatives leading to the review of national policies relating to biodiversity, the identification and removal of perverse incentives, and an examination of the possibility of using incentive measures as a mechanism to encourage responsible use of biodiversity. It would also lead to the identification of economic alternatives to replace poverty-driven threats to biodiversity.

#### **Programme Area 8: Measures for the sustainable use of biodiversity**

Sustainable use is at the core of the objectives of the Convention on Biological Diversity. Determining and monitoring sustainable use are challenges to biodiversity management. The development of relevant, realistic, and clear criteria and indicators can contribute to the process of regulating use within the requirements of sustainability, and also enhance the required national reporting process to the CoP. The

programme will lead to the development and adoption of criteria and indicators for the sustainable use of biodiversity.

### **Programme Area 9: Monitoring, Evaluation and Reporting of the implementation of Programme Areas 1 to 8 above**

The successful implementation of the Plan and its appropriateness to changing circumstances and needs will be enhanced by monitoring and evaluation of implementation and effectiveness. Monitoring and evaluation are seen as essential parts of the cyclical and adaptive planning approach.

This area of action will lead to the institution of a programme for monitoring and evaluation of the implementation of the Plan, as well as the submission of recommendations on modifications/improvements to the CBD by means of the National Report to the CoP and SBSTTA. (see Reporting in Ch. 8).

## **6.1.2 PHASE II: CONSOLIDATION OF PHASE 1 AND INITIATION OF ADDITIONAL INTERVENTIONS**

More specific details of Phase II will be defined based on the findings of Programme Area 8: Monitoring, Evaluation and Reporting, of Phase I. In Phase II, consolidation of Phase I Programme Areas will be given priority. In addition, Programmes in new strategic areas will be initiated. Programme Areas highlighted in this Phase include:

### **Programme Area 1: Mobilization of Financial and Technical Resources**

Actions in this programme area will involve the identification and accessing of new sources and the continuation of existing support.

### **Programme Area 2: Human Resources and Institutional Capacity Building**

The programme involves actions for the strengthening of agencies involved in biodiversity management; strengthening of human resources capacity for undertaking biodiversity projects; and the development of a programme of support for national biodiversity collections.

### **Programme Area 3: Research and Information on Biodiversity**

In this Phase, research on the genetic characterization of economically important species of Guyana; valuation of biodiversity and habitats; and a revision of the Country Study on Biological Diversity will be undertaken.

### **Programme Area 5: Public Awareness and Education**

This programme area will involve a continuation of public awareness initiatives.

### **Programme Area 6: *In situ* and *ex situ* Conservation**

Under this programme area the initiative to establish a national system of protected areas will be continued.

### **Programme Area 7: Monitoring, Evaluation and Reporting of the implementation of Programme Areas 1 to 6 above**

Evaluation of implementation of the initial cycle of the NBAP will be conducted under this programme.

### **Programme Area 8: Planning Biodiversity Action Plan Cycle 2**

Planning for the second cycle will be undertaken as the link between this and the subsequent plan.

## **6.2 THE INTERVENTIONS**

A total of 32 projects and other activities have been proposed in the Action Plan. Projects and other actions are linked as clusters under programme areas. Details of the individual actions are given as follows:

### **PHASE I: FOUNDATION PROGRAMMES (YEARS 1-2 OF THE PLAN)**

This Phase is comprised of the following 8 Programme Areas and 27 actions:

#### **Programme Area 1 : Mobilization Of Financial And Technical Resources**

##### **INTRODUCTION**

The ability to mobilize financial and technical resources quickly and sustainably is absolutely vital to the successful implementation of the Guyana Action Plan. Hence, this Programme Area is extremely critical and will be given highest priority in the early stages of Phase I of the Plan. Existing strategies for obtaining financial and technical resources will be consolidated. In addition, a spectrum of new approaches will be developed. These will be generally based on the principle that those who benefit from biodiversity deserve to have the opportunity to protect their future by investing in its management.

#### **1. PROJECT: *Ensuring short and long term financing and sustainability of the Biodiversity Action Plan***

##### **OBJECTIVES:**

- I. To develop the human capacity to ensure the short- and long-term financing and sustainability of the Biodiversity Action Plan
- II. To design and implement a spectrum of sustainable financing mechanisms for Plan implementation

##### **ACTIVITIES:**

- I. Create and fill a position of Fund Raising Specialist at the EPA. The responsibilities of this position are to identify and obtain financial and technical support for projects under the Biodiversity Action Plan.
- II. Develop the following categories of initiatives (by the Fund Raising Specialist):
  - Mobilization of financial resources from the regional and international donor community:
    - Public
    - Private

- Mobilization of financial resources from national sources:
    - Public
    - Private
    - Community
  - Mobilization of financial resources from the sustainable use of biodiversity and other new and innovative funding mechanisms (including creating a Biodiversity Trust Fund)
  - Mobilize technical assistance from regional and international sources
- III. Up-grade skills of the Fund Raising Specialist through participation in key fora and/or training workshops (e.g. CDB, IADB and/or GEF project development workshops; the Financial Innovations workshops of the Global Biodiversity Forum)
- IV. Coordinate the management of projects by the Biodiversity Project Coordinator, once funds have been accessed by the Fund Raising Specialist.
- V. Design and utilize methodologies and indicators for monitoring and evaluating project progress.

#### DURATION/TIMING:

Immediate, throughout Phase I and 2 of the Plan

#### LOCAL PARTIES:

EPA

#### BUDGET:

	<u>US \$</u>
Fund Raising Specialist	48,000
Equipment	4,000
Computer	1,500
Training	5,000
Travel	2,000
Research Costs	3,000
Communication	15,000
Contingencies (10%)	<u>7,850</u>
TOTAL	<u>86,350</u>

## 2. PROJECT: *Mobilization of financial resources from the regional and international donor community*

#### OBJECTIVES

- I. To develop a visionary and clear “negotiating platform” for encouraging donor investment in the management of Guyana’s biodiversity
- II. To use the above as a basis for developing a spectrum of creative and innovative project documents for the priority elements of the Plan
- III. To use the project documents to mobilize financial and technical resources

## ACTIVITIES

- I. Develop a visionary and clear “negotiating platform” for negotiation in the regional and international arenas by the Fund Raising Specialist
- II. Review of regional and international funding context by Fund Raising Specialist
- III. Identify multilateral, bilateral, regional and private donor agencies to be targeted
- IV. Convene meetings with financial and technical assistance agencies to match their interests with project priorities such as a:
  - Roundtable with Guyana based representatives
  - Follow up meetings with individual agencies
  - Roundtable at Global Biodiversity Forum with internationally based representatives
  - Roundtable at COP 5 (2000) with internationally based representatives
- V. Follow up communication/meetings with agencies
  - Prepare project proposals
  - Access and administer funds
  - Strengthen ability of members of the NBAC, agencies and groupings involved in biodiversity management and regional and local groupings (including public, private and community) to seek their own funding on their own for biodiversity management activities. This will include convening a series of proposal preparation and fundraising workshops (Note: CF Institutional Strengthening)

## DURATION/TIMING:

Immediate; throughout Phase I and Phase II

## LOCAL PARTIES:

EPA

## BUDGET:

	<u>US \$</u>
Fund Raising Specialist	Covered in Project 1
Meetings with donors (individually and collectively)	2,000
Attendance of GBF	IUCN support to be sought
Attendance of COP 5	SCBD
Workshops (project preparation and fundraising)	UNDP (EIT project)
Research	3,000
Follow up with agencies	2,000
Communication	15,000
Contingencies (10%)	<u>2,200</u>
TOTAL	<u>24,200</u>



### 3. PROJECT: *Mobilization of financial resources from national inputs*

#### OBJECTIVES:

- I. To obtain necessary financial support for biodiversity initiatives
- II. To encourage local investment in biodiversity conservation as a complementing measure to foreign donor support

#### ACTIVITIES:

- I. Review of opportunities by Fund Raising Specialist. Areas to be examined include:
  - Community inputs: in-kind contributions (knowledge, information, labour)
  - Private sector: funds and in-kind contributions (eg sponsorship of activities, green investment funds, “adopt-a-beach/forest/species” schemes; lottery proceeds)
  - Non-governmental: funds and in-kind contributions
  - Governmental: increased government budgets
- II. Build on activity in Project 1 on strengthening ability of various groupings to access funds
- III. Develop demonstration projects to test selected priorities
- IV. Accessing and administering funds
- V. Expenditure reduction through reduction of duplication of effort, streamlining activities, and strategic actions to ensure maximum mileage from minimum investment by the Biodiversity Projects Coordinator
- VI. Design and utilize methodologies and indicators for monitoring and evaluating impacts

#### DURATION/TIMING:

Six months after the implementation of Phase I; throughout Phase II

#### BUDGET:

	<u>US \$</u>
Fund Raising Specialist	Covered in Project 1
Local travel	3,000
Research	2,000
Communication	10,000
Workshops	4,000
Demonstration Projects	6,000
Contingencies (10%)	<u>2,500</u>
TOTAL	<u>27,500</u>

4. PROJECT: *Mobilization of financial resources from the sustainable use of biodiversity and other new and innovative mechanisms*

OBJECTIVES:

- I. To develop mechanisms to return profits from the sustainable use of biodiversity to the management of biodiversity i.e. bridge the gap between the private benefits and the costs of conservation
- II. To develop other new and innovative mechanisms for financing biodiversity management
- III. To create a Biodiversity Trust Fund

ACTIVITIES:

- I. Review opportunities and methodologies by Fund Raising Specialist. Major sources of information will include compilations and analysis of experience by IUCN, WRI (on new and innovative mechanisms), and GEF (on conservation funds)
- II. Select priorities in the light of Guyana's specific cultural and social context.
- III. Develop demonstration projects to test selected priorities
- IV. Design and utilize methodologies and indicators for monitoring and evaluating impacts

DURATION/TIMING:

6 months after the implementation of Phase I; throughout Phase II

LOCAL PARTIES:

EPA

BUDGET:

	<u>US \$</u>
Fund Raising Specialist	Covered in Project 1
Research	2,000
Communication	10,000
Demonstration Projects	4,000
Consultants	12,000
Contingencies (10%)	<u>2,600</u>
TOTAL	<u>28,600</u>

5. PROJECT: *Mobilization of technical resources from regional and international sources*

**Programme Area 2: Human Resources And Institutional Capacity Building**

This programme area addresses the development of capacity to meet the new and additional requirements in the area of biodiversity. It would be significantly informed by the assessment of human resources capacity and training needs to be undertaken under the project "Development of human resources for the implementation of biodiversity activities."

## PHASE I

- Project 6: Strengthening of the EPA's capacity for administration and integrated planning of the biodiversity sector
- Project 7: Strengthening of the NBAC
- Project 8: Strengthening of regional institutions

## PHASE II

- Project: Strengthening of agencies and groupings involved in biodiversity management
- Project: Strengthen capacity of other institutions to undertake biodiversity projects

### 6. PROJECT: *Strengthening of the Environmental Protection Agency's capacity for administration and integrated planning of the biodiversity sector*

#### SUMMARY:

The project will strengthen the capacity of the EPA as implementer, coordinator, delegator and mobiliser of stakeholders in implementation and monitoring through support for the development of a Biodiversity Unit within Phase I which will develop into a Biodiversity Division in Phase II.

#### JUSTIFICATION:

The EPA has the mandate for coordinating biodiversity management. However, it does not yet have the required staff to execute this mandate. A specific Unit is to be established in this Phase within the Operations Division because the emphasis of a Biodiversity Unit would be on conservation planning and management within an economic development sphere. The other responsibilities of the Division, however, relate to monitoring and enforcement.

PHASE I - Creation of a Biodiversity Unit within the Operations Division (Phase I: Years 1 and 2)

#### OBJECTIVES:

To strengthen the EPA's capacity:

- For administration, planning and mobilizing funding and technical resources for the implementation of the Plan
- For coordinating the required policy, legal, scientific and economics work
- As implementer, coordinator, delegator, mobilizer and motivator of stakeholders (i.e. helping them to help implement the Plan)

#### ACTIVITIES (Phase I):

- I. Create the following positions, recruitment of staff to fill them and orientation of staff once in place
- II. Consolidate the biodiversity work programme.

**Fund Raising Specialist** (For Duties of positions see Appendix 7)

**Biodiversity Project Coordinator**  
**Environmental Lawyer**  
**Senior Environmental Officer (Natural Resources Biodiversity)** (Note: Existing Position at  
the EPA, soon to be filled)  
**Secretary**

SCOPE:

This activity will improve the functioning of the EPA as public environmental agency

TIMING/DURATION:

Positions to be filled by end of Year 1. The project will last the duration of two years of the Plan

LOCAL PARTIES:

EPA

BUDGET: (2 years)

	<u>US\$</u>
Fund Raising Specialist	48,000
Project Coordinator	48,000
Environmental Lawyer	Under EPA budget
Senior Environmental Officer	“
Secretary	4,800
Miscellaneous	20,000
Contingency (10%)	<u>12,080</u>
TOTAL	<u>132,880</u>

RISK AND ASSUMPTIONS:

PHASE II - Upgrading Biodiversity Unit into biodiversity division (years 3 to 5)

At the end of Phase I a comprehensive evaluation will be conducted. It is at this time that a concrete decision will be made as to whether or not the Unit needs to be up-graded to a Division. Preliminary recommendations at this stage are given as follows.

SUMMARY:

If created, the Division will build upon progress made by the Biodiversity Unit

ACTIVITIES (Phase II):

- I. Strengthening of existing positions through training
- II. Creation of the following new positions
- III. Consolidation and expansion of the Biodiversity work programme.

**Biodiversity Director** (For Duties of position, see Appendix 7)

## 7. PROJECT: *Strengthening of the National Biodiversity Advisory Committee*

### SUMMARY:

The project will give statutory status to the NBAC and with the complementary support of Project 8 will improve the administrative support available to the NBAC for the execution of its role. The project will strengthen the NBAC which, in Phase II, will develop into a National Committee on Biodiversity

### OBJECTIVES:

- I. To enable the NBAC to fulfill its existing objectives and responsibilities (Note: see Appendix 1)
- II. To expand the responsibilities of the NBAC (i.e. develop the NBAC into a major vehicle for inter-sectoral biodiversity planning and the integration of biodiversity issues into sectoral and national plans)
- III. To increase the ability of institutions with responsibilities for certain aspects of biodiversity to implement biodiversity actions by up-grading the NBAC into a National Committee on Biodiversity

### JUSTIFICATION:

### ACTIVITIES:

- I. Establish the NBAC as a Statutory Committee, expand mandate beyond advisory role, adjust name to National Biodiversity Committee (NBC)
- II. Review the guidelines for the NBAC and up-grade them appropriately
- III. Improve administrative and other support services (by the EPA's Environmental Officers and secretary) so as to create better systems of disseminating information, servicing meetings, tracking project status, record keeping, etc.
- IV. Improve technical support (by the EPA's Environmental Officer) to improve the NBC's ability to process specimens and applications for research, conduct field work etc
- V. Initiate incentives for increased levels of participation by members and expanded use of the pool of expertise in the Committee (e.g. honoraria, attendance of meetings of SBSTTA, CoP, etc)
- VI. Improve rate of attendance of key meetings, level of preparation prior to attendance, and reporting afterwards
- VII. Increase the scope of membership by adding:
  - Wildlife Department
  - Fisheries Department
  - Plant Quarantine Division
- VIII. Document interests and competence of the NBC members and match with responsibilities, tasks and accountability
- IX. Establish requirements for continuity of attendance at meetings, the implementation of tasks and the development and management of projects
- X. Establish the TPC as a Task Force of the NBC for purposes of future planning
- XI. Organise orientation and training workshops for members of the NBC, such as: Biodiversity planning; project development and management; fundraising; negotiation.

### DURATION/TIMING

This Project is for immediate implementation. Some activities will last the duration of Phase I, or as long as is necessary during Cycle 1.

## LOCAL PARTIES

EPA, NBAC

## BUDGET

The budget for this project will be met by the EPA with support for activities to be accessed from available sources. No formal budget can be presented at this time.

## PERFORMANCE INDICATORS

- I. NBAC expanded and established by statute
- II. Guidelines for NBAC reviewed and officially adopted
- III. Orientation and training workshops for members of NBAC held
- IV. Members of NBAC playing wider role, such as representing Guyana at meetings under the CBD, NBAC work to become part of the annual work plans of EPA.

## MEANS OF VERIFICATION

- I. Work Plan and Progress Reports of the EPA
- II. EPA legislation/subsidiary provisions
- III. Guidelines for the NBAC
- IV. Reports from meetings under the CBD

## RISKS/ASSUMPTIONS

- I. Participating agencies and EPA will endorse expanded role for the NBAC
- II. Rapid turn over of delegates to NBAC

## 8. PROJECT: *Strengthening of Regional Institutions*

### OBJECTIVES:

- I. To strengthen the capabilities of local and regional agencies to plan and implement their biodiversity priorities identified in their own local and regional plans
- II. To strengthen the capabilities of local and regional agencies to assist in the implementation of projects identified in the Action Plan
- III. To create strategic alliances between the EPA and this grouping of Partners
- IV. To facilitate the two-way sharing of knowledge, expertise and experience between the EPA and this grouping of Partners.

### JUSTIFICATION:

The biodiversity of Guyana physically exist at the local and regional levels. Therefore, Plan implementation at these levels, largely through local and regional authorities will be absolutely critical to the success of the Plan.

**SCOPE:**

Local and regional

**SUMMARY:**

The project will strengthen the capacity of Regional organs to enable them to better appreciate the need for biodiversity planning and to integrate biodiversity as a part of the regional planning agenda. These organs will also serve as focal points for public awareness and implementation activities during the Plan

**ACTIVITIES**

Specific activities under the project are to:

- I. Use lessons learned from strengthening of the NBAC and related agencies to refine action in this area
- II. Use relationships and linkages established during the strengthening of the NBAC and related agencies and liaison with the NREAC to underpin work here
- III. Convene roundtables on the Action Plan (for the purposes of education, orientation, implementation and sharing of knowledge) with:
  - Representatives of the 10 Administrative Regions
  - Local/municipal organizations
- IV. Convene short fund-raising and project planning workshops for these agencies
- V. Conduct other outreach activities as part of the work of the Educational National Environmental Education Advisory Committee and the EPA's Education, Training and Information Division
- VI. Conduct a demonstration project on integrating biodiversity considerations into regional planning

**TIMING/DURATION:**

At the end of year 1

**BUDGET:**

	<u>US\$</u>
Biodiversity Project Coordinator	Covered in Project 6
Demonstration project leader	5,000
Workshops	10,000
Demonstration project	5,000
Miscellaneous	1,000
Contingency (10%)	<u>2,100</u>
<b>TOTAL</b>	<b><u>US\$ 23,100</u></b>

**PERFORMANCE INDICATORS**

By the end of Phase I, the completion of one:

- Roundtable
- Workshop
- Educational outreach activity
- Demonstration project

## MEANS OF VERIFICATION

Progress report on each of the following:

- Roundtable
- Workshop
- Educational outreach activity
- Demonstration project

## RISKS AND ASSUMPTIONS

- I. Interest at the local and regional levels
- II. EPA and NBAC capacity

## **Programme Area 3: Research and Information on Biodiversity**

### 9. PROJECT: *Preparation and implementation of a prioritised programme of biodiversity research for Guyana*

#### OBJECTIVES:

- I To establish national needs and priorities of biodiversity research
- II To produce sub-projects for the prioritised national needs of biodiversity research
- III To secure funding and research bodies to implement sub-projects

#### JUSTIFICATION:

Research on biodiversity in the country has never been coordinated before, hence the efforts have been superficial and lacking direction and continuity. This project establishes the EPA and NBAC as the primary coordinating body which will determine the thrust of biodiversity research, and they would be the national caretaker of this undertaking ensuring there is no discontinuity. Adequate funding, lack of scientific equipment and commitment of researchers and their institutions have been, and are still, constraints to the implementation of research projects. The provision of finances and obtaining the commitment of implementing institution in a more systematic manner by a centralised body (EPA & NBAC) would ensure the successful completion of sub-projects.

#### SCOPE:

The scope of the research topics will extend to the national level

#### SUMMARY:

The project entails the EPA and NBAC coordinating biodiversity research at a national level. This would involve bringing together the various researchers and research institutions, local and international, in order to establish research needs and priorities at the national level in respect of sectoral and inter-sectoral issues, and to produce sub-projects based on the priorities. The EPA and the NBAC would then have to secure funding and identify research institutions interested in implementing the sub-projects. Contractual mechanisms should ensure that research institutions obtain equipment and provide researchers to



complete sub-projects on time. In this way, continuity of themes involving sub-projects can be maintained, eventually placing the country on the cutting edge of biodiversity research.

#### TIMING/DURATION:

Objectives I and II - 2 to 6 months during Phase I

Objective III - for the rest of Phase I and Phase 2

#### LOCAL PARTIES:

- I EPA and NBAC
- II All local and international research institutions involved in biodiversity research in the country
- III Sectoral agencies
- IV Private sector representatives in the respective sectors

#### BUDGET:

OBJECTIVE I	<u>US\$</u>
Three workshops	3,000
Coordinator (1)	1,200
Rapporteurs (2)	<u>1,200</u>
TOTAL	<u>5,400</u>

OBJECTIVE II	<u>US\$</u>
Six workshops	6,000
Coordinator (1)	2,400
Rapporteurs (2)	2,400
Sub-projects preparation	3,000
TOTAL	<u>13,800</u>

#### OBJECTIVE III

The activities under this objective and their implementation would depend on the outputs from the two objectives given above, and the nature of the sub-projects identified by Objective II, hence it is not possible to cost this objective at this stage.

Contingency (10%)	<u>1,920</u>
GRAND TOTAL (except Objective III)	<u>21,120</u>

#### PERFORMANCE INDICATORS:

- I Objective I - At the end of three months of the beginning of this project, a number of workshops would have been held
- II Objective II - At the end of six months of the beginning of this project, a number of workshops/consultations would have been held
- III Objective III - At the end of Phase I of the project, a number of research sub-projects would have started. At the end of phase 2 of the project, a number of sub-projects would have been completed, and some others would be under progress

#### MEANS OF VERIFICATION:

- I Objective I - Report on national needs and priorities on biodiversity research
- II Objective II - Proposals of sub-projects based on prioritised needs
- III Objective III - Funding contracts; research contracts; research findings; monitoring and evaluation report

#### RISKS/ASSUMPTIONS:

- I Willingness of stakeholders to work together
- II Availability of funding and scientific equipment
- III Availability of local researchers

#### 10. PROJECT: *Preparation and maintenance of a national database on biodiversity*

##### OBJECTIVES:

- I. To establish guidelines on the responsibilities of storing, access, sharing and use of biodiversity information among local institutions involved in biodiversity issues
- II. To obtain the physical and human requirements for establishing a computer network between institutions involved in biodiversity issues
- III. To procure and install the physical infrastructure for the network and to train personnel for operating it within the stipulated guidelines

##### JUSTIFICATION:

Currently, information on biodiversity issues, including research information, is scattered among the various sectoral and private institutions involved in biodiversity work, and there is no policy or guidelines for the responsibilities of storing, access, sharing and use of biodiversity information. This project is intended to establish the ground rules for solving this problem. In order to operate the databases at a national level, there is need to link the institutions through a network and to have trained personnel to operate it. The requirements for linking the various types of computer systems at the institutions and the training of personnel for implementing the project within the stipulated guidelines, are therefore essential steps.

##### SCOPE:

The coverage of the material resulting from this activity will be national.

##### SUMMARY:

This project is intended to establish the ground rules for the responsibilities for biodiversity management data and information.

##### LOCAL PARTIES:

- I. EPA and NBAC
- II. All local institutions with computerised biodiversity data

III. Private bodies with computerised biodiversity data, wishing to be a part of the process

BUDGET:

OBJECTIVE I	<u>US\$</u>
One workshop	1,000
Coordinator (1)	400
Rapporteurs (2)	400
TOTAL	<u>1,800</u>

OBJECTIVE II	<u>US\$</u>
Consultant (1) for 2 months	4,000
Travel to agencies for consultations	1,000
TOTAL	<u>5,000</u>

OBJECTIVE III

The activities under this Objective cannot be costed at this stage because it depends on the outputs of Objectives I and II.

Contingency (10%)	680
GRAND TOTAL (except Objective III)	<u>7,480</u>

PERFORMANCE INDICATORS:

- I. Objective I - At the end of three months, a number of workshops and consultations would have been held
- II. Objective II - At the end of nine months, a number of consultations and workshops would have been held, and a number of persons would have been trained
- III. Objective III - At the end of Phase I of the project, the network would have been installed and operational

MEANS OF VERIFICATION:

- I. Objective I - Guidelines would be available
- II. Objective II - Report on the specifications of the network; list and cost of equipment; locations of equipment; training contracts
- III. Objective III - Monitoring and evaluation report

RISKS/ASSUMPTIONS:

- I. Participation of stakeholders
- II. Availability of funds

**11. PROJECT: *Development and implementation of a national clearing house mechanism for biodiversity***

**SUMMARY:**

This project will access financing for the acquisition of equipment and for training towards the establishment of a national clearing house mechanism for biodiversity. Under the aegis of the NEEAC, a national steering committee or working group would be established to bring about implementation of the clearing house mechanism. The mechanism would operate from the offices of the EPA or the CSBD. The mechanism will contain the following elements, among others: country profile, diagnostic reports (country study on biodiversity, the stocktaking and assessment report), appropriate legislation and policies, administrative procedures, scientific and technological information, and financial information.

**FURTHER NOTE ON PROJECT DETAILS:**

The format of the project will follow those required by the GEF. The activities/components will be in accordance with the existing guidelines relating to support available for the development of national CHMs in Parties to the CBD.

**12. PROJECT: *Developing capacity for the genetic characterization of economically important species of Guyana***

**OBJECTIVE:**

- I To train two persons in the field of plant and animal molecular genetics
- II To establish a molecular genetics laboratory at the University of Guyana

**JUSTIFICATION:**

One of the requirements of the CDB is the provision of access to genetic resources (Article 15) to contracting parties. It also involves the development and implementation of scientific research on genetic resources. Currently in Guyana, there is no capability to conduct this kind of research which would inform the process of accessing genetic resources by contracting parties. This project would enable the country to develop this capacity through training and establishment of facilities to conduct genetic research.

**SCOPE:**

The project would enable the characterization of genetic resources at a national level.

**SUMMARY:**

The project would involve two aspects: the training of two persons at the MSc level in the respective fields of plant and animal molecular genetics, and the procurement and installation of equipment for the establishment of a molecular genetics laboratory at the Department of Biology, University of Guyana. These activities would occur simultaneously during the two years of Phase I, in order to enable the characterization process to commence in Phase II. The NBAP involves a cyclical process, hence the details for Phase II would have to be developed during one of the reviews of the NBAP.

## TIMING/DURATION:

The project is recommended for immediate implementation and will run for the 2 years of Phase I.

## LOCAL PARTIES:

UG, IAST

## BUDGET:

OBJECTIVE I	<u>US\$</u>
Two persons trained for 1 year each in molecular genetics lab, including undergraduate courses in biotechniques	20,000
MSc Trained person in Biotechnology	20,000
TOTAL	<u>40,000</u>
 OBJECTIVE II	
Reverse osmosis (or distilled water) system	5,000
Resin bead cartridge filtration system (secondary treatment of water, resin bead cartridge)	2,000
Table top centrifuge	5,000
-80° Freezer	20,000
Back-up power supply	5,000
-25° non-frost free standing freezer (enzymes)	3,000
Refrigerator	1,000
Horizontal gel trays (2 maxi gels, 2 power packs)	2,000
PCR (polymerase chain reaction) machine	5,000
Sequencing rigs, 2 at \$500 each	1,000
Power pack for sequencing rig	2,000
Pipettors: P1000, P200, P20 2 sets, P10	3,000
UV light box	1,000
Table top shaker, 2 at \$500 each	1,000
Water baths, 2 at \$1000 each	2,000
Autoradiograph (film) developing tanks (developer, fixer, rinse, dry)	2,000
Film cassettes, 2 at \$500 each	1,000
Hybridization oven	2,000
Autoclave (need separate one for molecular genetics lab)	5,000
Balance (+/- 0.01 gm)	3,000
Balance (+/- 1.0 gm)	2,000
pH meter	1,000
Stir plates, 2 at \$500 each	1,000
High end microcomputer, dedicated to molecular genetics lab, internet access	5,000
Glassware	5,000
Initial chemical set-up	5,000
TOTAL	90,000
	<u>11,000</u>
GRAND TOTAL	<u>141,000</u>

Other considerations:

Lab with air hood

Continuing costs:

Radioisotopes, radioisotopes disposal

Chemicals, disposable supplies (pipette tips, kimwipes, gloves, eppendorf tubes, etc.)

\$1000 per month per technician

Service contract on microcentrifuge, -80° freezer, -25° freezer, autoclave, balances

## PERFORMANCE INDICATORS:

- I Objective I - at the end of 2 years, two trained persons in the field of plant and animal molecular genetics would be in place
- II Objective II - at the end of 2 years, equipment would have been procured, installed, and there would be a functional molecular genetics lab

## MEANS OF VERIFICATION:

- I Objective I - Scholarship awards
- II Objective II - Procurement contracts; bills; infrastructure plans, building contracts, monitoring and evaluation report

## RISKS/ASSUMPTIONS:

- I Student interest
- II Availability of funding
- III Commitment of UG

**Programme Area 4: Consolidation of the Policy, Legal and Administrative Framework****13. PROJECT: *Developing a legal regime for promoting the protection, compensation for local knowledge, innovations and techniques relating to biodiversity***

## OBJECTIVES:

To upgrade national legislation to enable the protection of intellectual property on biodiversity and to promote the use of prior informed consent in the granting and obtaining of access to biodiversity and knowledge or biodiversity.

## JUSTIFICATION:

Much of Guyana's biodiversity resides in the hinterland which is the remotest region of the country and where most of the indigenous Amerindian population live. Local and indigenous communities possess a wealth of information relating to biodiversity and its use which knowledge is potentially of trade and other economic advantage to the nation and the owners of such knowledge. However, in the absence of legislation to protect such knowledge, there is a risk of its uncompensated use resulting in the loss of its economic value to the nation and local communities. Further, such knowledge is often treated as lay knowledge and therefore its value is distorted.

**SUMMARY:**

The project will review and upgrade current legislation to provide for the protection of local intellectual knowledge and the equitable sharing of benefits from the use of such knowledge.

**SCOPE:**

This intervention is national in scope.

**TIMING/DURATION:**

6 months, during Phase I

**LOCAL PARTIES:**

Environmental Protection Agency, Attorney General's Chambers, Ministry of Amerindian Affairs

<b>BUDGET:</b>	<u>US\$</u>
Consultant:	10,000
Local Travel:	3,000
Consultation:	3,000
Miscellaneous	4,000
Contingency (10%)	<u>2,000</u>
	<u>22,000</u>

**PERFORMANCE INDICATORS:**

- I. Locating and committing funds
- II. Recruiting of Consultants
- III. Number of Consultations

**MEANS OF VERIFICATION:**

- I. Consultant's report
- II. Legislation

**RISKS & ASSUMPTIONS:**

The support and agreement of developed countries, their agencies and organizations would be required.

- 14 PROJECT: Comprehensive review and updating of national legislation relating to biodiversity access and benefit sharing

**OBJECTIVES:**

To upgrade national capability to regulate access to biodiversity and benefit sharing

**JUSTIFICATION:**

Current national policy, as articulated in the national biodiversity strategy, is to promote the sharing of knowledge and benefits resulting from the use of biodiversity under equitable terms. Current legislation however, does not provide a sufficient framework to monitor and determine access to biodiversity nor for enforcing equitable sharing of benefits arising from the use of biodiversity.

**SUMMARY:**

The project will contract the services of a specialist to map out a strategy to control access and provide for benefit sharing and draft corresponding legislation to support the strategy. A high level of consultation would be required.

**SCOPE:**

The revision will affect the national legislation, but its application will have implications at the Regional and local levels

**TIMING/DURATION:**

Six (6) months during Phase I

**LOCAL PARTIES:**

EPA/NBAC, Amerindian communities, Attorney General's Chambers

**BUDGET:**

	<u>US\$</u>
Consultant:	10,000
Local travel:	3,000
Consultations:	3,000
Miscellaneous	4,000
Contingency (10%)	<u>2,000</u>
<b>TOTAL</b>	<b><u>22,000</u></b>

**PERFORMANCE INDICATORS:**

- I. Identification and commitment of funds
- II. Recruitment of Consultant
- III. Number of workshops/stakeholders participation

**MEANS OF VERIFICATION:**

- I. Consultant's report
- II. Implementation of recommendations
- III. Legislation

**RISKS & ASSUMPTIONS:**

Acceptance by the developed countries, their agencies and institutions.



15. PROJECT: *Comprehensive review and updating of national legislation on natural resources*

OBJECTIVE:

To review and update the national legislation to ensure complementarity in sustainable resource use and the incorporation of biodiversity conservation considerations.

JUSTIFICATION:

Conservation and sustainable utilization of Guyana's natural resources is at present guided by inadequately defined policies and a wide array of pieces of legislation that overlap in some cases or have noticeable deficiencies. When put together, they still do not address some issues. On the other hand, exploitation of non-living resources can impact negatively on biodiversity if not guided by clear policies and regulations to limit these impacts. These limitations must be addressed through improved and updated legislation in order to ensure better implementation, enforcement and management of biodiversity.

SUMMARY: Under the project a consulting firm will be appointed to review, rationalize and expand all legislation dealing with natural resources. It will result in the definition of an administrative regime for the various resource sectors and produce revised individual legislation in each sector with fewer ambiguities, overlaps and other weaknesses. The legislation will also reflect biodiversity considerations.

SCOPE:

National

TIMING/DURATION:

One (1) year

LOCAL PARTIES:

Sectoral agencies, EPA

BUDGET:

	<u>US\$</u>
Consulting Agency	80,000
Local Travel	10,000
Consultations	10,000
Miscellaneous	10,000
Contingency (10%)	<u>11,000</u>
	<u>121,000</u>

PERFORMANCE INDICATORS:

- I. Recruitment of Consulting Agency
- II. Stakeholders participation
- III. Legislative drafts

#### MEANS OF VERIFICATION:

- I. Consultant's report
- II. Pieces of legislation produced

#### RISKS AND ASSUMPTIONS:

Government's commitment to the process through assignment of responsibilities to Agencies.

#### 16. PROJECT: *Developing national policies on wildlife, fisheries and biodiversity*

#### OBJECTIVES:

- I. Developing a national policy statement on biodiversity
- II. Developing a national policy statement on wildlife
- III. Developing a national policy statement on fisheries

#### JUSTIFICATION:

Even though there is a national strategy, and now an action plan, for biodiversity there is no policy document on biodiversity. In order to allow for adequate definition of the strategy and plans to be developed in the future as part of the planning cycle, this gap in the cycle would have to be filled.

Wildlife and fisheries are important natural resources of Guyana. Both resources are significant in extent, economic importance. The Atlantic bordering the country's land mass to the north adds extensive marine habitat to those of freshwater ecosystems found inland. Fisheries are an important source of foreign exchange, local food protein, and employment. Wildlife, on the other hand are also a significant resource which has helped to distinguish Guyana, particularly for the high levels of export of birds, mammals and reptiles. There has been no management of wildlife in the country, and the range of economic possibilities for the resource has not been integrated into decision making. Current use of wildlife is mainly harvesting from the wild for export and the local pet and wild meat markets. The use of wildlife resources needs to be expanded as a matter of policy so that there can be maximization of benefits through the promotion of multiple use of the resource and conservation of the resource at the same time.

#### SCOPE:

The policies developed will be national in scope, and will address resources found in communally owned land, usufruct rights, and the importation of species.

#### SUMMARY:

The project will develop for the first time national policy statements in the area of wildlife and fisheries. The process of development of the policies will be participatory, and the documents will treat all relevant aspects of the two sectors and the resources which drive them. The policies will serve to promote conservation and responsible development in both sectors. In the case of wildlife, the policy will be the basis of further work in legislation and administration, while in the fisheries sector, it will complement draft new legislation and a sectoral plan.

#### TIMING/DURATION:

The project is identified for Phase I of the Plan. Each component will last for about three months.

## LOCAL PARTIES

Wildlife Unit, Fisheries Division, EPA

## BUDGET:

	<u>US\$</u>
<b>OBJECTIVE I</b>	
Consultant (3 mo.)	6,000
Two consultations	4,000
Printing and dissemination of draft	1,500
Printing of final version	2,000
Contingency (10%)	<u>1,350</u>
<b>TOTAL</b>	<b><u>14,850</u></b>
<b>OBJECTIVE II</b>	
Consultant (3 mo.)	6,000
Three consultations	4,500
Printing and dissemination of draft	1,500
Printing of final version	2,000
Contingency (10%)	<u>1,400</u>
<b>TOTAL</b>	<b><u>15,400</u></b>
<b>OBJECTIVE III</b>	
Consultant (2 mo.)	4,000
One consultation	2,500
Printing of draft	1,500
Printing of final version	2,000
Contingency (10%)	<u>1,000</u>
	<b><u>11,000</u></b>
<b>TOTAL</b>	<b><u>41,250</u></b>

## PERFORMANCE INDICATORS:

- I. Consultants hired
- II. Consultations carried out
- III. Policies adopted and documents published

## MEANS OF VERIFICATION:

- I. Contracts of Consultants
- II. Reports of consultations
- III. Draft and finalised versions of policy documents

## RISKS AND ASSUMPTIONS:

- I. Funding for the activities

II. High level of stakeholder participation in the process

17. PROJECT: *Fortifying the national quarantine and biosafety processes*

OBJECTIVE:

To regulate the introduction and use of Living Modified Organisms (LMOs)/Genetically Modified Organisms (GMOs) and alien species

JUSTIFICATION:

LMOs contain new genes which may have been transferred from an entirely unrelated species. Their release into the natural environment can result in unpredictable interactions with other components within the environment. These LMOs pose substantial potential risk to the country's biodiversity due to their unpredictable behaviour. In fact these organisms can seriously affect land races and native species

SCOPE:

The project will address the question of national legislation, and administration as it relates to plant and animal protection. Emphasis will also be placed on seeds which have been genetically modified.

TIMING/DURATION:

Immediate, during the first year of the Plan's implementation. Six months

LOCAL PARTIES:

EPA, Ministry of Agriculture (Plant Quarantine), NARI, Guysuco

BUDGET:	<u>(US\$)</u>
Consultant (2 mths)	12,000
Training exercises	4,000
Production of guidelines/regulations	6,000
Contingency (10%)	<u>2,200</u>
TOTAL	<u>24,200</u>

PERFORMANCE INDICTORS:

- I. Recruitment of Consultant
- II. Identification of personnel for training
- III. Training courses held
- IV. Guidelines produced

MEANS OF VERIFICATION:

- I. Consultant's report
- II. Personnel trained and operating at ports of entry
- III. Guidelines and regulations documented are implemented

## ASSUMPTIONS/RISKS:

- I. Availability of personnel to benefit from the training
- II. Process will lead to the implementation of the guidelines/regulations

## Recommendations arising from consideration of policy, legal and administrative framework.

1. A policy document on biodiversity should be developed in order to inform future strategy and plan development
2. A policy should be prepared in relation to all aspects of protected areas (establishment, management, revocation, private protected areas, international designations, etc). In this regard the NPAS Outline Strategy would be a significant building block
3. Some action is required to increase the staff at the AG's Chambers so that needed legislation could be produced in a shorter time span
4. There is need for enforcement agencies to identify a system or individuals to which or whom authority could be delegated for enforcement of legislation in remote or outlying areas
5. The actions of Indigenous people on ancestral lands are exempted from most regulations. The situation could result in Amerindians not deriving maximum benefit from the use of biodiversity in these lands and can also contribute to the loss of biodiversity. Such exemptions need to be reviewed.
6. It would seem more practical for the current legislation on natural resources to make provision for biodiversity rather than developing specific legislation on biodiversity. This is an issue that could be considered in the comprehensive revision of the natural resources legislation (see Programme 4).
7. Biodiversity is not among the subject areas treated in the NDS, which, being the highest level of national strategic planning, should include consideration of biodiversity.

## Programme Area 5: Public Awareness and Education

### INTRODUCTION:

Any attempt to promote an understanding of the nature of biological diversity and of the ways it is impacted by use or by human activity has to be situated in a broader environmental context. This means that the processes which govern the relationships among living organisms and between living organisms and their non-living environment have to be considered in education and awareness programmes on biodiversity.

The education process seeks to impart knowledge of the existing diversity among organisms and the causes of this diversity - the processes which have given rise to observed variations. Based on this knowledge, it becomes possible to create or to heighten awareness of the status of biodiversity in a given area, and to assess the potential threat to its survival.

In a recent series of regional workshops convened to address biodiversity issues, it was generally agreed that an education and awareness programme should be developed to promote conservation of biodiversity through its responsible use in the development process.

It was recommended that the programme target all levels of the population, with particular emphasis on children in the nursery and primary sectors of the formal education system, and including also special instruction for various categories of adults, the whole process to be supplemented by non-formal methods of instruction.

The workshops also provided insights on local concerns relating to biodiversity, pointing to potential conflicts between conservation and development, and the need, therefore, for public awareness and

education on economic aspects of biodiversity use, and the importance of conservation measures to ensure sustained livelihood.

Other recommendations included introduction or enhancement of formal instruction at university and other tertiary level institutions such as the Guyana School of Agriculture and the Cyril Potter College of Education (teacher training college); promotion of non-formal education methods which target different levels of the population, particularly policy-makers at national and local levels; and training by the EPA of local “facilitators” of public awareness programmes.

To give effect to these recommendations, a cluster of mutually supporting projects has been designed to encompass the following elements:

- survey of curricula and syllabuses of educational institutions to identify topics which can be integrated into a subject/course to be designated *Environment and Biodiversity*;
- training of teachers at appropriate levels to teach the designated course(s);
- preparation of appropriate instructional materials;
- development of non-formal methods of instruction.

#### 18. PROJECT: *Incorporating studies on environment and biodiversity into the curricula of schools*

##### OBJECTIVE:

The objective of this project is to ensure that pupils/students of all schools receive formal instruction on the nature and value of biodiversity, and on the inter-relationship between biodiversity and the environment, illustrated by the realities of their immediate environment and, so far as may be relevant or comprehensible, by other examples.

Non-formal approaches may also be pursued, where these may help to reinforce concepts covered in the formal syllabuses.

##### JUSTIFICATION:

Guyana, as part of the Amazon Basin, is richly endowed with biological diversity which, unfortunately, is under increasing threat of decimation resulting mainly from destruction of ecosystems in the commercial exploitation of natural resources. The population in general pays scant attention to the importance of biodiversity, though benefiting from its use in fundamental ways.

To correct this situation, it is considered essential to instill into the minds of children at the earliest possible age a proper regard for biological resources, so that they will grow with the conviction that biodiversity needs to be conserved through responsible use.

##### SCOPE:

This project is conceived as one that is national in scope, involving the entire formal education system.

**SUMMARY:**

A survey of curricula of schools will be undertaken to determine the extent to which biodiversity and environmental issues are addressed, and to recommend changes which would help to achieve project objectives.

Recommendations will take into account level of educational development and time-table constraints. With regard to the latter, the possibility of coalescing relevant elements of existing syllabuses into a unit course or subject area will be explored.

With the collaboration of the Ministry of Education and other appropriate agencies, pilot projects will be instituted to ensure viability of the proposed course/subject offerings.

**TIMING/ DURATION:**

It is intended that this project will be introduced from the inception of the Programme and will cover a period of 2 years

**LOCAL PARTIES:**

Ministry of Education (MoE); National Centre for Education Resource Development (NCERD); EIT of EPA; Cyril Potter College of Education (CPCE)

**BUDGET: (2 years)**

	<u>US\$</u>
Workshops	24,000
Honoraria for Instructors	15,000
Salary of Coordinator*	24,000
Local Travel for Coordinator*	1,500
Materials	1,000
Contingency (10%)	<u>6,550</u>
<b>TOTAL</b>	<u><b>72,050</b></u>

**PERFORMANCE INDICATORS:**

- I. Constitution of Task Force drawn from Local Parties
- II. Progress Reports on development of curricula and syllabuses.

**MEANS OF VERIFICATION:**

Task Force constituted; periodic reports of Task Force submitted; progress reports on curriculum and syllabus reforms.

**RISKS AND ASSUMPTIONS:**

- I. It is assumed that the local parties will be supportive. It is further assumed that funding will be available in a timely manner and that training of project staff will be satisfactorily undertaken
- II. There is a risk that in the absence of incentives such as examination credits, the project may not elicit sustained interest of pupils/students or teachers

\* The Coordinator will be expected to service the four (4) projects in this programme area

#### 19. PROJECT: *Training of teachers to teach courses on environment and biodiversity*

##### OBJECTIVE:

To train teachers to teach the course(s) on environment and biodiversity adumbrated in Project No. 1 above.

##### JUSTIFICATION:

Implementation of the proposed project: *To incorporate studies on biodiversity and environment in the curricula of schools* (Project No. 1 above), will require teachers with specialised training in the relevant subject areas.

It is envisaged that such training will be dovetailed with the preparation of syllabuses, so that the latter can be tested and refined in the classroom, while ensuring that a complement of trained teachers will be available to take the process forward.

##### SCOPE:

This project will be based at the Cyril Potter College of Education (CPCE) and involve a number of selected pilot schools.

##### SUMMARY:

Syllabuses of the CPCE will be examined to identify courses which may be upgraded or modified to provide the training requirements for implementation of Project No. 1 described above.. Teaching modules prepared jointly by the EPA, NCERD, CI and CPCE will be used as a framework for instruction of teacher trainees to prepare them to teach the courses developed earlier under Project No. 1 in the schools to which the teachers are assigned after completion of their training.

##### TIMING/ DURATION:

Implementation of this project will be contingent on the preparation and adoption of syllabuses, a process which is estimated to take 1 year. The project should therefore start in the second year of the NBAP. It is expected to last a duration of 18 months

##### LOCAL PARTIES:

Environmental Protection Agency (EPA), National Centre for Education Resource Development (NCERD), Cyril Potter College of Education (CPCE), Conservation International (CI), Ministry of Education (MoE).

##### BUDGET: (18 months)

	<u>US\$</u>
Training Workshops (4 x 3-days)	18,000
Honoraria for Instructors	15,000
Salary of Coordinator*	18,000
Travelling etc. for Coordinator*	1,500
Materials	1,000



Contingency (10%)	<u>5,350</u>
TOTAL	<u>58,850</u>

PERFORMANCE INDICATORS:

Syllabus for training of teachers on issues of the environment and biodiversity implemented by CPCE.

MEANS OF VERIFICATION:

Progress Reports on performance of teacher trainees submitted in a timely manner;  
Adjustments to syllabus based on Progress Reports.

RISKS AND ASSUMPTIONS:

The underlying assumption here is that funding has been secured.  
It is also expected that the CPCE programme can accommodate this project.

\* The Coordinator will be expected to service the four (4) projects in this programme area

20. PROJECT: *Preparation of instructional material for biodiversity education and awareness programmes*

OBJECTIVE:

To ensure that relevant material is available for guidance of students, instructors, drafters of curricula and syllabuses, as well as producers of audio-visual and non-formal education aids, based on on-going monitoring and evaluation.

JUSTIFICATION:

Rapid changes in the status of biodiversity conservation and use require that education and awareness programmes be not only responsive to these changes, but also contribute to elaboration of policies to arrest negative trends.

SCOPE:

National - to inform all programmes

SUMMARY:

Under the direction of the EPA, a multi-disciplinary team of experts will be retained to prepare appropriate programme inputs. The team will maintain active communication links with EPA and other data sources, as well as with the various levels of programme implementing personnel.

TIMING/ DURATION:

This project should start at the beginning of the programme (Year 1), so that material would be available to service the other projects. It is conceived as on-going, covering the entire duration of the Action Plan, i.e., 5 years in this instance.

#### LOCAL PARTIES:

Environmental Protection Agency (EPA); National Centre for Education Resource Development (NCERD); Cyril Potter Collage of Education (CPCE); Regional and Local Government administrations; Conservation International (CI).

#### BUDGET: (5 years)

	<u>US\$</u>
Salaries of Teachers & Teacher Trainer	175,000
Salary of Science Writer	20,000
Salary of Illustrator	20,000
Salary of Resource Person	20,000
Salary of Coordinator*	60,000
Travelling & subsistence (Coordinator & Trainers)	10,000
Materials	7,500
Contingency (10%)	<u>31,250</u>
TOTAL	<u>343,750</u>

#### PERFORMANCE INDICATORS:

- I. Early constitution of multi-disciplinary team
- II. Compilation of relevant biodiversity data by EPA.
- III. Production of instruction materials.

#### MEANS OF VERIFICATION:

Multi-disciplinary team constituted.

Mechanism established by EPA for garnering of information on biodiversity.

Timely production of materials required to implement projects in programme.

#### RISKS AND ASSUMPTIONS:

There are some areas of uncertainty associated with (I) assembling the multi-disciplinary team early in the project, (II) activating a mechanism for collating biodiversity information appropriate for the execution of the project, (III) securing funding for the programme. It is assumed also that the other projects identified in this programme area will be executed as planned.

\* The Coordinator is expected to service the four (4) projects in this programme area

#### 21. PROJECT: *Developing non-formal methods of promoting biodiversity education and awareness*

##### OBJECTIVE:

To provide a vehicle for the rapid and effective dissemination of information on the role of biodiversity in maintaining the natural world and on ways of conserving biodiversity at all levels (*genes, species and ecosystems*).

The project is intended to complement formal programmes of instruction on the same theme, so that the general population may become aware of biodiversity-related issues and thereby contribute to conservation and responsible use of biodiversity.

#### JUSTIFICATION:

While the major thrust of this programme is formal education in schools and other institutions, it is recognised that the majority of adults will not have access to such instruction although they are engaged in the use of biodiversity in their daily lives. Moreover, development policies which impact biodiversity are made by adults who are largely unaware of these impacts.

To curb further destruction of biological resources, it was recommended by the recent regional workshops that non-formal methods also be used to heighten awareness among the adult population, as well as to reinforce formal approaches.

#### SCOPE:

National

#### SUMMARY:

Sectoral agencies will be assisted to host workshops and seminars for occupational groups within the respective sectors. The same process will be promoted at regional and local levels, to include administrative and other interest groups.

Information will be disseminated through flyers, pamphlets and brochures; and appropriate contributions will be solicited from the electronic and print media. Local communities will be encouraged to participate by preparing resource inventories and other data on their neighborhoods.

A recommendation which will be pursued is to urge the EPA to train local “facilitators” of biodiversity awareness and to supply audio-visual materials.

#### TIMING/DURATION:

The project is recommended for immediate implementation and will continue for the duration of the Plan.

#### LOCAL PARTIES:

Environmental Protection Agency (EPA); Regional and Local Government Administrations; Sectoral Agencies (especially natural resources); Conservation International.

#### BUDGET: (5 years)

	<u>US\$</u>
Regional Project activities	20,000
Coordinator's salary*	60,000
Travelling & subsistence	15,000
Materials	25,000
Contingency (10%)	<u>12,000</u>
TOTAL	<u>132,000</u>

**PERFORMANCE INDICATORS:**

- I. Reports on workshops and seminars conducted by sectoral agencies, regional and local administrations
- II. Preparation and distribution of flyers, brochures, posters and other public education campaign materials; use of electronic and print media in propagation of information to public
- III. Efforts of EPA to train local “facilitators” and produce visual aids to promote awareness at the level of communities; and involvement of community members in preparation of local biological resource inventories.

**MEANS OF VERIFICATION:**

- I. Workshops and seminars conducted
- II. Information literature prepared and distributed, and media participation secured
- III. Community involvement stimulated by “facilitators” trained by EPA.

**RISKS AND ASSUMPTIONS:**

- I. Failure to secure collaboration of sectoral agencies, and regional and local administrations
- II. Inability of media to accommodate planned awareness programmes
- III. Obstacles to training of community agents by EPA, or in participation of local communities
- IV. Adequate funding should be available.

\*The Coordinator is expected to service the four (4) projects in this programme area

**Programme Area 6: *In Situ and Ex situ Conservation of Biodiversity*****22. PROJECT: *Developing a national system of protected areas*****OBJECTIVE:**

To establish a national protected areas system in Guyana

**JUSTIFICATION:**

A project for the establishment of a representative system of protected areas that would contribute to ecosystem and biodiversity conservation, watershed protection and the maintenance of the country’s cultural heritage, among other reasons, will significantly contribute to development and conservation in Guyana. Such a project was developed with a donor agency, but has encountered problems of an external nature which threaten to delay or jeopardise its implementation.

**Recommendation:**

This project will be activated should the present initiative not yield a positive outcome. In such an event, and under the Plan, the existing project design will be adopted after prior review and updating.

**23. PROJECT: *Coordination and expansion of ex situ activities***

## OBJECTIVES:

- I. To document all *ex situ* conservation activities currently being pursued
- II. To develop a national network involving agencies engaged in *ex situ* conservation

## JUSTIFICATION:

*Ex situ* conservation activities are being pursued by the National Parks Commission (Botanical Garden), National Agricultural Research Institute (NARI), Guyana Rice Development Board (GRDB) and the Guyana Sugar Corporation (Guysuco). Each agency operates in isolation of the others; coordination will allow for better utilization of scarce resources and the standardization of systems wherever this is possible. Coordination and establishment of an *ex situ* network will help in the evolution of policy regarding this sort of conservation.

## SCOPE:

The project will entail documentation of all *ex situ* conservation activities and developing a programme for the expansion of *ex situ* conservation activities.

## SUMMARY:

The project will seek to coalesce all existing information on *ex situ* conservation in Guyana. All agencies engaged in this activity will participate in a network, and one agency identified to play the lead role in this exercise. A national coordinator will also be selected and a programme for the further expansion of this conservation effort developed.

## TIMING/ DURATION:

This activity will commence during the second year of the implementation of the Plan and will last for four months

## LOCAL PARTIES:

National Agricultural Research Institute, Guyana Sugar Corporation, Guyana Rice Development Board, National Parks Commission.

BUDGET:	<u>(US\$)</u>
Production of report	1,000
Developing Programme	2,000
MSc Position	20,000
Contingency (10%)	<u>300</u>
TOTAL	<u>23,300</u>

## PERFORMANCE INDICATORS:

- I. Representatives of agencies identified
- II. Production of status report on *ex situ* collection in Guyana
- III. Formation of *ex situ* conservation network involving all local parties
- IV. Programme for the increased activity in *ex situ* conservation activities

## MEANS OF VERIFICATION:

- I. Report of *ex situ* conservation
- II. Network established
- III. Coordinating agency and network coordinator functioning

**Programme Area 7: Incentive measures**

24. PROJECT: *Review of incentives and disincentives for conservation and sustainable use of biodiversity and the identification of sustainable economic alternatives to activities that threaten biodiversity*

## OBJECTIVE:

To put in place incentive measures that would be economically and socially beneficial and contribute to the conservation of biodiversity.

## JUSTIFICATION:

Guyana's biodiversity is most abundant in the remote areas of the country where one's existence could be harsh and of necessity based on the use of biodiversity. Alternative opportunities to the use of biodiversity should be offered.

## SUMMARY:

This intervention will lead to the listing and analysis of the effect of the array of incentives and disincentives that exist in relation to the sustainable use of biodiversity, to determine their appropriateness and to make amendments or recommend new ones.

## SCOPE:

Incentive measures to be reviewed and considered under the project will be national in scope.

## TIMING/DURATION:

This intervention will be undertaken during the first Phase of the Plan. It is envisaged to occur over the last six (6) months.

## LOCAL PARTIES:

EPA, Ministry of Finance, GFC, Fisheries Department, Wildlife Unit, Geology and Mines Commission

## BUDGET:

	<u>US\$</u>
Hiring of Consultant	\$5,000
Consultation (1)	2,000
Rapporteur	200
Contingency (10%)	<u>720</u>
TOTAL	<u>7,920</u>

**PERFORMANCE INDICATORS:**

- I. Locating and committing resources
- II. Recruitment of Consultant
- III. Participation of stakeholders

**MEANS OF VERIFICATION:**

- I. Consultant's report
- II. List of incentives/disincentives

**RISKS AND ASSUMPTIONS:**

Government's commitment to implementation of recommendations.

**Programme Area 8: Measures for the sustainable use of biodiversity****25. PROJECT: *Criteria and indicators for sustainability of biological resources*****OBJECTIVES:**

To establish criteria and indicators for sustainability of biological resources in Guyana

**JUSTIFICATION:**

The Convention on Biological Diversity deals with sustainable use of biodiversity in Article 10, and among other issues that this article deals with, it mentions the integration of conservation and sustainable use of biological resources into national decision-making. In the country, various biological resources are being utilised but there are no criteria and indicators controlling their use, or to assist the decision-making process. This project is intended to fill this gap.

**SCOPE:**

Criteria and indicators will apply nationally.

**SUMMARY:**

The project will aim to establish criteria and indicators for the conservation and sustainable use of biological resources of the country. As mentioned above these elements are non-existent at the moment, which can lead to over-harvesting and degradation of the resources. These elements would have to be developed sectorially, e.g. forestry, fisheries, wildlife, etc. and be integrated in the economic and societal aspects of the ecosystem approach adopted by the NBAP.

**TIMING/DURATION:**

Due to the importance of criteria and indicators for planning, management and monitoring, this activity will occur as early as in Phase I. The project will be spread over a period of 2 years.

## LOCAL PARTIES:

- I EPA and NBAC
- II Sectoral institutions
- III Research institutions
- IV Decision-makers
- V Resource users
- VI Economists

## BUDGET:

	<u>US\$</u>
Six workshops	6,000
Coordinators (2)	4,800
Rapporteurs (2)	2,400
Contingency (10%)	<u>1,320</u>
TOTAL	<u>14,520</u>

## PERFORMANCE INDICATORS:

During Phase I, a number of workshops and consultations would be held

## MEANS OF VERIFICATION:

- I Workshop and consultation reports
- II Final report
- III Monitoring and evaluation reports

## RISKS/ASSUMPTIONS:

- I Stakeholders participation
- II Availability of funds

**Programme Area 9: Monitoring, Evaluation and Reporting of the implementation of Programme Areas 1 to 8 above**

26. PROJECT: *Monitoring, Evaluation and Reporting of the implementation of Programme Areas*

## OBJECTIVES:

- I. To identify and commission an external independent evaluator(s) to evaluate the implementation of Phase I of the Plan

## JUSTIFICATION

The effective evaluation of the Plan will require the involvement of an external independent evaluator(s). This person/team will bring an objective and fresh perspective to the cyclical and adaptive biodiversity planning process.



## SCOPE

The projects and processes being evaluated will be community based, regional and national.

## SUMMARY

The EPA board will identify the external evaluator(s). The major activities of the evaluator(s) will be to:

- Develop guidelines, indicators and methodologies for evaluating the implementation of the Plan, taking into consideration:
  - The goals and objectives of the Plan
  - The targets set out in the Plan
  - The objectives and activities and timetables specified under each project
  - Conduct an external review of analysis of monitoring data prepared in the monitoring activities
  - Apply the indicators for monitoring and evaluation
  - Prepare and submit evaluation report(s) to the Board of Directors of the EPA
  - Recommend how to use the findings to inform approaches to Phase II implementation and future planning.

## TIMING/DURATION

Evaluation will take place towards the end of the first two years

## LOCAL PARTIES

The EPA, EPA Board, NBAC and all of the stakeholders in the Plan.

## BUDGET:

	<u>US\$</u>
Consultant (evaluator)	12,000
Air Travel	800
Per diem	2,250
Local travel	500
Communication	500
Miscellaneous	500
Contingency (10%)	<u>1,655</u>
TOTAL	<u>18,205</u>

## PERFORMANCE INDICATORS

Recruitment and orientation of consultant

## MEANS OF VERIFICATION

Guidelines, indicators and methodologies for evaluating implementation  
Evaluation reports

## RISK/ASSUMPTIONS

Appropriate evaluator(s) can be identified and commissioned

Cooperation and participation by all of the stakeholders

**27. ACTIVITY: *Advance recommendations on modifications/improvements to the CBD through CoPs and SBSTTA*** (see Reporting in Chapter 8)

During the implementation of the Plan, the various groups involved in project and activity implementation (e.g. the EPA, NBAC, Regional authorities, government departments, non-governmental organizations) will develop evolving perspectives on issues relating to the CBD. These perspectives will be gathered and compiled and related back to the COP and SBSTTA, so as to improve international understanding and knowledge.

***PHASE II: Consolidation of Phase I and Initiation of Additional Interventions (Years 3-5 of the Plan)***

As mentioned earlier, refinement of Phase II activities will occur during Phase I. This Phase will be comprised of the following Programme Areas and activities:

**Programme Area 1: Mobilization of Financial and Technical Resources**

Actions in this programme area will involve the identification and accessing of new sources and the continuation of existing support

**Programme Area 2: Human Resources and Institutional Capacity Building**

**28. PROJECT: *Strengthening of agencies and groupings involved in biodiversity management***

**OBJECTIVES**

- I. To strengthen the capabilities of related agencies to plan and implement their sectoral biodiversity priorities identified in their own sectoral plans
- II. To strengthen the capabilities of related agencies to assist in the implementation of projects identified in the Action Plan
- III. To create strategic alliances between the EPA and this grouping of Partners
- IV. To facilitate the two-way sharing of knowledge, expertise and experience between the EPA and this grouping of Partners

**JUSTIFICATION**

A wide diversity of groups have responsibilities and interests in different aspects of biodiversity planning and management. Hence it is essential that all of these groups are mobilized and work together in a coherent and structured manner.

**SCOPE:**

National

## SUMMARY:

The EPA executes its mandate through inter-sectoral and participatory mechanisms, which include broad-based committees, boards, the development of memoranda of understanding, the delegation of functions and the granting of authority. During Phase II a number of relevant institutions, will receive support for strengthening their capacity to integrate biodiversity considerations into their planning efforts and to support the EPA in monitoring biodiversity components in their respective sectors or at their respective levels of jurisdiction.

## ACTIVITIES

Specific activities under the project are to:

- I. Use lessons learned from strengthening of the NBAC to refine action in this area
- II. Use relationships and linkages established during the strengthening of the NBAC and liaison with the NREAC to underpin work here
- III. Convene roundtables on the Action Plan (for the purposes of two-way education, orientation, implementation, sharing of knowledge) with selected sectors and agencies such as the:
  - Private sector
  - Forestry sector
  - Others
- IV. Convene short fund-raising and project planning workshops for related agencies
- V. Develop MOUs, additional committees or Task Forces where necessary.

## TIMING/DURATION

During Year 3

BUDGET:	<u>US\$</u>
Biodiversity Project Coordinator	Covered in another project (EIT)
Workshops	10,000
Miscellaneous	1,000
Contingency (10%)	<u>1,100</u>
TOTAL	<u>12,000</u>

## PERFORMANCE INDICATORS

By the end of Phase I, the completion of one:

- Roundtable
- Workshop

Several MoU's and Task Forces operational

## MEANS OF VERIFICATION

Progress report on each of the following:

- Roundtable
- Workshop
- MOU/Task Force implementation

## RISKS AND ASSUMPTIONS

- I. Interest within other institutions
- II. EPA and NBAC capacity

### 29. PROJECT: *Strengthening capacity of other institutions to undertake biodiversity projects*

#### OBJECTIVES:

- I. To strengthen the capabilities of other institutions (especially communities and groupings of Indigenous Peoples) to plan and implement their biodiversity priorities identified in their own plans
- II. To strengthen their capabilities to assist in the implementation of projects identified in the Action Plan
- III. To create strategic alliances between the EPA and this grouping of Partners
- IV. To facilitate the two-way sharing of knowledge, expertise and experience between the EPA and this grouping of Partners.

#### JUSTIFICATION:

Sound biodiversity planning and management requires the full commitment and participation of a wide diversity of groups. Implementation at the community level will be critical to the success of the Plan. Historically, communities groupings (especially Indigenous Peoples) have been responsible for managing natural resources. Hence they have much experience to share with government planners and government planners have much to share with them.

#### SCOPE:

Community

#### SUMMARY:

During Phase II a number of other institutions (especially community groups and groupings of Indigenous Peoples), will receive support for strengthening their capacity to integrate biodiversity considerations into their planning efforts and to support the EPA in monitoring biodiversity components at their respective levels of jurisdiction. This will occur in Phase II and in the second planning cycle.

#### ACTIVITIES:

Specific activities are to:

- I. Use lessons learned from working with other groups to refine action in this area
- II. Use relationships and linkages established during the strengthening of other groups to underpin work here
- III. Convene roundtables on the Action Plan (for the purposes of education, orientation, implementation and sharing of knowledge) with:

- Institutions not included earlier

- Community groupings
- Groupings of Indigenous Peoples

IV. Convene short fund-raising and project planning workshops for these groups

V. Develop demonstration projects

#### TIMING/DURATION:

During year 3

#### BUDGET:

	<u>US\$</u>
Biodiversity Project Coordinator	Covered in another project
Demonstration project leader	5,000
Workshops	10,000
Demonstration project	5,000
Miscellaneous	1,000
Contingency (10%)	<u>2,100</u>
TOTAL	<u>23,100</u>

#### PERFORMANCE INDICATORS

By the end of Phase I, the completion of one:

- Roundtable
- Workshop
- Demonstration project

#### MEANS OF VERIFICATION

Progress report on each of the following:

- Roundtable
- Workshop
- Demonstration project

#### RISKS AND ASSUMPTIONS

- I. Interest at the level of the targeted groups
- II. EPA and NBAC capacity

### 30. PROJECT: *Support for the establishment of a national centre for biological collections*

#### OBJECTIVES:

- I. To extend the physical facilities of the existing building of the CSBD
- II. To coordinate the main body and branches of the National Collection Centre
- III. To strengthen the human resources capacity of the Centre

**SCOPE:**

The project will involve all existing collection institutions.

**SUMMARY:**

This project will seek to integrate all biological collecting agencies into one network. It will provide support for the development of the main body for this network by expanding the physical facilities of the existing CSBD. It will also strengthen the human resources capacity to manage the collections.

**TIMING AND DURATION:**

This action will commence during the second Phase of the implementation of the Plan and will involve two years of infrastructural development and one year of support for the staff.

**LOCAL PARTIES:**

UG, NARI, GFC

**BUDGET:**

	<u>(US\$)</u>
<b>HUMAN RESOURCES*</b>	
Manager	600
Keeper/Botanical Collections	500
Keeper/Zoological Collections	500
Herbarium Technician	300
Zoological Collection Technician	300
GIS Specialist in Biodiversity	500
Secretary	250
Driver	200
Librarian	200
Artist	200
<b>TOTAL ANNUAL COST</b>	<b>42, 600</b>

**INFRASTRUCTURE:**

Two storey Concrete building (40' x 100')	
@ \$30 per square ft	120, 000
Equipment and Furniture	40, 000
Contingency (10%)	<u>20, 260</u>
<b>GRAND TOTAL</b>	<b><u>222, 860</u></b>

\* recurring cost

**PERFORMANCE INDICATORS:**

- I. Recruitment of staff
- II. Development of infrastructure
- III. Establishment of network

#### MEANS OF VERIFICATION:

- I. Progress reports
- II. Institutional structure and staffing

#### RISKS AND ASSUMPTIONS:

- I. Availability of financial support
- II. Continuation of funding after first three years

### **Programme Area 3: Research and Information on Biological Diversity**

Continuation of genetic characterization of economically important species of Guyana and initiation of any other actions

#### 31. PROJECT: *Pilot Study on Economic valuation of biodiversity*

#### OBJECTIVES

- I. To determine the economic value of an ecosystem in Guyana by method of total economic valuation
- II. To use the study as a pilot/demonstration project for further biodiversity valuation exercises in Guyana
- III. To provide training and develop experience in Guyanese specialists in relevant disciplines for conducting similar studies in the future

#### JUSTIFICATION

Decisions about resource use have traditionally been made in Guyana without full knowledge and information on the range of values and options relating to these resources and the ecosystems of which they are a part. Methodologies for the valuation of biodiversity and other natural resources which go beyond the traditional (and easily computable) valuation based on direct (or market) use have been proposed and studied. On the basis of this it is now possible to apply methods for the valuation of biodiversity, including ecosystems.

In order to demonstrate the economic value of biodiversity and to realise that value, it is first necessary to measure the value of that biodiversity. This information is necessary for informing decision-making and planning processes so that all the values of biodiversity are taken into consideration in these processes.

#### SCOPE

The project will apply to the chosen ecosystem and all similar units. If successful, however, its relevance and application are expected to become national in scope.

#### SUMMARY

The project will select one ecosystem of national priority. It will involve studies by a multidisciplinary team to determine the total economic value of the ecosystem and its resources. The team will include an international specialist in natural resources economics and at least one local counterpart in the same field.

The project will serve as a pilot activity for the study of biodiversity in Guyana and is expected to open the way for further valuation studies in the country.

#### TIMING/DURATION

Data collection and inventory for the project will be conducted over a period of one year. The total duration of the project will be up to two years.

#### LOCAL PARTIES

UG, GNRA

BUDGET	<u>\$US</u>
Valuation Team	60,000
Resource inventory	20,000
Interviews, literature research, etc.	15,000
Analysis and reporting	10,000
Contingency (10%)	<u>10,500</u>
TOTAL	<u>115,500</u>

#### PERFORMANCE INDICATORS

- I. Pilot Site and Terms of Reference defined
- II. Multidisciplinary team selected
- III. Components, functions and attributes of the ecosystem identified
- IV. Data collected from inventory, interviews and literature research
- V. Data analysed and values quantified

#### MEANS OF VERIFICATION

- I. Contract for Study
- II. Quarterly Reports of the Team
- III. Inventory and Assessment Report
- IV. Final Report of the Study

#### RISKS/ASSUMPTIONS

- I. There are adequate and appropriate sources of valuation data
- II. Interested and qualified local counterpart and team members are available

### 32. PROJECT: *Revision of the Country Study on Biological Diversity*

#### SUMMARY

This study will be undertaken in accordance with the UNEP Guidelines for Country Studies on Biological Diversity. The methodology, activities, duration, and format will be in accordance with the prescribed guidelines, which will also influence the budget. These activities will lead, however, to the updating and upgrading of the country study, including in the final output the relevant findings on the national status of biodiversity and its conservation.



This project holds an important position in the planning process and will inform the second cycle to a large extent. The project would be funded either by UNEP, GEF, or the Government of Guyana.

#### **Programme Area 4: Consolidation of the Legal Framework**

Conclusion of programme activities of Phase One in this area

#### **Programme Area 5: Public Awareness and Education**

Continuation of public awareness initiatives

#### **Programme Area 6: *In situ* and *ex situ* Conservation of Biodiversity**

Continuation of initiative in establishing national system of protected areas

#### **Programme Area 7: Monitoring, Evaluation and Reporting of the implementation of Programme Areas 1 to 6 above**

### **33. PROJECT: *Evaluation of implementation of the initial cycle of the National Biodiversity Action Plan***

#### **OBJECTIVES:**

- I. To identify and commission an external independent evaluator(s) to evaluate the implementation of the first cycle of the Plan

#### **JUSTIFICATION**

The effective evaluation of the Plan will require the involvement of an external independent evaluator(s). This person/team will bring an objective and fresh perspective to the cyclical and adaptive biodiversity planning process.

#### **SCOPE**

The evaluation will cover the entire first cycle of the Plan.

#### **SUMMARY**

The EPA board will identify the external evaluator(s). The major activities of the evaluator(s) will be to:

- Develop guidelines, indicators and methodologies for evaluating the implementation of the Plan, taking into consideration:
  - The goals and objectives of the Plan
  - The targets set out in the Plan
  - The objectives and activities and timetables specified under each project
  - Conduct an external review of analysis of monitoring data prepared in the monitoring activities
  - Apply the indicators for monitoring and evaluation
  - Prepare and submit evaluation report(s) to the Board of Directors of the EPA
  - Recommend how to use the findings to inform approaches to the second cycle implementation and future planning.

**TIMING/DURATION**

Evaluation will take place towards the end of the five years

**LOCAL PARTIES**

The EPA, EPA Board, NBAC and all of the stakeholders in the Plan.

**BUDGET:**

	<u>US\$</u>
Consultant (evaluator)	12,000
Air Travel	800
Per diem	2,250
Local travel	500
Communication	500
Miscellaneous	500
Contingency (10%)	<u>1,655</u>
<b>TOTAL</b>	<b><u>18,200</u></b>

**PERFORMANCE INDICATORS**

Recruitment and orientation of consultant

**MEANS OF VERIFICATION**

- I. Guidelines, indicators and methodologies for evaluating implementation
- II. Evaluation reports

**RISK/ASSUMPTIONS**

- I. Appropriate evaluator(s) can be identified and commissioned
- II. Cooperation and participation by all of the stakeholders

**Programme Area 8: Planning Biodiversity Action Plan Cycle 2**

Initiation of planning for second cycle of national planning. This activity will be in-house, in the sense that it will be conducted by the EPA, in consultation with national stakeholders. From that time onwards, it will be a part of the plan of work of the Biodiversity Division/Unit of the Agency.

**TOTAL BUDGET FOR PLAN:**

PHASE I	2,579,335.
PHASE II	391,660.
<b>TOTAL BUDGET (US\$)</b>	<b><u>2,970,995.</u></b>

## **CHAPTER 7 IMPLEMENTING THE PLAN**

### **7.1 INSTITUTIONAL REQUIREMENTS FOR IMPLEMENTING THE PLAN**

#### **7.1.1 Strengthening and consolidation of Biodiversity capacity within EPA**

Implementation of the Plan is as important as the planning phase and is one of the most important determinants of the fruitfulness of the planning effort. The EPA, as the institution responsible for the coordination and implementation of the Plan will require greater capacity in order to mobilise resources, coordinate activities, facilitate integration and monitor progress. This requirement will be met by projects and activities in Programme Area 2: Human Resources and Institutional Capacity. In these activities, both the EPA and the NBAC will benefit from strengthening support. In Phase I the EPA will establish a Biodiversity Unit. Appendix 7 gives the suggested organizational structure for the Unit. By the end of Phase II, it is envisaged that this Unit will develop into a larger Biodiversity Division to accommodate the range of activities anticipated as a part of the implementation phase and address the needs for technical and other support in the national, sectoral and regional integration of biodiversity planning. The Division will also address new developments in the area of biodiversity.

#### **7.1.2 Strengthening of agencies and groupings involved in biodiversity management**

During Phase I a number of relevant institutions, including at the regional level, will receive support for strengthening their capacity to integrate biodiversity considerations into their planning efforts. This support will also assist the EPA in monitoring biodiversity components in the respective sectors and at the respective regional levels.

#### **7.1.2 Training in negotiation and business management**

During the implementation phase of the Plan attention will be focused on the following:

1. Developing an active strategy of negotiation at the diplomatic and marketing fronts brought about by short-term training of resource managers in international negotiating and business skills.
2. Deep rationalization of the natural sciences and resource management programmes at the university, such as the promotion of a programme in natural products chemistry jointly with other partners and the offering of business as a minor/combination with natural resources programmes, including chemistry.

### **7.2 MOBILIZATION OF FINANCIAL AND TECHNICAL ASSISTANCE**

A priority step in the support strategy is the creation and filling of a specialist position of Biodiversity Fund Raising Specialist at the EPA (see Project Profile 1 of Programme Area I on Mobilization of Financial and Technical Resources previously). The responsibilities of this post are to identify sources of financing, “market” the Plan, liaise with donors, and coordinate funding and other support for projects. This will possibly be a long term position.

The Fund Raising Specialist will develop and manage the projects listed in Phase I, Programme Area 1 on Mobilization of Financial and Technical Resources. The Fund Raising Specialist will develop comprehensive strategies for accessing resources from a diversity of target organizations and activities as indicated in the Programme Area 1 project profiles. Outlines of key areas are summarized below.

### 7.2.1 Incorporating the Donor Community

Work will include the:

- 1) Review of funding opportunities by the Fund Raising Specialist. This will include identification of donor agencies to be targeted. Potential donors are listed in Appendix 4.
- 2) Convening of a donors' meeting to match donor interests with project priorities.
- 3) Convening meetings with individual donors.
- 4) Preparation of project proposals.
- 5) Accessing and administering project funds.

### 7.2.2 Involving National Sources

Major activities include the:

- 1) Review of opportunities by the Fund Raising Specialist
- 2) Areas to be examined include:

Community Inputs	: in-kind contributions (knowledge, information, labour)
Private Sector	: funds and in-kind contributions
Non-governmental	: funds and in-kind contributions
Governmental	: increased government budget

- 3) Accessing and administering funds

### 7.2.3 From the Sustainable Use of Biodiversity

- 1) Review of opportunities by the Fund Raising Specialist. Work here will focus on returning profits from the use of biodiversity to the management of biodiversity. Approaches and activities for priority action can be selected from the following list:
- 2) Areas to be examined include:
  - Charges for ecological services
  - Special taxes
  - Bioprospecting fees
  - Fees from academic research
  - Restructuring existing wildlife use, e.g. developing new markets for wildlife products based on non-destructive use (use of extractives, bird watching, trophy spotting), alternatives to wild harvest (e.g. farming of species in demand)
  - *In situ* conservation e.g. significant dedication of user fees in protected areas to *in situ* conservation
  - *Ex situ* conservation e.g. Entry fees at zoos, commerce in genetic material, participation in proceeds from patenting of inventions
  - Eco-tourism
  - Penalties e.g. polluter pays penalties, performance bonds, non-compliance fees
  - Debt for Nature Swaps
  - Carbon sequestration
  - Service fees, e.g. full cost pricing of water services

- 3) Accessing and administering funds.

#### **7.2.4 Technical Resources From Regional and International Sources**

Action includes the:

- 1) Review of technical assistance opportunities by the EPA Fund Raising Specialist. This will include identification of technical assistance agencies to be targeted. In addition to some of the agencies listed under funding opportunities in Appendix 4, potential sources of technical assistance are given in Appendix 5
- 2) Accessing and using technical resources.

### **7.3 ENSURING LONG TERM FINANCING AND SUSTAINABILITY**

The ability to mobilize financial and technical resources on a sustainable basis will be critical to the successful implementation of the Guyana Action Plan and the longer term objective of realising and maintaining responsible management of biodiversity. This section highlights some of the key philosophies and approaches which will be used to ensure the long term financing and sustainability of Guyana's Biodiversity Action Plan.

#### **THE CORE PRINCIPLES**

These are:

- 1) For diverse reasons, Guyana has a number of unique "selling points." In addition, the international climate created as a result of the CBD and other key international agreements, generates opportunities for Guyana.
- 2) Those who benefit from biodiversity deserve to have the opportunity to protect their future by investing in its management
- 3) Diversity is strength i.e. the funding base must come from diverse sources

#### **THE CORE PROPOSALS**

These are the:

- 1) Hiring of the Fund Raising Specialist at the EPA
- 2) The convening of donors meetings with financial and technical assistance agencies
- 3) Capitalizing on opportunities presented by agencies and processes aimed at "enabling" Plan implementation
- 4) Strengthening capacity of biodiversity agencies to raise their own funds. Conditions will be created whereby the local community and the private and NGO sector can manage certain resources and can seek funding on their own.
- 5) Creating a Biodiversity Trust Fund into which monies derived from the sustainable use of biodiversity (as well as other funds) will be invested.

Hence, a number of Innovative Funding Mechanisms backed by compatible national policies will be developed. It is proposed that efforts will be placed at the:

1. Community level to provide economic incentives for conservation.
2. Regional and sectoral levels to provide support for action at local levels and the allow for national policy to be implemented regionally and in the areas of the appropriate sectors.
3. National level to ensure that government policies are compatible with such incentives.
4. International level to ensure that wealthy nations benefiting from the biodiversity and its conservation have the opportunity to invest its sound management.

Opportunities also created by the evolving international environment catalyzed by the CBD and other agreements will be maximized. For example, the following “windows” will be used:

### **The CBD**

- Article 20: Financial Resources - Developed countries shall provide new and additional financial resources to enable developing countries to implement measures
- Article 20 para. 6 - Consideration will be given to the special situation of developing countries, including those that are most environmentally vulnerable, such as those with coastal areas
- Article 21 : Financial Mechanism - Establishes a mechanism for the provision of financial resources to developing countries, which is the GEF. It also calls on Parties to strengthen existing financial institutions in support of the objectives of the CBD
- Article 8: *In situ* conservation - Calls for cooperation in providing financial and other support for *in situ* conservation
- Article 9: *Ex situ* Conservation - Has similar requirements for *ex situ* conservation

### **Other Initiatives**

- Other international conventions related to biodiversity (e.g. the Convention on International Trade in Endangered Species, the World Heritage Convention)
- Mechanisms for the implementation of the Small Island Developing States/Programme of Action which includes biodiversity
- The Framework Convention on Climate Change including the Kyoto Protocol under the Convention

## **CHAPTER 8 MONITORING, EVALUATION AND REPORTING**

### **8.1 MONITORING**

The successful implementation of the Plan and its appropriateness to changing circumstances and needs will depend on the monitoring and evaluation of effectiveness. Monitoring and Evaluation are both essential elements of the adaptive planning process.

Monitoring and Evaluation will be conducted during and after the implementation phase. The full methodology will be developed and finalised upon completion of the Plan. Some key issues for consideration in relation to monitoring is that there is commitment and cooperation from all sectors of society that can play a supportive role and for the process to be institutionalised and cost effective. Table 3 refers to the areas in which elements of monitoring and evaluation will be conducted.

#### Phase I:

Basic elements include:

1. Development of guidelines, indicators and methodologies for monitoring each project. This will be done in the project development stage by the Fund Raising Specialist together with relevant stakeholders in each project.
2. Development of guidelines and indicators for monitoring each Programme Area.. This will be the responsibility of the Biodiversity Project Coordinator in collaboration with the Fund Raising Specialist.
3. Identification of stakeholders and timetable for monitoring each Programme Area and project.
4. Orientation/training of stakeholders in monitoring by the EPA.
5. Reporting by stakeholders to the EPA at specified times in the Project Cycle. These reports will be submitted to the EPA and donors.
6. Synthesis and analysis of monitoring data by EPA (annually or as required by specific projects).
7. Using of evaluation and findings to improve planning, make modifications, and inform national reporting.

Phase II:

Same as the above

### **8.2 EVALUATION**

This is to be undertaken on an annual basis. Evaluation will be conducted by independent evaluators who would report to the Board of the EPA. Project profile 25 elaborates on this in more detail.

#### Phase I:

Basic elements include:

1. Development of guidelines, indicators and methodologies for evaluating the implementation of the Plan, taking into consideration:

The goals and objectives of the Plan

The targets set out in the Plan  
The objectives and activities and timetables specified under each project

2. Identification of evaluator(s)
3. External review of analysis of monitoring data. This will be done by the evaluator(s). Evaluation will take place biannually or as otherwise specified by the Board of the EPA or donor agency
4. Application of indicators for monitoring and evaluation by evaluator(s)
5. Preparation and submission of evaluation report(s) to the Board of Directors of the EPA
6. Use findings to inform approach to Phase II (in the case of the first evaluation), implementation and future planning.

Phase II:

Same as above.

**Table 3. Possible framework for Monitoring and Evaluation Indicators**

<b>Programme/ Project</b>	<b>Performance Indicator</b>	<b>Means of Verification</b>	<b>Responsibility</b>	<b>Timing</b>	<b>Assumptions/ Risks</b>

### **8.3 REPORTING**

Reports on implementation of projects will be prepared and presented to the EPA. The overall process will be the responsibility of the EPA which will report of overall Plan implementation under existing arrangements for regular reporting to the Board of Directors of the agency. The report of the Evaluator(s) will be presented directly to the Board of the EPA.

Progress in implementing the Plan and upgrading the implementation of Guyana's obligations under the CBD will inform the National Report to the CoP. Reporting by sectoral and regional bodies will be used to facilitate the integration of biodiversity planning into sectoral and national planning and inform other planning and reporting processes such as the National Development Strategy and reporting to the Commission on Sustainable Development.

Any evolving perspectives on the CBD developed during the implementation of the Plan will be compiled and reported back to the CBD.



**APPENDIX 1 SPECIES DIVERSITY DATA (PLANTS)**

Biodiversity	Major Sub-Divisions	English Names	Global Total No. of Described Species	Country No. spp.		Remarks Global Status
				Total	Described	
Virus		Viruses	1,000	30	30	Further Studies Needed
Monera	Bacteria Myxoplasma Cyanophyta	Bacteria Bacteria Bluegreen algae	3,000 60 1,700	53 - 4	33 - 1	"
Fungi	Chytridiomy Acrasimycota Myxomycota Oomycota Ascomycota Zygomycota Basidiomycota	Chytrids Cellular slime moulds Plasmodial slime moulds Water moulds Cup Fungi Zygomycete Basidiomycetes	575 13 500 500 10,650 665 16,000	6 3 12 25 193 6 258	2 1 1 19 185 4 214	" " " " " " "
Algae	Chlorophyta Phaeophyta Rhodophyta Chrysophyta Phrrhophyta Euglenophyta	Green algae Brown algae Red algae Chrysophyte algae Dinoflagellates Euglenoids	7,000 1,500 4,000 12,500 1,100 800	24 10 9 unknown unknown 1	- - - - - -	" " " " " "
Plantae	Bryophyta  Lycopodiophyta Filixophyta Gymnosperma Dicotoilydonae	Mosses, Liverworts, Hornworts  Lycophytes Ferns Gymnosperms Dicots Monocots	16,600  1,275 10,000 529 170,000 50,000	186  28 100 6 4,238 1,109	186  28 100 6 4,218 1,108	Further Studies Needed " " " "
TOTAL				6,301	6,136	

Source: Guyana/UNEP Country Study of Biological Diversity (Draft) 1992. *National Strategy for the Conservation and Sustainable Use of Guyana's Biodiversity.*

## APPENDIX 2 Species Diversity Data (Animals)

Major Sub-Divisions	English Names	Global No. Described spp	Country No. spp.		Remarks
			Total	Described	
Porifera	Sponges	5,000	2	2	Further studies needed
Cnidaria Ctenophora	Combjellies Jellyfish, corals	9,000	5	5	"
Platyhelminthes	Flatworms	12,000	3	3	"
Nematoda	Nematodes (roundworms)	12,000	13	13	"
Annelida	Annelids (earthworms)	12,000	6	5	"
Mollusca	Molluscs (snails etc.)	50,000	18	17	"
Echinodermata	Echinoderms (starfish)	6,100	4	4	"
Arthropoda Insecta	Arthropods Insects	751,000 123,161	834 39	834 39	"
Chordata Tunicata	Tunicates	1,250	-	-	"
Cephalochordata	Acornworms	23	-	-	"
Vertebrata Agnatha	Vertebrates Lampreys Jawless Fishes	63	-	-	"
Chondrichthyes	Sharks, Cartilaginous fishes	834	9	9	"
Osteichthyes	Bony Fishes	18,150	352	352	"
Amphibia	Amphibians	4,184	77	77	"
Reptilia	Reptilians	6,300	102	102	"
Aves	Birds	9,040	711	711	Almost complete
Mammalia	Mammals	4,000	123	123	"
TOTAL					

			2,298	2,296	
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Source: Guyana/UNEP Country Study of Biological Diversity (Draft) 1992. *National Strategy for the Conservation and Sustainable Use of Guyana's Biodiversity*

## **APPENDIX 3 INDIVIDUALS AND GROUPS CONSULTED IN THE DEVELOPMENT OF THE PLAN**

### **1. LIST OF PARTICIPANTS IN THE GEORGETOWN WORKSHOP**

Esme Rockliffe	Regional Development Office, Region 4
H. Baldeo	Regional Development Office, Region 4
Taima Murugan	Guyana Natural Resources Agency
Lance Carberry M.P.	Representative of People's National Congress
Sandra Adams M.P.	Representative of Region 10 Administration
Gobin Rameshwar	National Commission of the Treaty of Amazonian Cooperation
Forbes July	Ministry of Foreign Affairs
Dawn Shepherd	Ministry of Fisheries, Crops and Livestock
Clayton Hall	Commissioner of Forests (ag.)
Mona Bynoe	Forest Products Association
Andrew Bishop	Land Use Planner, Office of the President
Sharon Alexander	Ministry of Trade and Tourism
Kenneth McNicol Croal	Guyana Rice Development Board
Lorna McPherson	NCERD, Ministry of Education
John Caesar	Department of Biology, University of Guyana
Dindyal Permaul	Forestry Unit, University of Guyana
Pooran Persaud	Faculty of Agriculture, University of Guyana
Clifton Paul	National Agriculture Research Institute
Saudia Mohamed	Wildlife Division
Dennis Somerset	Ministry of Agriculture
Graham Watkins	Iwokrama Rain Forest Centre
David Cassells	Iwokrama Rain Forest Centre
Roderick Zagt	Tropenbos Foundation
Hans ter Steege	Forest Ecologist
Tania Schimmel	United Nations Development Programme
Ben ter Welle	Natural Resources Management Project

### **2. LIST OF PARTICIPANTS IN CORRIVERTON WORKSHOP**

K. Bacchus (Mr)	Regional Vice Chairman, Region 6
K. Paul (Ms)	Mayor and Town Council, New Amsterdam
E. Thom (Mr)	Fisheries Officer based in Region 6
Abdul Ganny	Representative of No. 52-74 NDC
S. Bacchus (Mr)	Environmental Health Officer, Public Health Department
Richard Thomas	Environmental Health Officer, Public Health Department
Fred Bradford	Plant Quarantine Unit, Corriverton
R. D. Panday (Mr)	No. 67-74 Cane Farmers Association
A. Hamid (Mr)	Deputy Regional Executive Officer

### 3. LIST OF PARTICIPANTS IN LETHEM WORKSHOP

Muacir Baretto	Regional Chairman, Region 9
Vincent Henry	Vice Chairman, Region 9
G. Latchman	Karasabai
Bertie Murray	Karasabai
Yvonne Jerrick	Annai
Elmo Edwards	Karasabai
Jude Isaacs	Sand Creek
Juanito Alberto	Karasabai
Tony James	Aishalton
Stephanie Huesler	University of Wisconsin (student)
Paul Aelseen	Konashen
Gary Atkinson	Aishalton
Eugene Andrews	Sand Creek
William Perria	Tiperu
Eugene Fraser	Annai
James LaRose	Aishalton
Ernest Francis	St Ignatius
K. Cuthbert	Annai
Eugene Bernard	Baitoon
Jacqueline Austin	Aishalton
Adrian James	Aishalton
Columba Spencer	Aishalton
Patrick Atkinson	Aishalton
Vincent Toney	Lethem
Shirley Melville	Lethem
Trevor Spencer	Lethem
Cyril King	Lethem
Emiline Baretto	St Ignatius
William Andries	Toka
Rocky Innis	Toka
Larry Ignacio	Dadanawa
Justin de Freitas	Dadanawa
Carl Fredericks	Weri Meur
Lloyd Powell	Lethem
Genevive Murray	Karasabai
Second Lieutenant Fung	Guyana Defence Force, Lethem

### 5. LIST OF PARTICIPANTS IN MABARUMA WORKSHOP

Kamla Armogan	Wauna
Dennis Raphael	Kamwatta
Joseph Hernandez	Koriabo/Arukamai
Nandkissore Persaud	Anna Regina
Samuel Williams	Anna Regina
Juliet Cooujah	Suddie
Jude Agard	Anna Regina
Alli Baskh	Anna Regina
Edward Harris	Wauna

Rueben Taylor	Amazon Caribbean
Dextroy Sandy	Amazon Caribbean
Joel Clementson	Port Kaituma
Attlee Peters	Hosororo Hill
Symeon Nedd	Mabaruma
Michael Christopher	Port Kaituma
Kevin Angoy	Oronoque
Ann Linton	Maburama
Paul Santiago	Mabaruma
Norman Whittaker	Mabaruma
Edward Roberts	Barima/Koriabo
Alvin Daniels	Yarakita
Philomena Sahoye-Shury	Ministry of Local Government
Tarchand Chetram	Mabaruma
Gordon Edward	Mabaruma
Patrick Antonio	Hobodeia Village
Norbert Debideen	Aruka River
Nigel Fisher	Wanaina Hill
George Jarvis	Wauna
Joseph Siry	Rollins College, USA
Peter Pritchard	Florida, USA
Eric Shaver	Florida, USA
Audley James	Almond(Shell) Beach
Romeo DeFreitas	Almond(Shell) Beach
Wendell Allix	Mabaruma
Abraham Daniels	Hotoquai
Raymond Atkinson	Red Hill

## 6. LIST OF PARTICIPANTS IN PRIVATE SECTOR MEETING

Toni Williams	A Mazaharally & Sons
Mona Bynoe	Forestry Products Association
Dennis Dalip	Toolsie Persaud Ltd
Collette McDermott	Tourism and Hospitality Association of Guyana
Leoni Haakshorft	Tourism and Hospitality Association of Guyana
Gavin Ferreira	Guyana Manufacturers Association
Adeola Simon	Private Sector Commission
Narvan Singh	Institute of Private Enterprise Development
Yogieraj Singh	Institute of Private Enterprise Development
Roxanne Reese	Wildlife Exporter

## **APPENDIX 4 MOBILIZATION OF FINANCIAL RESOURCES: POTENTIAL SOURCES**

(Note: Details on many of these organizations are provided in the EPA's "Finance and Technical Assistance Resource Kit")

### **International Agencies:**

#### **United Nations Organizations and Specialized Agencies:**

Secretariat for the Convention on Biological Diversity 3  
 United Nations Development Programme  
 Global Environmental Facility  
 Biodiversity Planning Support Programme of UNDP/GEF  
 United Nations Environmental Programme  
 Regional Co-ordinating Unit for the Caribbean Environment Programme/UNEP  
 United Nations Educational Scientific and Cultural Organization  
 United Nations Special Unit/Technical Cooperation among Developing Countries  
 Food and Agricultural Organization of the United Nations  
 International Fund for Agricultural Development  
 Transfer of Knowledge Through Expatriate Nationals Global Unit/UNDP  
 United Nations Information Centre  
 World Food Programme  
 World Health Programme  
 World Intellectual Property Organization  
 World Tourism Organization  
 World Trade Organization

#### **International Financial Institutions/Organizations:**

World Bank  
 Commonwealth Fund for Technical Cooperation

#### **International Inter-Governmental Organizations:**

Organization for Economic Cooperation and Development  
 Organization of the Petroleum Exporting Countries  
 Commonwealth Secretariat

#### **Regional Organizations:**

Organization of American States  
 Inter-American Development Bank  
 United Nations Economic Commission for Latin America and the Caribbean  
 Association of Caribbean States  
 Treaty for Amazonian Cooperation  
 Caribbean Development Bank  
 Caribbean Community Secretariat  
 Organization of Eastern Caribbean States  
 Pan-American Health Organization

Inter-American Institute for Cooperation on Agriculture  
 Caribbean Centre for Monetary Studies  
 Caribbean Tourism Organization

### **Bilateral Donor Organizations**

Australia	:	Australian Agency for International Development
Austria	:	Austrian Development Cooperation
Belgium	:	Agence Generale pour la Cooperation au Developpment
Canada	:	Canadian International Development Agency International Development Research Centre Canada Fund for Local Initiatives
Denmark	:	DANIDA DanChurch Aid
Finland	:	Ministry of Foreign Affairs Department for International Development Cooperation
France	:	Ministere des Affaires Etrangeres
Germany	:	BMZ GTZ
Ireland	:	Irish Aid
Italy	:	Department of Development Cooperation Association for Participation in Development
Japan	:	Overseas Economic Cooperation Fund Japanese International Cooperation Agency
Luxembourg	:	Ministere des Affaires Etrangeres
Netherlands	:	Ministry of Foreign
New Zealand	:	Ministry of Foreign Affairs and Trade
Norway	:	Norwegian Agency for Development Cooperation
Portugal	:	Ministerio dos Negocios Estangeiros Palacio das Necessidades
Spain	:	Ministerio de Asuntos Exteriores
Sweden	:	Swedish International Development Cooperation Agency
Switzerland	:	Federal Department of Foreign Affairs World Council of Churches
United Kingdom:		Department of International Development Darwin Initiative Voluntary Services Overseas Commonwealth Development Cooperation
United States	:	United States Agency for International Development

### **Foundations:**

W. Alton Jones Foundation  
 John D. and Catherine T. MacArthur Foundation  
 The Rockefeller Brothers Fund  
 The Rockefeller Foundation  
 The Tinker Foundation  
 Weeden Foundation  
 The Inter-American Foundation  
 The Indigenous Peoples' Fund  
 Peoples Trust for Endangered Species  
 Carnegie Corporation of New York



-making foundations, on a national level:

Australia	:	AusAID
Austria	:	Austrian Development Cooperation
Belgium	:	Agence Generale pour la Cooperation au Developpment (AGCD)
Canada	:	CIDA IDRC
Denmark	:	Danida DanChurch Aid
Finland	:	Ministry of Foreign Affairs Department for International Development Cooperation
France	:	Ministere des Affaires Etrangeres
Germany	:	BMZ GTZ
Ireland	:	Irish Aid, Department of Foreign Affairs
Italy	:	Department of Development Cooperation Association for Participation in Development
Japan	:	Overseas Economic Cooperation Fund Japanese International Cooperation Agency
Luxembourg	:	Ministere des Affaires Etrangeres
Netherlands	:	Ministry of Foreign Affairs, Directorate General for International Cooperation
New Zealand	:	Ministry of Foreign Affairs and Trade
Norway	:	Nowegian Agency for Development Cooperation
Portugal	:	Ministerio dos Negocios Estangeiros Palacio das Necessidades
Spain	:	Minsterio de Asuntos Exteriores
Sweden	:	Swedish International Development Cooperation Agency
Switzerland	:	Federal Department of Foreign Affairs World Council of Churches
United Kingdom:		Department of International Development Darwin Initiative Voluntary Services Overseas Commonwealth Development Cooperation
United States	:	United States Agency for International Development

### **Foundations:**

Carnegie Corporation of New York  
 The Center for Field Research  
 The Conservation Technology Support Program  
 The William and Flora Hewlett Foundation  
 W. Alton Jones Foundation  
 John D. and Catherine T. MacArthur Foundation  
 The David and Lucile Packard Foundation  
 The Pew Charitable Trusts  
 The Rockefeller Brothers Fund  
 The Rockefeller Foundation  
 The Tinker Foundation  
 Weeden Foundation  
 Peoples Trust for Endangered Species

## **APPENDIX 5 MOBILIZATION OF TECHNICAL RESOURCES: POTENTIAL SOURCES**

### **Caribbean Environmental Agencies:**

University of the West Indies  
University of Guyana  
Sustainable Economic Development Unit/UWI  
Caribbean Conservation Association  
Caribbean Natural Resources Institute  
Consortium of Caribbean Universities for Natural Resource Management  
Caribbean Council for Science and Technology  
Caribbean Environmental Health Institute  
Caribbean Planning for Adaptation to Global Climate Change  
Eastern Caribbean Center  
Island Resources Foundation  
CARICAD

### **International Environmental Agencies:**

IUCN – The World Conservation Union  
Environmental Law Centre of IUCN  
World Conservation Monitoring Centre  
World Resources Institute  
World Wide Fund for Nature  
Conservation International  
Biodiversity Support Programme  
International Academy on the Environment  
Third World Network  
Green Peace International  
Foundation for International Environmental Law  
Consultative Group on Biodiversity  
BioNet  
Bird Life International  
London Environmental Economics Centre  
Universities

## **APPENDIX 6 FUNCTIONS AND COMPOSITION OF THE N.B.A.C.**

### **Functions:**

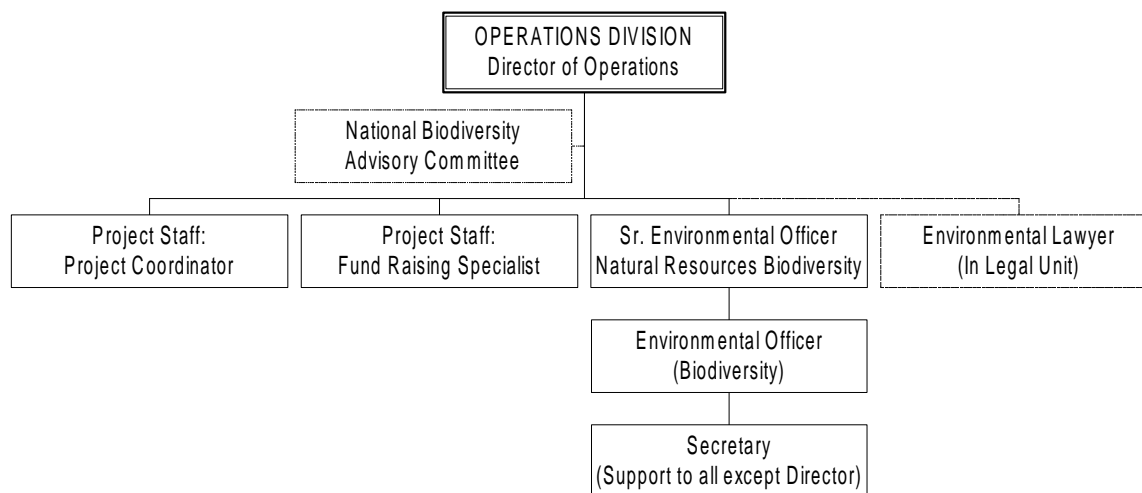
- 1) To recommend policies for the identification, monitoring, conservation and management of biodiversity.
- 2) To develop administrative mechanisms and legal requirements for access to biological diversity.
- 3) To advise the government on strategies, plans and programmes for biodiversity conservation, management and monitoring.
- 4) To advise the government on priorities for biodiversity research, conservation, management and monitoring.
- 5) To review applications for access to biodiversity.
- 6) To perform advisory and other related functions pertaining to biodiversity matters of concern.

### **Composition:**

- 1) National Agricultural Research Institute
- 2) Biology Department – University of Guyana
- 3) Faculty of Natural Sciences – University of Guyana
- 4) Ministry of Foreign Affairs
- 5) Guyana Defense Force
- 6) Amerindian Affairs Unit – Office of the President
- 7) Guyana Forestry Commission
- 8) Environmental Protection Agency
- 9) Members representing particular expertise areas (2)
- 10) Ministry of Agriculture – Crops and Livestock
- 11) Ministry of Fisheries
- 12) Ministry of Agriculture – Quarantine Division
- 13) GNRA

## 14) APPENDIX 7 STRUCTURE OF THE BIODIVERSITY UNIT AND FUNCTIONS OF KEY POSITIONS

### Structure of Proposed Biodiversity Unit



### PHASE 1

#### POSITIONS:

##### 1. Fund Raising Specialist

- Duties:
  - Mobilize financial and technical support for projects under the Biodiversity Action Plan (priority is to identify funding for other positions recommended to be filled later)
  - Develop the categories of initiatives listed in Project 1: Ensuring short- and long-term financing and sustainability of the Action Plan of Programme Area 1 on Financing
  - Other activities set out in Project 1
- Reports directly to Director of Operations.
- Position to be filled by consultant to be hired with UNDP/Guyana assistance for 9 months. Priority is to generate funds to create long term position.
- Orientation (if necessary) can be obtained from the following courses:
  - The Foundation Center, Washington, DC
  - World Resources Institute
  - World Conservation Union

##### 2. Biodiversity Project Coordinator

- Duties:
  - Overall co-ordination of Plan implementation, monitoring, evaluation and reporting (Includes co-ordination of scientific, economic aspects, etc. of the Plan)
  - Strengthening linkages with the NBAC and related agencies.

- Overseeing macro-project management (ie working with specific project managers in the NBAC and other agencies to ensure that formats and deadlines for reporting to donors are met, project objectives are reached)
- Coordination of delegations (in collaboration with the Director of Operations) to national, Regional and international meetings (including the Focal Point for the COP).
- Reports directly to Director of Operations
- Training opportunities if needed:

CBD's Projects Development course in Barbados  
 Foundation Centre's fund-raising courses, Washington, D.C.  
 IADB's courses  
 University of Bradford's project planning courses

### **3. Environmental Lawyer**

- Duties:
  - Coordination of the development and implementation of projects and programmes on areas like:
    - Intellectual property law
    - Biosafety
    - Access to genetic resources
    - Fair and equitable sharing of benefits
- This position is to be filled at the end of Year 1 of the Plan. It reports directly to Director of Operations.
- This work will build upon the on-going environmental legislation project.
- This position could be filled within existing vacant position in the EPA's Legal Unit

### **4. Senior Environmental Officer (Natural Resources Biodiversity)** (Note: Existing Position at the EPA, soon to be filled)

- Duties:
  - Administrative and research support to the Environmental Lawyer
  - Coordination of information (i.e. coordinate EPA's Clearing House Mechanism activities)
  - Provide administrative and research support to the NBAC on legal and economic matters
- The incumbent will report to the Director of Operations

### **5. Environmental Officer (Natural Resources Biodiversity)** - (Note: Existing position)

#### Duties:

- To give administrative and research support to the Fund Raising Specialist and Project Coordinator
- Cooperate with staff of the EIT Division of the EPA on the development and implementation of biodiversity awareness programmes
- 
- The incumbent will report to the Director of Operations

### **6. Secretary**

#### Duties:

- Provide secretarial support to staff of the Biodiversity Unit and Plan as well as the NBAC.

## **PHASE 11 BIODIVERSITY DIVISION**

### **7. Biodiversity Director**

This person will assume some of the duties previously done by Project Planner and will be responsible for:

- Overall co-ordination of Plan implementation, monitoring, evaluation and reporting including strengthening linkages with the NBAC and related agencies
- Co-ordination and supervision of the Division staff (including development and evaluation of work programmes)
- Co-ordination of delegations to national, regional and international meetings (including the COP)
- Strategic planning i.e. planning Cycle 2 of the Biodiversity Planning process.