



INDEPENDENT STATE OF PAPUA NEW GUINEA



PAPUA NEW GUINEA

NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN



GOVERNMENT OF PAPUA NEW GUINEA

DECEMBER 2006

Preface

Papua New Guinea (PNG) signed the *Convention on Biological Diversity* (CBD-1992) on 13 June, 1992 on the occasion of the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil. The Convention was ratified by the Government of PNG on 16 March, 1993. The signing and ratification of the Convention is a demonstration of our commitment to meeting our obligations under the Convention. This also provides the interests and opportunities and at the same time issues of concern that PNG expresses on the development and conservation of our rich and unique biological diversity (biodiversity), and to build linkages to the *United Nations Framework Convention on Climate Change* (UNFCCC-1992) and the *United Nations Convention to Combat Desertification and Drought in those Countries Experiencing Serious Drought and/or Desertification, particularly in Africa* (UNCCD-1994).

One of the main obligations of the CBD is that Parties must undertake appropriate inventories of their biodiversity and develop national strategies, plans and programs for the conservation and sustainable use of their biological resources. The outlining of the strategic plans and programs are commitments provided for in Article 5 of the CBD. This would provide the platform for cross-sectoral plans, programs and policies at the national, provincial and community levels for the implementation of the CBD.

This document - PNG's National Biodiversity Strategy and Action Plan (NBSAP) fulfills the country's commitment under the CBD. The NBSAP provides our initial strategic framework based on our current policies, programs and projects, which will be strengthened over time to establish comprehensive datasets and information bases to support our aspirations on environmental sustainability and economic growth within our ever changing social landscapes. This strengthens our efforts to contribute meaningfully to our global commitments under the CBD and the United Nations Millennium Development Goals with particular reference to addressing Goal 1 on poverty reduction and Goal 7 to ensuring environmental sustainability. It is our vision that this initiative will in particular address some of the pressing issues on our natural forests in terms of ecological goods and services, international trade and anthropogenic activities pertaining to climate change, global warming and land degradation.

The document contains an overview of our current socio-economic, political and cultural landscapes and shows the intricate linkage between these activities and their impacts on our natural environments and hence outlines the current status of our biodiversity and provides the framework for the conservation and sustainable use of our biodiversity into the future.

The conservation of biodiversity in PNG has been maintained to date not by conventional policy and legal means per se, but by virtue of the many customary resource tenure systems which accounts for some 97 percent of land-coastal and marine regions. These are un-written codes which have stood the test of time and thus all external interventions must operate within these socio-cultural settings.

I am very delighted that PNG has finally put together a strategic policy framework for the conservation and sustainable use of our rich biological diversity. I'm confident that with the adoption of the NBSAP by the government, the government and our partners (both local and international) can work together to realize the aspirations of Papua New Guineans contained in this document.

In view of our vision as enshrined in our National Constitution which is complimented by the common global commitments on sustainable development we invite our national, regional and international partners to share, develop and conserve our rich, unique and cultural values to make our planet a blessed home for now and into the future.

Rt. Hon. Grand Chief Sir Michael T. Somare, GCL, GCMC, CH, CF, KStJ
Prime Minister of Papua New Guinea

Foreword

PNG occupies less than 1 percent of the world landmass but is home to 6-7 percent of the total world's biodiversity. This represents some 400,000 – 700,000 species from the estimated 14 million species on earth. Its grand tropical forests are home to a rich and varied Australasian biota that includes tree dwelling kangaroos, huge flightless birds - cassowaries, the world's largest pigeons and butterflies, the world's longest lizard, more than 3,000 species of orchids and some 15,000-20,000 flowering plants.

The natural forests draw particular attention in that they provide plants for various socio-cultural activities and include cordage, bark, ornaments, fish poisons, magic potions, medicine, narcotics, food and carrying vessels, tools, weapons, art supplies, dyes and for food, insects, fungus, nuts and seeds, fruit, game, edible roots and greens. PNG is a centre of germplasm diversity for several global food crops of importance. These include the sweet potato, yams, taro and the winged-bean. It is also the centre for such ubiquitous crops as the banana and sugar cane.

The unique rich biodiversity is mirrored by the rich ethnic and linguistic diversity that contributes to a quarter of the world's languages. It is estimated that Papua New Guinea's distinct ethno-linguistic group range between 700 to 850 and higher.

Since about 87 percent of its human population of 5.2 million people is rural based, reliance on the natural ecosystems especially on the use and conservation of biodiversity is significant given the onset of the modern economy. The development and conservation of biological resources is subject to understanding and making appropriate interventions on the given resource ownership systems in PNG. This is of particular significance because it is rooted under various customary tenure systems (unwritten and not codified) which accounts for 97 percent particularly for land and forests resources.

The significance of the customary tenure systems is directly related to the current status of the natural ecosystems given the economic agenda for the development of PNG's natural resources. This is however being tested to the limit and already we are concerned about the actual and potential rapid increase of the human population, intensive development of extractive industries, expansion of human settlements and associated infrastructure, and intensive and extensive activities in the agriculture, forestry and fisheries sectors.

All have serious implications for the biodiversity conservation efforts in PNG and need to be addressed through appropriate integrated conservation and development policies, programs and projects. One of the major concerns relates to biodiversity inventories because PNG lacks consolidated data and information on the species richness and distribution, extinction of species, rate of species loss, degradation of natural ecosystems, root causes of ecosystem changes, and thus we need to develop appropriate models to establish a protected areas system and thereby to conserve genes and species.

The developmental aspects of our national genetic resources within our domestic jurisdiction, regional and international arrangements pose immense challenges given our present limited human resources capacity, and building and strengthening of our institutional management arrangements.

This NBSAP provides our initial response on the Convention's requirement for appropriate national biodiversity strategies and plans to be reflected in a cross sectoral manner. The mainstreaming of biodiversity conservation into all the main sectors is envisaged to be a gradual process and this document presents our framework for the short to medium term which will lay the foundation for a longer term action plan.

The sentiments expressed by our Prime Minister, is echoed especially in the areas of regional and international cooperation and assistance to support PNG as it strives to achieve sustainable development. In this manner we are indebted to the regional and international partners and organizations which have contributed immensely to the development and conservation programs to date. In the same vein we also invite and welcome the same to continue but to be sustained by appropriate new interventions to make our only Earth a blessed haven in the universe for all.

Hon. William Duma, LLB, LLM, MP
Minister for Environment and Conservation

Acknowledgments

The Government of PNG is grateful to the many stakeholders and concerned parties and is appreciative for all the support that has been provided from within PNG and international support by direct and indirect means through the Department of Environment and Conservation (DEC). The efforts of the DEC is particularly acknowledged when all the odds were against it following the termination of the World Bank-GEF National Biodiversity Strategy and Action Plan Project (NBSAP) in 2003. DEC had to turn to other partners for assistance to develop the initial NBSAP framework in 2005 to meet one of the cornerstones of the CBD. The NBSAP outlines some of the priorities for biodiversity conservation and sustainable development in light of the national goal for socio-economic development.

The Government in particular recognizes and makes special mention of the support provided by Conservation International (CI) with a modest \$US 50,000 to initiate the NBSAP framework in PNG which will now pave the way for improvements and implementation in the short to long term. This grant funding opportunity was possible through a national consultation in 2001-2002 on building alliances on the conservation work in PNG when stakeholders recommended a funding window be created for DEC to address some major issues on conservation policies and supporting legal frameworks. The result of this was the workings of the NBSAP in the DEC-CI project entitled *Alliance for Policy and Legal Frameworks for Supporting Biodiversity Conservation in Papua New Guinea*.

The Government also extends its sincere gratitude to Dr Eric L Kwa (University of Papua New Guinea, PNG) for undertaking the initial preparation of the NBSAP documentation and partaking in the subsequent national stakeholders' consultations which led to the finalization of this NBSAP.

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Executive Summary

PNG is one of the three remnant tropical natural wilderness areas on earth. It holds 6-7 percent of the world's biological resources in its diverse and varied natural environments that range from the tropical oceans and seas to the high mountains above 3,000 meters. This diversity possibly equates to some 700,000 species but, unfortunately we have extremely limited data for the marine species and in many parts of the country. The biodiversity embodies the heart of sustainable livelihoods for both the urban and rural peoples.

PNG has a population of 5.2 million people with 85 percent of its people living in the rural areas of the country. These people depend largely on subsistence agriculture for their livelihood. As a developing country with a huge biodiversity base, PNG faces a lot of environmental, economic and socio-cultural challenges. It is a country comprising of more than 10,000 tribes and a rich ethno-linguistic characteristic that is defined by more than 800 living languages. This poses strong challenges on its modern education system, other public outreach activities and telecommunication.

PNG's social development indicators include a high national population growth rate of 2.7 percent, low literacy rate, low health status and a pandemic HIV/AIDS problem and 30 percent of the people live below the poverty line of K399 per year. In the late 1990s (1999) PNG was placed 122 out of 162 countries, that is, at the bottom of a ranking based on the UN Human Development Index. In the light of these problems, a number of government programs have been initiated over the years to rectify and even alleviate some of these problems. Some inroads have been made by the government in some sectors, however, a lot remains to be done by the government and other stakeholders to overcome these issues.

The social sectoral programs are supported by conventional economic development models, which will have to be transformed to take into account environmental sustainability models to promote greater environmental management. The PNG NBSAP as required under the CBD is poised against this backdrop to support major interventions on environmental sustainability and economic growth to foster PNG's aspirations to achieve sustainable development.

In the main, the NBSAP process has entailed considerations of international and regional experiences on the development of CBD NBSAPs (Chapter 3), the current status of the major relevant national policies and legal instruments pertaining to biodiversity conservation (Chapter 4), a developmental history of various interventions, since 1992 when PNG signed the CBD, by international donors and domestic initiatives on biodiversity conservation (Chapter 5), the current status of institutional capacity (Chapter 6), adverse impacts on biodiversity (Chapter 7), and identification of gaps and needs for biodiversity conservation.

These have formed the basis for the development of the core elements of the country's NBSAP (Chapter 9) in terms of its goals, objectives, strategies and actions. These are broad in nature and thus cross-sectoral in character. This initial framework establishes the six main goals of:

- Goal 1 - Conserve, Sustainably Use, and Manage PNG's Biodiversity;*
- Goal 2 - Institutional and Human Capacity Building;*
- Goal 3 - Partnership Strengthening and Coordination for Biodiversity Conservation;*
- Goal 4 - Protected Areas;*
- Goal 5 - Ensure A Fair and Equitable Sharing Of Benefits Arising Out of Genetic and Ecosystem Resources; and*
- Goal 6 - Research and Development.*

The highest priority is on policy and legal reform to promote environmental protection of important representative natural ecosystems which need to be managed through appropriate protected areas conservation management models.

It is recognized that sustainable financing of biodiversity conservation programs particularly for protected areas is crucial and hence the long-term success of biodiversity conservation and sustainable use in PNG will depend largely on the continued flow of sufficient funds to implement and sustain the programs envisioned in the NBSAP (Chapter 10). To identify and capitalize on sustainable sources of funding, actual or estimated costings of each of the strategy and action plans need to be quantified. In so doing PNG can be able to strengthen and create new partnerships in financing these programs.

There are five (5) main intricately linked outcomes of the NBSAP (Chapter 11) which appropriate monitoring and evaluation will need to be undertaken to measure the success of the NBSAP over time. The outcomes are:

- (1) Implementation of the nine (9) NBSAP Programmes;
- (2) Policy Reform;
- (3) Legislative Reform;
- (4) Strengthening of the PNG Protected Areas Initiative; and
- (5) Institutional and Human Capacity Building.

The NBSAP paves the way for the development of a national biodiversity policy, revision of the laws on biological diversity and the identification of institutional and human capacities relating to biodiversity assessment, protection and management. It is envisaged that this initial framework will support the Government's continued programs which address the gross inadequacies reflected in the socio-economic development indicators. Particular attention must be paid to the rural regions of PNG where biodiversity conservation matter's most.

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Acronyms

CAA	Conservation Areas Act
CBD	Convention on Biological Diversity
DEC	Department of Environment and Conservation
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
EIA	Environmental Impact Assessment
FPCA	Fauna (Protection and Control) Act
GNP	Gross National Product
JPOI	Johannesburg Plan of Implementation
MDG	Millennium Development Goals
MEA	Multilateral Environmental Agreements
MTDS	Medium Term Development Strategy
NADP	National Agriculture Development Plan
NAR	National Assessment Report
NBSAP	National Biodiversity Strategy and Action Plan
NFCAP	National Forests and Conservation Action Program
NGO	Non-Governmental Organization
NPA	National Parks Act
NSDS	National Sustainable Development Strategy
PAI	Protected Areas Initiative
PINBio	Papua New Guinea Institute of Biodiversity
PNG	Papua New Guinea
WMA	Wildlife Management Area
WSSD	World Summit on Sustainable Development
UNCED	United Nations Conference on Environment and Development
UNCLOS	United Nations Convention on the Law of the Sea
UNFCCC	United Nations Framework Convention on Climate Change

Chapter 1: Introduction

PNG is endowed with a rich and diverse biodiversity. Given its unique environment and its natural resources, PNG has proven itself to be a very strong advocate of international co-operation. Being the largest developing country in the South Pacific region, PNG sees its participation in international initiatives as a statement of its status in the region. This is more so in the area of environmental initiatives because of its unique biodiversity and rich natural resources. The country has therefore, participated in a number of important global and regional environmental conventions and ratified a number of international and regional treaties relating to the environment and more recently biodiversity conservation.

PNG's response to biodiversity conservation has been quite overwhelming especially during the early 1990s. The surge in political activism in this area was influenced largely by the UNCED in 1990. The UNCED was a pivotal gathering of world leaders. PNG had prepared a national report which was presented at the conference by the Governor-General and the Minister for Environment and Conservation (DEC). At the UNCED, PNG joined 177 other countries in accepting the earth charter known as the "Rio Declaration on Environment and Development" - an environmental bill of rights delineating the principles for economic and environmental behavior of peoples and nations. The Rio Declaration is a statement of 27 principles which the States agreed to implement at the domestic level in dealing with environment and development issues.

At UNCED, PNG also made a commitment to biodiversity conservation and sustainable use by adopting: (1) the CBD; (2) the Framework Convention on Climate Change (UNFCCC); (3) Agenda 21; (4) the Statement of Forest Principles; and (5) the Rio Declaration.

The adoption of multilateral environmental agreements (MEA) and other treaties and the Rio Declaration, Agenda 21, the Forest Principles, the Johannesburg Declaration and the Johannesburg Plan of Implementation (JPOI) by PNG manifests the country's willingness to join hands with the global community in tackling many of the world's environmental problems. By international standards, PNG has shown strong enthusiasm in the field of international environmental law-making. This international commitment must however be translated into domestic action.

Almost all the MEA require corresponding domestic commitments to make the treaty work. Thus, in the case of the CBD, PNG is required to:

- Create a system of protected areas to conserve biological diversity (Article 8);
- Develop mechanisms for the prevention and the introduction of, control or eradication of alien species which threaten ecosystems (Article 8);
- Develop systems for the preservation and maintenance of knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application through appropriate legal, policy and administrative arrangements (Article 8j);
- Protect and encourage customary use of biological resources in accordance with traditional and cultural practices (Article 10);

- Develop incentive measures for the sustainable use and management of the country's biological resources (Article 11);
- Promote research and training (Article 12);
- Promote and strengthen public education and training in biological resources management (Article 13);
- Introduce mechanisms to strengthen impact assessment and minimizing adverse impacts on the country's biological diversity (Article 14);
- Develop strategies that promote access to genetic resources (Article 15);
- Identify and strengthen strategies to access and transfer technology (Article 16);
- Introduce legislative, administrative or policy measures to regulate and manage biotechnology research and benefit sharing (Article 19); and
- Strengthen partnerships to promote access to financial resources (Article 20 and 21).

In a similar vein, Agenda 21 calls on States to:

- Develop a strategy to integrate environment and development at the policy, planning and management levels;
- Provide an effective legal and regulatory framework that will promote sustainable development;
- Introduce strategies to make effective use of economic instruments and market and other incentives; and
- Establish appropriate systems integrating environmental and economic accounting.

The Johannesburg Declaration adopted at the World Summit on Sustainable Development (WSSD) in 2002 also contains several key principles which are relevant for environmental planning for development. In short the Johannesburg Declaration calls on States to:

- Strengthen partnerships to achieve sustainable development (Principles 16, 26, 27 and 29);
- Promote dialogue and cooperation (Principle 17);
- Promote and strengthen efforts in improving the livelihood of the poor and biodiversity (Principle 18);
- Eliminate barriers to sustainable development (Principle 19);
- Share resources to eradicate poverty and promote sustainable development (Principle 21);
- Support indigenous communities in their efforts in promoting sustainable development (Principle 25) and;
- Promote good governance as a tool for the effective implementation of sustainable development (Principle 30).

There are also several key targets provided by the JPOI which member States are required to consider in their pursuit of biodiversity conservation. Some of these are:

- Reduce poverty by half in 2015;
- Reduce by half the proportion of people who cannot access clean drinking water and adequate sanitation;

- Achieve by 2020 a significant improvement in the lives of at least 100 million slum dwellers;
- Enhance corporate environmental and social responsibility and accountability through voluntary initiatives; including environmental management systems, codes of conduct, certification and public reporting of environmental and social issues;
- Reduce by 2015 mortality rates for infants and children under 5 by two thirds and maternal mortality rates by three quarters;
- Reduction of HIV prevalence among young men and women aged 15 to 24 by 25% in the most affected countries by 2005, and globally by 2010, as well as combat malaria, tuberculosis and other diseases;
- Reduce the rate of biodiversity loss significantly by 2010.

Most of the JPOI goals trace their origins to the Millennium Declaration of 2000. The Millennium Declaration adopted eight development goals which are now referred to as the Millennium Development Goals (MDG). It was perceived that the implementation of JPOI would also lead to the realization of the MDG. The MDG are:

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria and other diseases
7. Ensure environmental sustainability
8. Develop a Global Partnership for Development

This set of international environmental obligations requires concerted and affirmative action by Nation States to achieve them. The real challenge for the 21st Century is that unlike previous international environmental resolutions, the WSSD has placed emphasis on actual targets and defined the timeframes in which these targets must be met. These targets and others contained in MEA must be addressed by PNG. Table 1 shows some of the MEA that PNG is a party.

Table 1: *Some of the MEAs adopted by PNG*

Type of Convention	Title of Convention	Signature	Accession, Ratification, Entry into Force
Global Climate	Vienna Convention for the Protection of the Ozone Layer 1995		27/10/92 (Acc), 27/01/93 (F)
	Montreal Protocol on Substances that Deplete the Ozone Layer 1997		27/10/92 (Acc), 25/01/93 (F)
	Amendment to the Montreal Protocol		02/08/93
	Framework Convention on Climate Change 1992 (UNFCCC)	13/06/92	16/03/93 (Rat), 31/03/04 (F)
	Kyoto Protocol to the UNFCCC 1997	22/03/99	28/03/02 (Rat)
	International Plant Protection Convention		01/06/76 (Acc)
	International Plant Protection Convention (Revised Text)		13/11/91
	Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)		12/12/75 (Acc), 11/03/76 (F)
	Convention on Wetlands of International Importance especially as Waterfowl Habitats (RAMSAR)		16/07/93 (F)

Global Biodiversity	Protocol to Amend the Convention on Wetlands of International Importance especially as Wildfowl Habitats (RAMSAR)		16/03/93 (F)
	Convention on Biological Diversity (CBD)	13/06/92	16/03/93 (Rat)
	International Tropical Timber Agreement	28/08/95	28/08/95
	United Nations Law of the Sea Convention 1982	10/12/82	14/1/97 (Rat)
	Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks 1995	04/12/95	
	Convention Concerning the Protection of the World Cultural and Natural Heritage (WHC)		08/07/97 (Acc)
	Convention to Combat Desertification (CCD)		06/12/00 (Acc), 06/03/01 (F)
Wastes, Chemicals, Pollution	Stockholm Convention on Persistent Organic Pollutants (POPs)	23/05/01	
	Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal 1989 (Basel)		01/09/95 (Acc), 30/11/95 (F)
	International Convention Relating to the Intervention on the High Seas in Cases of Oil Pollution Casualties		12/03/80 (Acc), 10/06/80 (F)
	International Convention for the Prevention of Pollution from Ships as modified by the Protocol of 1978 (MARPOL)		25/10/93 (Acc), 25/01/94 (F)
	International Convention on Civil Liability for Oil Pollution Damage (CLC 69)		12/03/80 (Acc), 10/06/80 (F)
	Protocol of 1992 to Amend the International Convention on Civil Liability for Oil Pollution Damage (CLC Prot 92)		23/01/01 (Acc), 23/01/02 (F)
	Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (LDC)		10/03/80 (Acc), 09/04/80 (F)
Regional Environmental Agreements	Convention for the Protection of Natural Resources and Environment of the South Pacific Region (Noumea)	05/11/87	22/08/90 (F)
	Protocol for the Prevention of Pollution of the South Pacific Region by Dumping 1986	03/11/87	18/08/90 (F)
	Protocol Concerning Cooperation in Combating Pollution Emergencies in the South Pacific Region 1986	03/11/87	18/08/90 (F)
	Plant Protection Agreement for the Asia and Pacific Region		01/06/76 (Acc)
	Agreement Establishing the South Pacific Commission		16/09/75 (Acc)
	South Pacific Forum Fisheries Agency Convention	10/07/79	10/07/79 (F)
	Convention on the Conservation of Nature in the South Pacific (Apia)	12/06/76	
	The South Pacific Nuclear Free Zone Treaty 1985 (Rarotonga)	16/09/85	15/09/89 (F)
	Agreement Establishing the South Pacific Regional Environment Program (SPREP)	16/06/93	31/08/95
	Convention to Ban the Importation into Forum Countries of Hazardous Wastes and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous Wastes within the South Pacific 1995 (Waigani)	16/09/95	21/10/01 (F)
	Agreement for the Establishment of a Regional Animal Production and Health Commission for Asia and the Pacific		25/07/80 (Acc)

Source: Piest and Velasquez (2003)

PNG being an active member of the global community has agreed to undertake concrete measures to promote biodiversity conservation and sustainable use of biological resources. Table 1 gives an impressive picture of PNG's intent in implementing biodiversity conservation measures in the country. However, PNG is faced with a paradox. On the one hand, it is attracted to biodiversity conservation and sustainable development but on the other hand, it is rigorously pushing for the exploitation of the country's biological and mineral resources for economic growth.

PNG has made several important interventions in implementing some of its obligations under a number of the MEA. The experiences in these initiatives highlight serious administrative, legal and policy deficiencies which have and continue to pose a challenge to the government. The key issue for PNG is to synergize its policies and laws so that they focus on promoting biodiversity conservation and sustainable use of biological resources. Pursuing inter-linkages and synergies at the national level of environment and sustainable development governance would be particularly beneficial to the strengthening of overall MEA implementation. One of the instruments for achieving biodiversity conservation is through a (National Biodiversity Strategy and Action Plan (NBSAP). Thus, the Papua New Guinea National Biodiversity Strategy and Action Plan (NBSAP) would serve as the vehicle for the implementation of PNG's obligations, particularly biodiversity conservation and sustainable use, under the different MEA. It would also provide the platform for sustainable growth in PNG.

PNG's active participation at the UNCED in Rio and its membership to relevant MEA has progressed slowly at the domestic level. There is ample evidence to show that the biodiversity conservation and sustainable use process in PNG has been painstakingly slow, and more importantly, it has had little impact on overall development planning. This is where the NBSAP plays a critical role as a tool for sustainable economic development and biological resources conservation and management. The formulation and implementation of the NBSAP is therefore imperative.

1.1 Objectives of the NBSAP/PAI Project

The present NBSAP/PAI Project is an explicit attempt by PNG to implement its obligations under the CBD, Agenda 21 and the JPOI. The project has three main objectives, which are referenced to some of the core and priority undertakings of the CBD, which have been long outstanding since 1993 when the Convention entered into force for PNG. The objectives of the NBSAP/PAI Project are:

- Support to the Government's development of the NBSAP and submission to the NEC and thereafter to the CBD Secretariat;
- Support the Government's development and establishment of the Papua New Guinea Protected Areas Initiative (PNGPAI) as an innovative multi-stakeholders' approach to the establishment and management of protected areas as provided by the 2004 CBD-COP7
- Support the Government's development of a national biosafety framework through supporting the Access and Benefit Sharing (ABS) consultation processes in 2005 and further activities in 2006.

The NBSAP is the roadmap to the sustainable use and management of the country's biological resources. The NBSAP will enable the country to successfully meet some of its

obligations under the CBD, some of the MEA and other international instruments such as: Agenda 21, the MDG and the JPOI. Moreover, the NBSAP is a strategic plan that aligns, strengthens and ensures the implementation of the government's environmental commitments espoused by the major national development policies.

1.2 *Methodology*

The major component of this work is focused on assessing the status of biodiversity conservation and sustainable use of biological resources in PNG. The task involved a review of:

- Biodiversity and biological resources;
- Biodiversity policy;
- Biodiversity law;
- Assessment of key sectors;
- Assessment of activities with adverse impacts on biological diversity;
- Analysis of adverse impacts; and
- Identification of gaps for biodiversity conservation.

The assessment of the above components were based on existing literature on environment and development issues in PNG which are set out in detail at the end of the document. Subsequent workshop consultations in November 2005, peer reviews, and consultations throughout 2006 added further value to this NBSAP. The NBSAP is therefore a multi-sectoral and people centred strategic policy document.

Chapter 2: Background

2.1 Political

PNG is located on the eastern side of the island of New Guinea. The western side of the island of New Guinea is Indonesia and to the east lies the Solomon Islands. To the north of the country is the Federated States of Micronesia, and to the south, Australia.

The people of PNG sighted the first expatriates as early as the 15th Century. Although the first European settlers arrived only in the late 19th Century beginning with the Christian missionaries, Papua New Guineans had had contact with the outside world from ancient time. Traders from India and China had known PNG long before the Spaniards came onto the PNG scene in the late 15th Century. Formal contact with the Europeans was made in 1884 with the establishment of the British protectorate in the south (Papua) and the German colony of New Guinea in the north (New Guinea) of the country.

The country became independent in 1975. Its Constitution itself declares that every act (whether administrative or judicial) is to be made subject to the Constitution. The Constitution establishes a Westminster model of government with the traditional three separate branches of government – the legislature, the executive and the judiciary. These three arms of government are separate and independent of each other and were envisioned by the constitutional makers to keep a check on one another. To strengthen the check and balance, the Constitution established independent institutions called “constitutional offices” whose primary function is to ensure impartiality and fairness in the functions of government.

The country is a constitutional monarchy with Queen Elizabeth II as the Head of State. The representative of the Queen in PNG is the Governor-General. The executive arm of the government is headed by the Prime Minister with a collection of ministers appointed at the discretion of the Prime Minister.

PNG has a unicameral Parliament which consists of 109 legislators who are elected to Parliament on a five yearly term by universal adult suffrage. These 109 legislators were initially elected by the constituents through the First-Past-the Post electoral system. This electoral system was replaced by the Limited Preferential Voting System in 2003 pursuant to Constitutional Amendment 20 and the Organic Law on National and Local-level Government Elections 1997. The new voting system now applies to all future elections in PNG starting with the 2007 National Election.

The country is divided into 20 provinces which are administered by 20 provincial governments. There are also 89 districts which cut across the 20 provinces. In 1995 the Parliament amended the Constitution and enacted the Organic Law on Provincial Governments and Local-level Governments which removed the old provincial government system and ushered in a new decentralized form of government with the creation of another level of government – local-level government. There are currently 289 local-level governments spread throughout the country. These local-level governments comprise Ward Councilors who represent about 6000 Wards in the country. The members of the local-level

and provincial governments hold office for a term of five years. They are elected at the same time as the national politicians.

2.2 **Biological Diversity and Biological Resources**

PNG is recognized as one of the four mega-diversity areas of the world. The country has a total land mass of 462 840 km² which consists of 0.5 percent beaches and ridges, 11 percent swamps, 15 lowlands; 43 percent foothills, mountains up to 1000m above sea level; 25 percent mountains 1000-3000m and 4 percent above 3000m. Natural forest covers almost 77 percent of the total land area. The country occupies half of the world's largest and highest tropical island which is 0.14 percent of the earth's land area and supports 5-7 percent of the world's terrestrial biodiversity. PNG has 5,000 lakes, extensive river systems, 5,000 miles of mangrove swamps (1.5 percent of land area), lagoons, wetlands, coral reefs and atolls plus island archipelagoes. PNG has jurisdiction over 8,000 km² of ocean, including 4,000 km² of coral reefs.

By 2003, it was estimated that the country has:

- 20,000 plant species;
- 600 fish species;
- 800 species of coral;
- 304 mammals species;
- 733 bird species;
- 298 species of reptiles;
- 228 amphibian species; and
- 45 types of forest/wetlands

There are approximately 60 percent of plants which are endemic to PNG. Also there are about 500 species of food crops, 30 root and staple crops, 43 nut types, 100 fruits and 60 leafy green vegetables. There are a number of other plants which are used by Papua New Guineans for different purposes. Some of their uses are shown in Table 2.

Table 2: *Numbers of Plants and Their Uses*

Use	Number of Plants
Food	229
Ash salt	17
Medicines	252
Narcotics, stimulants, intoxicants	10
House and Shelter	100
Canoes and Rafts	43
Tools and Weapons	73
Hunting and Fishing	44
String and Bark Cloth	31
Ropes used in House and Fence Construction	31
Personal Ornaments	75
Ritual and Magic	78
Art	50
Food Preparation	30

Source: PINBio (2004)

The government has acknowledged the cultural, scientific and economic value of the country's biological diversity by adopting a series of programs aimed at protecting and promoting sustainable use of these biological resources. These programs are discussed in Chapter 5.

2.3 Socio-economic Status

The population of PNG in 2000 stood at 5.1 million people. The country's population growth rate is quite high hovering over the 2.5 percent mark. Almost 85 percent of the people live in the rural areas actively involved in rural-based subsistence farming. PNG is predominantly a primary producing country with a small developing economy which is susceptible to the vagaries of international market forces. PNG exports consist of: primary produce such as coffee, cocoa, copra and oil palm; forests and fisheries products; and mineral resources such as gold, copper and petroleum products. The main performers in the economy have been the minerals, logging and fishing. The minerals sector is the biggest contributor to the national purse.

The economic, social and environmental indicators in Table 3 show that since independence in 1975 PNG has not performed very well. The economic, social and environmental indicators highlight the need for PNG to improve its position on a range of key issues that require immediate remediation.

Table 3: *Some Economic, Social and Environmental Indicators for Papua New Guinea*

<i>Indicator</i>	<i>Unit</i>	<i>Year</i>	<i>Measure</i>
Human Development Index (HDI)	No unit	1999	0.534 rank = 122/162
Population size	million	2000	5.1
Population growth rate	%	1990 - 2000	3.5
Population density	Persons per 1000 hectares	2000	110
Urbanization	%	1999	17.1
Adult literacy	% age group > 15 years	1999	45 / 76
		2002	56
Poverty rate	Measured as human deprivation index	1998	43.7
Poverty rate	Measured as human poverty index	1999	36.2 rank = 60/90
Infant mortality rate	Per 1,000 live births	1999	79
Total fertility rate	Births per woman	2000	4.8
Life expectancy at birth	Years	1999	56.2
Contraceptive prevalence	Any method %	1990-98	26
Women in Government	% at all levels	1997	1.8
Gender-related development Index	No unit (comparable with HDI)	1999	0.503
GNP per capita	US\$	2000	264
Total debt service as a % GDP	%	1999	5.9
Public debt as a % GDP	%	2001	70
Average annual growth rate of GDP	%	1992-2000	3.2
		1995-2000	1.2
Agriculture as a % GDP	%	2000	28
Industry as a % GDP	%	2000	37
Services as a % GDP	%	2000	35
Population without access to safe water	%	1996	76
Energy consumption	Petajoules/commercial + traditional	1995	96
Fertilizer consumption per cropping area	Kg ha ⁻¹ a ⁻¹	1994	30
Public Expenditure on Health	% GDP	1997	5.8

Public Expenditure on Education	% GDP	1997	9.7
Military expenditure	% GDP	1999	1.0
Food Intake	Daily calories supply per capita (kilocalories)	1999	2974
Number of Doctors	Number of people per doctor	1990-93	12754
HIV/AIDS	AIDs cases per 1,000	1999	2.2
Carbon dioxide emissions	Million tonnes	1996	2.400
Greenhouse Index	Share of global CO ₂ emissions	1996	-
Total freshwater withdrawals annually	Cubic metres per capita	1987-95	28
Deforestation	Average annual rate of deforestation	1990-95	0.40
National Protected Areas	% all protected areas – IUCN categories I-V of total land area	1996	0.1
National Protected Areas	% by PNG criteria	1997	3.0
% mammals at risk/ threatened	Number at risk over number of species known	1990s	26.7
% birds at risk/ threatened	Number at risk over number of species known	1990s	4.8
%higher plants at risk/threatened	Number at risk over number of species known	1990s	1.0

Source: NAR 2002

Several of these indicators require special mention given their importance to the country. These include population, poverty, education, health and law and order. Each of these issues is considered below.

The country has an unsustainable population growth with approximately 45 percent of the population belonging to the category of the young dependent age group of 0-14 years. There are therefore many social and economic implications for the country now and in the future. Given the continued patterns and trends of fertility and mortality, the population of PNG is expected to reach 10.2 million by the year 2020. The young age structure means that population will continue to grow - long after it reaches the replacement level of fertility.

Initially, population was considered as a separate issue from other social concerns. In 1994, at the second World Population Conference at Cairo, Egypt, government officials and other stakeholders agreed that population was an integral element of wider social issues. The Cairo Program of Action advanced the shift in population thinking by stating that population and poverty are critical attributes of sustainable development and therefore must be integrated together in national development programs. In a review conducted in 2004, the United Nations Population Fund concluded that the goals of the Cairo Program of Action are also closely linked to the MDG espoused under the Millennium Declaration. PNG has responded positively to the Cairo Program of Action by adopting in 2000, the National Population Policy 2000-2010.

At the WSSD, the global community agreed that poverty is intricately linked to sustainable development. It was agreed that for sustainable development to be realized, poverty in all its form had to be alleviated. The concerns of the global community are reflected in the *Johannesburg Declaration* and the JPOI. The JPOI contains a series of directives which the global leaders perceived if implemented will overcome poverty. PNG has accepted this challenge by adopting poverty as a key national goal under the Medium Term Development Strategy (MTDS) 2005-2010.

Poverty was however, initially not considered to be prevalent in PNG given the lack of understanding of the concept. Papua New Guineans had a narrow perspective on poverty – lack of food, water and shelter. Given that the majority of the people lived in the rural areas where there was plenty of food, water and adequate shelter, Papua New Guineans did not think there was poverty. However, poverty has many different faces – lack of food, water, adequate shelter, deteriorating physical infrastructure, poor health services, inaccessibility to

education services, rising mortality rates and high unemployment rates. Since the 1990s there has been a general consensus that poverty does exist in the country. In 2004, the “Millennium Development Goals: Progress Report for Papua New Guinea” noted that 30 percent of the people of PNG was living below the lower poverty line of K399 per year.

The government has accepted poverty alleviation as a core policy issue for PNG. In its five year development plan of 1997-2002, the government tried to address the issue by including a poverty reduction strategy as an integral component of the MTDS. The inclusion of the poverty reduction strategy in national development programs is one of the conditionalities imposed by the World Bank on low-income earning countries requiring a loan from the World Bank and the IMF. PNG being a recipient of a structural adjustment program loan from the World Bank had to integrate the poverty reduction strategy in the MTDS. The new MTDS also adopts poverty alleviation as a key government objective for the next five years.

The poverty reduction strategy promulgated by the MTDS must be considered in the context of the MDG and the JPOI. By 2015, the MTDS seeks to reduce poverty in PNG by half. Attempts are now being made by the government to clarify the linkage between the MDG, the JPOI and the national development goals. This task will be made easier if the government knows the exact number of people who are now living in extreme poverty. The figure of 30 percent quoted above is based on a survey conducted in 1996. The collection and collation of updated data will significantly contribute to designing appropriate measures to alleviate poverty. Several studies have been undertaken to identify causes and effects of poverty in PNG but their focus has either been limited or mostly theoretical in nature.

By regional standards, PNG ranks very poorly in health matters. Statistics show that the government has also performed poorly in health expenditure which has resulted in the poor health status as seen in Table 4. For instance, in 1997 the government’s expenditure on health was 2.3 percent of the GNP. In comparison Fiji spent 3.5 percent; Solomon Islands spent 11.6 percent and Kiribati spent 12.7 percent of the GNP on health. Generally, PNG spent much less on health than the other eight Pacific Island countries.

Table 4: *Health Demography of South West Pacific Countries*

	Life Expectancy at Birth	Infant Mortality Ratio	Under 5 Mortality Ratio	Total Fertility Rate	Maternal Mortality Ratio
Fiji	67	19	23	2.7	27
Kiribati	63	54	74	4.5	225
Marshall Islands	66	63	92		
Micronesia (FSM)	68	20	24	4.0	226
Samoa	68	22	27	4.1	70
Solomon Islands	63	22	26	4.8	549
Tonga	71	19	23	3.6	197
Vanuatu	61	38	49	4.3	68
Papua New Guinea	54	73	102	4.8	370

Source: *National Health Plan 2001*

The government has acknowledged that PNG’s health status is poor. It therefore adopted in 2001 a 10 Year National Health Policy. The National Policy covers the years 2001 to 2010. The policy paves the way for the efficient delivery of health services to the people of PNG and identifies key areas for government intervention. Prior to this policy the Parliament had enacted in 1997 the National Health Administration Act which reformed the administration of the delivery of health services mainly through the creation of Hospital Boards and the

introduction of the “user pay” policy in the sector. The Health Policy is quite comprehensive and ambitious. With significant financial and technical boost to the sector and support of various local and international partners the government can realize its goals and objectives expressed in the Health Policy.

In the area of literacy, by international standards PNG’s literacy rate is well below 50 percent. The low rate of literacy, participation and retention in formal education remain a critical concern for the country. It was reported in the 1999 UNDP Human Development Report that only 45 percent of the population is literate compared to an average of 85 percent for the other Pacific Island countries with the female literacy rate lower than that of males (40.3 percent compared to 49.7 percent). This situation is exacerbated by the fact that in PNG males are given more priority and preference than their female counterparts. At the formal level, the government through its educational agencies is actively pushing for a reversal of this tendency. The 1999 UNDP report has been criticized for being unreliable because of its reliance on the PNG 1990 National Census reports which was outdated by 1999. The Special Parliamentary Committee on Urbanization and Social Development also observed that intakes in Elementary and Grades 1 and 2 had increased dramatically from 1992 to 1998, meaning that more and more Papua New Guineans were being educated, thereby reducing the literacy rate markedly.

The government has however, recognized that literacy is intricately linked with education, particularly primary and elementary education. It has accepted that by improving and strengthening primary and elementary schools, PNG citizens of the future are prepared at an early stage to deal with issues of life. This assumption has led to the reformation of the education system with the concentration of funds and efforts at the elementary, primary and secondary levels of education and vocational schools.

The government’s focus is on basic education meaning elementary, primary and secondary schools. According to the MTDS 2005-2010, the government will improve its budgetary allocation for basic education from K186 million in 2005 to K257.9 in 2006. And in 2007 the amount will be increased to K277 million. This budgetary support will strengthen programs such as elementary teacher training; improvement of primary schools infrastructure; improvement of rural education facilities; teacher training; literacy and awareness, and technical and vocational training.

The government’s focus on basic education must be complementary with the White Paper on Higher Education, Research, Science and Technology adopted by the government in 1996. This policy has five broad objectives. These are:

- Creating a lively, just and self-reliant nation of forward and outward looking citizens;
- Promoting peace with our neighbors at home and abroad;
- Promoting pride in our rich cultural and environmental diversity;
- Promoting and upholding Christian principles; and
- Equipping citizens with the best that higher education, research, science and technology can provide to improve and sustain the quality of life.

In 1996 the government hoped to achieve these goals through the creation of additional universities and other tertiary institutions. In 2000, there were 31 declared institutions of higher learning with six universities. It was envisioned by the government at the time that

these institutions would absorb the majority of the Grades 10 and 12 graduates passing out of secondary and high schools. These higher learning institutions were also required to provide the necessary high-level training to the future human resource of the country.

The government's focus on basic education needs to be complemented with a similar focus on higher education. The government's declining financial support for tertiary institutions such as the universities has greatly impacted on their capacity to effectively perform their primary functions namely, teaching and research. The government has been criticized by the Vice Chancellors of the six universities for providing little support to universities under the MTDS 2005-2010. A review of the MTDS confirms the views of the Vice Chancellors. The government has responded positively to these criticisms by providing extra funding to the rehabilitation of the universities. This gesture by the government must be sustained to ensure that the five goals of the Higher Education Policy are achieved both in the short and long-term.

An issue that has become critical for PNG is law and order. This issue has been blamed primarily for the lack of foreign investment in the country. A number of research projects have been undertaken to identify the root causes of law and order problems and a number of strategies have even been adopted to tackle the problem.

In the late 1990s the government, with the aid of AusAID, set about developing a new Law and Justice Sector policy. This initiative was completed in 1999 and a new Law and Justice Sector policy was consequently approved by the government. The new policy entitled "National Law and Justice Policy and Plan of Action: Towards Restorative Justice" takes a holistic approach to the resolution of the law and order issue in PNG. The policy recognizes the important linkage between law and order and nation building and thus, vests an obligation on all the stakeholders to cooperate in joint initiatives to deal with the problem. At the core of this new policy is the concept of 'restorative justice'. Restorative justice is premised on conflict resolution and deviates from retribution and adversarial approaches.

The new law and justice policy seeks to shift conflict resolution from the formal system to the community. It seeks community support in maintaining peace and good order within the society. The concept is aimed at enabling the communities to deal with minor conflicts while the major and serious cases are dealt with by the formal system – the police, courts and prisons.

2.4 Summary

Since independence, successive governments have introduced their development programs to improve the livelihood of the people of PNG. However, given the limited scope of these policies they failed to adequately address the long-term impacts of the social, environmental and economic problems. In the 1990s the government began to formulate five year development programs. The first major five year development program was the MTDS 1997 – 2002. The main vision of that MTDS was building partnership between the government and the people.

By 2004, it was realized that the MTDS did not provide the impetus for rural growth and sustainable development in the country. The ending of the MTDS 1997-2002 also coincided

with the election of a new government in 2002. The new government set about implementation of its election agenda with the formulation of the new MTDS 2005-2010.

The real challenge for the Papua New Guinea is to make this development program work. A key concern about the MTDS is that it does not provide a clear nexus between the priorities identified by the MTDS and biodiversity conservation and sustainable use. The MTDS makes a brief mention of biodiversity conservation and sustainable use and ties it loosely with forestry and fisheries resources development, but it fails to clearly provide the strategy to achieve biodiversity conservation and sustainable use, not only in these two sectors, but also on a broad spectrum. The NBSAP seeks to fill that gap by providing the linkage between the MTDS and biodiversity conservation. A National Sustainable Development Strategy (NSDS) will further enhance these and other sectoral linkages.

Chapter 3: Policy Framework for Biodiversity Conservation

3.1 Introduction

The NBSAP is aimed at streamlining several major national policies which have a focus on biodiversity conservation. The NBSAP provides a coherent and consistent framework for the implementation of these policies so that PNG's international environmental commitments espoused under the various MEA are implemented horizontally and vertically by all the agencies of the Government. Some of the major national policies which have a bearing on biodiversity conservation and sustainable use of biological resources include: (1) the Environment Policy 1976; (2) the Medium Term Development Strategy 2005-2010 (MTDS); (3) the National Agriculture and Livestock Policy 2001-2012; (4) National Food Security Policy 2000-2010; (5) the National Health Policy 2001-2012; (6) Fisheries Policy; (7) the National Population Policy 2000-2010; (8) Forest Policy; (9) the Eco-Forestry Policy; (10) Education Policy; the draft Biosafety and Biotechnology Policy 2005; National Transport Policy 2001-2010; the draft Carbon Trade Policy 2005; and (11) Decentralization. Each of these policies is considered below.

3.2 Policy Framework

3.2.1 Environment Policy 1976

The Environment Policy was adopted by the government a year after Independence in 1976. The Policy is an expansion of Goal 4 of the National Goals and Directive Principles of the Constitution. The key element of the Policy is the promotion of the sustainable development concept captured by the term "wise use". The Environment Policy seeks to foster proper environmental management for the benefit of the present and future generations and the consideration of biodiversity protection and sustainable use in economic planning. The Environment Policy spells out general environmental principles which must be considered in development planning. Five key principles are articulated by the environment policy. These are:

- That development must be economically, socially and ecologically sound;
- That non-renewable natural resources to be used wisely;
- The ability of the environment to produce renewable resources must be recognized;
- That wildlife and their habitat must be protected and wisely managed in the development process; and
- That planning to be applied to human settlement and urbanization.

The Environment Policy was articulated in 1976 and has not been revised for 30 years. No serious attempts have been made by the government to conduct a comprehensive review of the Environment Policy to make it more responsive to the emerging contemporary issues. The government has acknowledged this setback and is working towards a reformation of the Environment Policy.

3.2.2

MTDS 2005-2010

The MTDS is the principal document outlining the government's key development goals and aspirations. The last five year development program was the MTDS 1997 – 2002. When the MTDS 1997-2002 came to an end in 2002, the government introduced a new MTDS covering the period 2005-2010. The primary vision of last MTDS was to build a partnership between the government and the people. The MTDS 2005-2010 focuses on three broad areas:

- Good governance;
- Export-driven economic growth; and
- Rural development, poverty reduction and human resource development.

The third objective contains three separate policy objectives – rural development; poverty reduction and human resource development. The government therefore, has six policy objectives which it wants incorporated into the new MTDS 2005-2010.

The MTDS adopts these six objectives as the pillars for the development of PNG over the next five years and beyond. The MTDS document states that for the period 2005-2010, the overarching development strategy is defined as export-driven, focused on rural development and poverty reduction, expressed through good governance and the promotion of agriculture, forestry and fisheries on an ecologically sustainable basis. The strategy will be realized by empowering Papua New Guineans, especially those in rural areas, to mobilize their own resources for higher living standards.

The government aims to achieve these objectives through a number of intervention strategies aimed at the following priority areas:

- Rehabilitation and maintenance of transport infrastructure
- Promotion of income earning opportunities;
- Basic education;
- Development-oriented informal adult education;
- Primary health care;
- HIV-AIDS prevention; and
- Law and justice.

Is there a relationship between the MTDS and biodiversity conservation and sustainable use? Interestingly the MTDS contains a table entitled 'Table 6.1 MDG National Goals and Targets' which attempts to provide a link between the eight MDG contained in the Millennium Declaration and expanded in JPOI, and PNG's position in relation to these goals. Goal 7 of the MDG is significant as it relates to environmental sustainability. The global community is encouraged to achieve two targets under environmental sustainability. These are: (1) integrate the principles of biodiversity conservation and sustainable use into country policies and programs and reverse the loss of environmental resources and (2) to halve by 2015, the proportion of people without sustainable access to safe drinking water. The relevant part of 'Table 6.1' on environmental sustainability is presented in Table 4.

Table 4: *Ensuring Environmental Sustainability*

Targets	Indicators
Implement the principles of sustainable development through sector specific programs by 2010 and no later than 2015	<ul style="list-style-type: none"> • Percentage of land covered by primary forest • Primary forest depletion rate (percentage) per year • Reforestation rate (percentage) per year • Percentage of land area protected to maintain biological diversity • Percentage of marine area protected to maintain biological diversity • Percentage of land area rehabilitated to ensure biodiversity (mines) • GDP per unit of energy use (as proxy for energy efficiency) • Carbon dioxide emissions (per capita)
By 2020, increase commercial use of land and natural resources through improvements in environmentally friendly technologies and methods of production	<ul style="list-style-type: none"> • Percentage of land used for commercial purposes • Percentage of cultivable land used for agricultural production • Agricultural exports as a percentage of all exports • Value of agricultural exports as a percent of total GDP • Value of non-agriculture exports as a percent of GDP • Percentage of commercial operations using sustainable practices
Increase to 60 percent the number of households with access to safe water by 2010 and to at least 85 percent by 2020 (as per definition from DOH)	<ul style="list-style-type: none"> • Percentage of districts that have implemented a water policy • Total meters of operating water pipes • Total number of clean water storage tanks and wells in use • Number of water pumps per district • Litres of water supplied to users • Percentage of households with sustainable access to safe water source • Percentage of households connected directly to safe water supply (pipe/tank)
By 2020, to have achieved a significant improvement in the lives of disadvantaged and vulnerable groups in urban areas	<ul style="list-style-type: none"> • Rural to urban net migration rate (percentage) • Percentage of households with access to electricity, safe water and sanitation, health and education services, by geographic sector, as well as by census unit (CU) type in urban areas • Unemployment rate (percentage) by geographic sector and sex • Urban crime rate (percentage) including prostitution and drug trafficking • Ratio of urban/peri-urban households with access to secure tenure • Percentage of population classified as vulnerable or disadvantaged by geographic sector • Percentage of household using wood as their primary energy source, by geographic sector

Source: *MTDS 2005-2010*

The government does not show how it plans to achieve these targets through the strategies proposed by the draft MTDS. The MTDS is silent on the linkage between the goals of environmental sustainability and the national strategies. The assumption is that a separate government policy will set out the detailed strategies for obtaining the MDG targets. In early 2005 the government adopted the first progress report on the status of MDG in PNG. The report presents up-to date information on the status of the MDG in PNG as at 2004. Unfortunately, the report makes a counter reference to the MTDS without providing any meaningful strategies for attaining the three goals of environmental sustainability expressed in the MTDS. Thus, there are no specific government strategies for achieving the targets of MDG 7.

There is clearly a weak link between the MTDS and environmental sustainability. The government has recognized this weakness and is pushing for the integration of environmental sustainability at various levels of administrative decision-making. This initiative is being spearheaded by the government's MDG 7 Steering Team and the MDG 7 Working Groups.

3.2.3 National Agriculture and Livestock Policy 2001

Agriculture has been described as the backbone of the country's economy. It is estimated that more than 85 percent of Papua New Guineans live in the rural areas of the country. These people live off their land, producing mostly subsistence crops. The main source of income for these rural dwellers is agricultural cash crops. The challenge for PNG has been and continues to be the development of strategies which will enable the 4, 412,169 people in the rural areas to harness their resources through agriculture production to enhance and improve their livelihoods.

Since independence in 1975, several agriculture policies had been developed by the government to address issues in agriculture. Most of these policies have not been able to solve the agriculture problems in the country. The new agriculture policy 2001-2012 was designed to achieve the goals of the MTDS 1997 – 2002 and the National Charter on Reconstruction and Development 2000 – 2002.

The Agriculture and Livestock Policy targets four main issues. These are:

- Sectoral policies relating to economic and other policies specific to the sector;
- Commodity policies focused on expanding production on a sustainable basis;
- Other development policy issues relating to inter-sectoral and interacting policies and compliance; and
- Monitoring and evaluation policies relating to performance requirements of the sector.

The underpinning of the Policy is to increase sustainable production and productivity through improved research, extension and development. The government hopes to achieve this objective by promoting collaboration between those institutions engaged in agriculture research such as the National Agriculture Research Institute; Coca and Coconut Research Institute; Coffee Research Institute; PNG Oil Palm Research Association; Trukai Industries; Papua New Guinea University of Technology and Fresh Produce Development Company.

An important aspect of agriculture which is promoted by the CBD and is an objective of agricultural institutions in PNG is agro-biodiversity. Agro-biodiversity is an important component for biodiversity conservation. It involves germplasm collection of PNG's staple food crops species and the characterization of genetic diversity of food crops species through DNA fingerprinting techniques. Several institutions are actively involved in the research and collection of major food crops species. These are: the National Agriculture Research Institute; the Biotechnology Centre of the University of Technology; Coffee Research Institute; Cocoa and Coconut Research Institute and the National Research Institute.

The adoption of the MTDS 2005-2010 has given impetus to the government to develop a National Agriculture Development Plan which will cover the period 2007-2012. The government has tasked a team to review all existing government policies on agriculture and develop a new comprehensive and holistic five year NADP. The central theme of the draft NADP is to promote growth and sustainable development of the agriculture sector. The government will approve the NADP in 2007.

3.2.4 National Food Security 2001

Food security is a real concern for Papua New Guinea. It was estimated in 2001 that about 29 percent of the population or 1,505,328 Papua New Guineans are food insecure. This can partly be attributed to the disparity in the rate of population growth and the rate of food production. It has been estimated that PNG's population was growing at 2.5 percent while the rate of food production is 1.2 percent. Given this dilemma, the National Food Security Policy 2000-2015 was formulated to increase and diversify food production in Papua New Guinea in order to achieve greater self-sufficiency in food and attain food security at the national and household levels by the year 2015.

A number of strategies have been devised to achieve the goals of the Food Security Policy. These include: (1) diversification of food production and marketing; (2) improvement of food quality and safety; (3) adoption of appropriate technology to sustainably intensify production; systems and ensure sufficient supplies of food and (4) improvement of production, downstream processing, marketing and utilization of food.

3.2.5 Draft Biosafety and Biotechnology Policy 2005

The draft Biosafety and Biotechnology Policy 2005 was formulated under the auspices of the UNEP/GEF Biosafety Project administered by DEC. The aim of the draft policy is to implement in PNG the Cartagena Protocol on Biosafety and the relevant provisions of the CBD on biosafety and genetic engineering. Some of the objectives of the policy are:

- To ensure the safe handling, use and management of genetically modified organisms for the safety of human health and biodiversity protection in Papua New Guinea;
- To identify and strengthen institutional capacities for the assessment of risks associated with the handling, use and management of genetically modified organisms;
- To strengthen national institutions engaged in the research and development of genetically modified organisms particularly for food, food processes and pharmaceuticals which contribute to the health and well-being of Papua New Guineans and their environment;
- To promote the development of guidelines for the assessment, use, management and transfer of genetically modified organisms; and
- To regulate the trade in genetically modified organisms that may have harmful effects on the health of Papua New Guineans and their environment and biodiversity.

Two positive outcomes have been achieved through the UNEP/GEF Biosafety Project. First, a draft policy has now been adopted by the stakeholders for presentation to the government for approval. And second, the government has now ratified the Cartagena Protocol on Biosafety meaning that the provisions of the Protocol are now applicable in PNG.

3.2.6 National Health Policy 2001

In 2001, the government adopted the first and most comprehensive 10 Year National Health Plan 2001-2010. The 10 year Health Policy is an ambitious action plan aimed at improving the delivery of health services to the people and strengthening the institutions responsible for the delivery of health services.

In 2003, the Health Department acknowledged that the effective implementation of the Health Policy was a difficult task. In line with the MTDS 2005-2010, the Department has reprioritized its goals and objectives. It has therefore, begun to reprioritize its goals and objectives. The Department has agreed to pursue five main goals in the short-term to provide the launching pad for the implementation of the Health Policy in the long-term. These reprioritized goals are:

- Disease control – particularly malaria and TB;
- Sexually Transmitted Infections – particularly HIV/AIDS;
- Child Mortality – reduce child mortality by two-thirds of 1990 level; and
- Maternal mortality - reduce maternal mortality by three quarters by 2015.

These goals have been adjusted to meet the requirements of the new MTDS 2005-2010. The Health Department hopes that all its resources both internally and from external sources will be channeled towards these four major programs to enhance the health status of the country in the long term.

In the area of disease control and STI, the government has made some important inroads, particularly in dealing with the HIV/AIDS pandemic. In 1998, it was estimated that by 2001 the number of HIV/AIDS cases would reach nearly 20,000. In 2004, figures on HIV/AIDS showed that PNG had the highest number of HIV/AIDS cases in the South Pacific region. The latest figures by the Aids Council put the figure at 10,000. The Council estimates that if the HIV/AIDS pandemic is not restrained by 2010, 10 percent the population will be infected with the virus. In an effort to contain the HIV/AIDS problem the government introduced sweeping policy and legislative reforms beginning in 1997. In that year the Parliament enacted the *National Aids Council Act* creating a statutory body to monitor and advise the government on strategic issues relating to the disease. In 1998, the government adopted the National HIV/AIDS Medium Term Plan 1998-2002 to coordinate its activities on HIV/AIDS. Then in 2003 the Parliament passed into law the *HIV/AIDS Management and Prevention Act* protecting the rights of HIV/AIDS infected persons and related matters.

The government is also actively promoting research and development of new pharmaceutical drugs for the treatment of HIV/AIDS, TB and cancer. Several research institutions from the United States and Australia have been granted access to conduct research and develop these drugs in PNG.

3.2.7 Fisheries Policy

There is presently no specific document which can be referred to as the fisheries policy. However, policy directions can be deduced from the various decisions of the government and especially the National Fisheries Authority and the regulatory framework. The major focus of the fisheries sector is the sustainable use and management of commercial fisheries resources. The sustainable use and management of non-commercial fisheries falls outside the scope of the National Fisheries Authority. Its research in marine biology is limited to the identification of marine species. The National Fisheries Authority engages in this program through collaborative work with both national and international research organizations.

3.2.8 National Population Policy 2000

The National Population Policy 2000-2010 is a very comprehensive document setting out in detail the population issues of PNG and provides strategies to overcome some of these problems. The Policy is a key tool for decision-making for economic and social development.

The Population Policy has 12 policy goals and provides a number of strategies the government envisions will enable it to achieve the goals. One of the requirements of the Population Policy is integration. Government agencies, NGOs and other partners are called on to integrate population issues in planning for development. The government hopes that with this tool, it will be able to reduce the annual population growth to no more than 2.1 percent by 2010 and to below 2 percent by 2020.

An important component of the Population Policy is that it embraces sustainable development as a key principle for development planning. The Policy calls on the relevant government agencies to taken into account environmental protection and conservation in the planning process because of the intricate linkage between Papua New Guineans and the environment. It also calls for the reduction in unsustainable production and consumption patterns as they have a significant impact on the health of the people and their environment.

3.2.9 Forest Policy 1990

The 1990 National Forest Policy is aimed at streamlining and strengthening access to forestry resources and their utilization. The Policy addresses these objectives through a number of strategies. These include: (1) Forest Management; (2) Forest Industry; (3) Forest Research; (4) Forestry Training and Education; and (5) Forestry Organization and Administration. These essential components of the National Forest Policy are designed to enhance the forestry sector and transform it into a viable sector. Each of these components is critical to the forestry sector.

The Policy expressly promotes the conservation of forests. If forests are unique because of their location, topographic constraints, ecological, or cultural or environmental considerations, they must be protected. The Policy also promotes forest research activities such as: development of silviculture and new logging techniques for enhancing forest productivity; botanical research and protection of forests from biodegradation and fire.

An important objective of the Policy is developing forest plantations. The government can develop and manage forest plantations on State land. National forests are usually forest plantations which are managed by the National Forest Authority. The establishment of forest plantations can be used as one of the grounds to access benefits under the Kyoto Protocol. The establishment of new forest plantations is therefore imperative.

According to the Draft Five Year Corporate Plan of the National Forest Authority (2002-2006) there are a total of 10 National Forests or forest plantations and six privately owned forest plantations. These forest plantations are spread throughout the country. Table 5 shows the location of the forest plantations and the volume of land covered by each of these plantations. The total land area covered by forest plantations is 58,957 hectares.

Table 5: *Existing Forest Plantations in PNG*

Province	Location	Main Species	Total Area (as at Dec 1997)
<i>State Forests</i>			<i>Ha</i>
Central	Kuriva	Teak	600
Madang	Madang North Coast	<i>E. deglupta, A. mangium, T. brassii</i>	900
Morobe	Wau-Bulolo	<i>A. cunninghamii, A. hunsteinii, P. caribaea</i>	12,000
Milne Bay	Sagarai	<i>A. mangium, E. deglupta, T. brassii</i>	1,500
New Ireland	Kaut	<i>E. deglupta, Calophyllum sp. Pterocarpus indicus</i>	250
Eastern Highlands	Fayantina	<i>P. patula</i>	900
	Lapegu	<i>P. patula</i>	3,200
	Kainantu	<i>P. patula</i>	1,000
Western Highlands	Wahgi	<i>E. grandis, E. robusta, E. salinga, P. patula</i>	2,100
Southern Highlands	Orere, Kui, Baino	<i>P. patula, E. robusta</i>	400
<i>Total</i>			22,850
<i>Private Forests</i>			
Madang	Gogol	<i>E. deglupta, A. mangium, T. brassii</i>	10,745
East New Britain	Open Bay	<i>E. deglupta, A. mangium, T. brassii</i>	12,004
	Keravat (customary – ex State)	<i>Tectona grandis, E. deglupta, Ochroma lagopus</i>	1,900
	Stettin Bay	<i>E. deglupta, T. brassii, A. mangium, O sumatrana</i>	1,200
West New Britain	Ulamona	<i>E. deglupta</i>	
Central	Brown River (customary – ex State)	<i>T. grandis</i>	1,200
<i>Total</i>			36,107
<i>Grand Total</i>			58,957

Source: Draft Five Year Corporate Plan of the National Forest Authority (2002-2006)

The National Forest Authority plans to increase the number of National Forests over the next five years. It was anticipated that in 2003, a total of 150,000 hectares of land would be set aside as national forests.

3.2.10 Draft Eco-Forestry Policy 2003

The objective of the draft Eco-Forestry Policy 2003 is to complement the National Forest Policy by strengthening the management and protection of the country's forest resources through the regulation of eco-forestry activities. Several key features of the draft Eco-Forestry Policy signal the shift in government thinking about the future of the country's forest resources. These are:

- National Forest and Biodiversity Inventory;
- Small and Medium-Scale Sawmills;
- Biodiversity Conservation;
- Support for Eco-Tourism;
- Non Timber Forest Products;
- Agro forestry;
- Woodlots; and
- Community Tree Nurseries.

Under the draft policy, it is proposed that the national inventory will be undertaken jointly by several institutions ranging from universities to national government departments and non-governmental organizations. The inventory will cover all forestry resources including flora and fauna species. This national database will be updated every 20 years. The policy promotes institutional collaboration and seeks to strengthen institutional networking.

The Policy promotes the protection and trade in non-timber forest products and the concept of protection forests. Under the draft policy, the National Forest Authority will promote the sustainable use of non-timber forest products and also establish a network of conservation forests throughout the country. Where an area has been declared a conservation forest, all commercial activities that by their nature would jeopardize the functions of the forest ecosystems will be banned. The relevance of this policy to the protected areas is that it is clear that the government is now serious about biodiversity conservation and protection. The draft policy is also an attempt by PNG to create a cohesive framework for the implementation of its commitment under the Forest Principles, the CBD, the Tropical Timber Agreement and the UNFCCC.

3.2.11 National Transport Policy 2001-2010

The National Transport Development Plan (Policy) 2001 – 2010 was adopted in 2001. This policy is comprehensive and takes a holistic approach to improving the transport system in PNG, by land, air and sea. The National Transport Plan sets out in detail the various transport programs of the government with specific financial commitments and institutional changes. According to the National Transport Plan, the government proposes to spend about K6 billion over the next 10 years to improve the country's transport system.

A critical component of the National Transport Policy is the recognition of the concept of sustainability and environmental principles in the implementation of the transport policy. The policy seeks to improve the national transport system so that it will promote the sustainable development of the country. The document also makes it clear that environmental principles such as the precautionary principle and EIA will be promoted by the government in the construction of transport infrastructure. A special mention is also made of oil pollution prevention strategies by the policy.

Although the Transport Policy does not expressly embrace biodiversity conservation, the adoption of environmental principles in transport development programs and the specific focus of the policy on oil pollution are encouraging because the implementation of the environmental principles and prevention of oil pollution will contribute towards biodiversity protection and sustainable use. The *National Roads Authority Act* does contain a specific directive under section 6(1)(m) for the Authority to promote and strengthen environmental capacities within the institution and the sector. Also with the implementation of the new *Environment Act 2000*, transport development projects would fall within the ambit of the legislation. The legal requirements promoted by these two laws will enhance biodiversity protection within the transport sector.

3.2.12 Education Policy

In 1996 the government adopted the White Paper on Higher Education, Research, Science and Technology. The Policy had five broad objectives which are:

- Creating a lively, just and self-reliant nation of forward and outward looking citizens;
- Promoting peace with our neighbors at home and abroad;
- Promoting pride in our rich cultural and environmental diversity;
- Promoting and upholding Christian principles; and
- Equipping citizens with the best that higher education, research, science and technology can provide to improve and sustain the quality of life.

These goals were to be achieved by the government through the creation of additional universities and other tertiary institutions. By 2000, there were 31 declared institutions of higher learning with six universities. Ironically, while the number of higher learning institutions was increased by the government, it began to cut funding to these same institutions. This is particularly evident in the universities. This funding cut has adversely affected the universities' ability to effectively perform their primary functions, namely teaching and research.

On the other hand, the government has placed a lot of emphasis on the provision of basic education through the elementary, primary and secondary schools. The government's plan through the MTDS 2005-2010 is to improve its budgetary allocation for basic education from K101.8 million in 2003 to K103.2 in 2006. The aim of the government is to strengthen programs such as elementary teacher training; improvement of primary schools infrastructure; improvement of rural education facilities; teacher training; literacy and awareness, and technical and vocational training.

The Education Department has recently introduced a new education policy which will hopefully provide the roadmap for the implementation of the government's goals promulgated by the MTDS.

3.2.13 Law and Justice Sector Policy 1999

The issue of law and order has been blamed for a host of problems affecting the country. A number of research projects have been undertaken to identify the root causes of law and order problems and a number of strategies have even been adopted to tackle the problem. These plans have not been able to improve the law and order situation in the PNG.

In the late 1990s the government with the aid of AusAID, set about developing a new law and justice policy. This initiative was completed in 1999 and a new Law and Justice Sector policy was consequently approved by the government. The new policy entitled "National Law and Justice Policy and Plan of Action: Towards Restorative Justice" takes a holistic approach to the resolution of the law and order problem in PNG. The policy recognizes the important linkage between law and order and nation building and thus, vests an obligation on all the stakeholders to cooperate in joint initiatives to deal with the problem. At the core of this new policy is the concept of 'restorative justice'. Restorative justice is premised on conflict resolution and deviates from retribution and adversarial approaches.

Although this policy might seem too remote to biodiversity conservation and sustainable use, its relatedness to biodiversity is an imperative for any policy formulation. The NBSAP contains innovative strategies which will contribute to the minimization of law and order problems in PNG.

3.2.14 Draft Tourism Policy 2001

This sector has a huge potential to contribute significantly to the development of the country. However, several factors have contributed to the stagnation of this industry. These problems include: (1) law and order; (2) the high costs of traveling in the country and other associated costs such as accommodation; (3) the lack of government support for this industry through appropriate policies and legal framework and (4) political interference in the regulatory body responsible for promoting tourism in PNG. These problems have deterred many potential tourists from visiting PNG and consequently, the loss of much needed revenue for the country.

The government has resolved to solve some of these problems through the introduction of a tourism policy which will provide the blueprint for the development of the country's tourism industry. In 2001, a draft Tourism Policy was circulated for comment. The draft policy is very brief and outlines the government's goals for sustainable tourism. The government envisioned that it would like to adopt the tourism policy in 2004. The draft document however, requires considerable in-depth analysis to make the policy more practical. In light of this concern, the government has recently introduced a draft Tourism Policy in September 2006 entitled "PNG Tourism Sector Review and Master Plan". The 2006 draft policy is currently in circulation for public comment. It is envisioned by the government that it will approve the new Tourism Policy in 2007.

3.2.15 Draft Carbon Trade Policy 2005

In 2005, the government agreed to seriously explore opportunities for the country's development under the Kyoto Protocol. Although the government had endorsed the first National Communication in 2002, it did not actively pursue its obligations under the Protocol. The Papua New Guinea Institute of Biodiversity (PINBio) has however been quietly promoting research and development projects related to the Kyoto Protocol.

The draft Carbon Trade Policy was formulated in July 2005 and presented to the government for endorsement. The draft has been approved and will be made public in 2007.

3.2.16 Draft National Energy Policy 2005

PNG has an abundant source of solar energy, biomass and hydropower and also significant geothermal, wind, wave and ocean thermal resources and petroleum resources. The majority of Papua New Guineans' principal energy use is biomass for cooking especially in rural areas and for drying copra and cocoa for export. Petroleum imports for transportation and electricity generation form the critical portion of use. These imports contribute immensely to the nation's trade imbalance. This trade imbalance will however, hopefully be reversed when proposed oil refineries come into operation.

The major challenge for PNG is, however, to harness these resources for the sustainable development of the country. Realizing the importance of the sector to the sustainable development of the country, the government began in the 1990s to carefully consider both the future role of the energy sector in the nation's development and, importantly, the approach that the government would take in determining that role. With the discovery of gas and oil, impetus to transform the petroleum policy and legislative framework set up since independence took on a new dimension.

In the late 1990s, the Department of Petroleum and Energy began to develop a draft energy policy to provide the framework to harness PNG's energy resources. In March 2001, the Department through its Energy Division completed the draft energy policy entitled 'National Energy Policy Guidelines'. A key element of the draft policy is the promotion of environmentally sustainable energy resources use. The policy clearly vests the Department with a special responsibility to:

- Monitor, review and provide recommendations on future developments in public and private energy sector infrastructure. In particular, encourage public sector agencies to adopt a least-cost, financially and environmentally sustainable strategy to meeting energy demand;
- Formulate and secure proposals for donor assistance where appropriate, and screen out those lacking in technical maturity, economic viability or environmental sustainability;
- In conjunction with other Ministries and agencies, develop, implement and monitor regulations and standards governing the energy sector, particularly concerning the safety of petroleum handling and storage facilities, and environmental guidelines for the petroleum sector, such as oil spill contingency plans and waste oil disposal; and
- Work closely with the relevant Government and non-Government organizations on the environmental aspects of energy projects and programs.

In 2005 the government embarked on a review of the draft policy of 2001. In August 2005, a new draft Energy Policy was adopted by the stakeholders in Alotau, Milne Bay Province. The draft policy 2005 is being reviewed. A final draft will be finalized for presentation to the government for approval.

3.2.17 Draft Sustainable Mining Policy 2003

Mining and its effects on the environment have attracted a lot of criticisms both in the country and overseas. The government being mindful of these criticisms has with the assistance of donors devised a draft mining policy which seeks to bridge sustainable development and mining. In 2003, the draft Sustainable Mining Policy was adopted and circulated to stakeholders for comments. The draft policy is quite innovative as it attempts to introduce the concept of sustainability in the mining sector. The greening of the sector has also resulted in the replacement of the Mining Department with the Mineral Resources Authority in 2006.

The draft policy promotes the integration of important environmental principles such as prior informed consent, access, benefit sharing and EIA. These concepts will be applied at the earliest point of the mining process – exploration.

3.2.18 Decentralization

In 1995 the government reformed the provincial government by replacing the old provincial governments with the new provincial and local-level governments. Two of the key reasons for reforming the decentralization process were: (1) to allow for greater accessibility to government by the people and (2) the efficient delivery of government goods and services to the people.

It was envisioned that people would easily access government through the local-level governments which are the face of government on the ground. Under the auspices of the Organic Law on Provincial Governments and Local-level Governments, 19 provinces and 297 local-level governments were created throughout the country. Papua New Guineans are required to participate in government through these new state institutions. The delivery of government goods and services is also meant to be achieved through the local-level governments.

There are three significant provisions of the Organic Law which will impact on the sustainable use and management of biological diversity. These are sections 115, 116 and 98. Section 115 of the Organic Law states that it is mandatory for the participation of all the stakeholders in the development of natural resources located within their area. This provision is however, not in force because an enabling legislation required under section 116 has to be enacted to bring it into operation. Section 98 is concerned with benefit sharing from the development of natural resources. An essential term that has been clarified by the Organic Law is “natural resource”. According to section 98(1) the term is defined as: minerals, petroleum, gas, marine products, water, timber (including forest products), fauna, flora and any other product determined by law to be a natural resource.

3.3 *Summary*

The formulation of the NBSAP takes into consideration these policies to ensure that the strategies adopted by the NBSAP contribute to the attainment of the goals of these various government policies. The strategies adopted by the NBSAP will also enhance and strengthen these national policies.

Chapter 4: Legal Framework for Biodiversity Conservation

4.1 *Introduction*

Sustainable use and management of biological diversity as elaborated by the Rio documents in 1992 and buttressed in Johannesburg in 2002 has had difficulties being translated at national jurisdiction. In PNG there was a lot of hype about biodiversity conservation and sustainable development after the UNCED in 1992. PNG instigated several initiatives (that are discussed in Chapter 5) aimed at entrenching the concept in PNG. Much of the fuss was in the field of academia. There was a faint sign of progress in the area of policy but, only lip service. However, in the last four (4) years the government has begun to take a more active interest in the area of biodiversity conservation locally and is playing an active role in the region and international arena in this field. The emerging policy initiatives that have been highlighted in the last Chapter (Chapter 3) are testimony of the government's attitude toward biodiversity conservation and sustainable use.

In the law-making field, the story is no different. A set of laws which are regarded as the environmental law of PNG were enacted soon after independence in 1975 to give effect to Goal Number 4 of the Constitution and the Environment Policy. These laws were: (1) the Environmental Planning Act 1978; (2) the Conservation Areas Act 1978; (3) the Environmental Contaminants Act 1978; (4) the National Parks Act 1982, (5) the Water Resources Act 1982; (6) the Fauna (Protection and Control) Act; and (7) the International Trade (Fauna and Flora) Act and the Physical Planning Act 1989. In 2000, Parliament enacted the Environment Act 2000 which repealed and replaced the Environmental Planning Act, the Environmental Contaminants Act and the Water Resources Act. It is imperative that a brief description of each of these statutes is provided to ascertain whether they provide the foundational basis for the promotion and strengthening of biodiversity conservation and the sustainable use of biological resources in PNG. These laws are discussed under three different heading: Environmental planning; Conservation of biological resources (protected areas); and Pollution.

4.2 *Environmental Planning*

There are two major pieces of environmental legislation that have a direct bearing on development planning. These are: the Environment Act 2000 and the Physical Planning Act 1989. The Environment Act is the principal environmental planning law. The legislation provides a series of mechanisms which are designed to protect the environment and biological diversity from the adverse impacts of development.

The focus of the legislation is however not on biodiversity conservation but managing the environmental impacts of development activities. In this regard the legislation adopts the precautionary approach; the polluter pays principle and environmental governance as primary tools for controlling development.

The precautionary approach is applied through the application of the Environmental Impact Assessment (EIA) process. The polluter pays principle is expressed through the high amount

of penalties that offenders under the Act will pay for breaches of the law. Good environmental governance is articulated through the division of powers between the Minister and DEC; the establishment of the Environment Council; and strict guidelines, procedures and regulations for environmental management.

The Physical Planning Act is an important legal tool which can be used effectively to promote biodiversity conservation and sustainable use of biological resources. There are several key features of the legislation which have a bearing on biodiversity conservation.

The legislation's primary role is to regulate planning for development at the national and provincial levels. Section 2 of the Act declares that the law applies to all land in PNG, whether it is customary, State or freehold land. And, section 5 of the Act makes it mandatory for the determining authority to take into account the Environment Act 2000 (the Act makes reference to the Environmental Planning Act and the Environmental Contaminants Act) and more specifically EIA, when considering physical planning matters. Also section 9 of the Act provides that the Secretary for DEC or his nominee is a member of the National Physical Planning Board. The inclusion of the Secretary for DEC on the Board, the requirement for an EIA and the reference to the Environment Act in the legislation, reflects the prominence the Act gives to environmental management *vis-a-vis* biodiversity conservation. A development activity that will have an impact on biodiversity conservation would definitely fall under the ambit of this legislation.

Both the Environment Act and the Physical Planning Act were preceded by the Environmental Planning Act 1978 and the Water Resources Act 1982. The Environmental Planning Act was the primary legislation for regulating economic development. The main environmental management principle promoted by the legislation was the precautionary principle. The Act postulated this principle through the EIA process which under the legislation was called 'environmental plan'. The legislation provided the methodology for dealing with an EIA. This mechanism also included procedures for enabling public participation in the EIA process. The Act was weak and contained a lot of loopholes which rendered its enforcement meaningless. It was repealed and replaced by the Environment Act in 2000.

The Water Resources Act was aimed at controlling the use of water in the country. Two aspects of the legislation are worth mentioning. The first relates to the "ownership" of water resources and the second relates to compensation to occupiers of land whose peaceful enjoyment of the land is disturbed by a water permit holder.

The Water Resources Act was severely criticized for its inability to control water pollution and protect aquatic and marine species. Three main factors were identified as contributing to the problem. These were: (1) inadequacy of the legislation in providing strong water standards; (2) lack of funds to enable site visits to strengthen monitoring and compliance; (3) lack of expertise within the government institution empowered to monitor compliance and (4) lack of facilities such as laboratories to assess water samples to ascertain and maintain water quality.

In 2000, the government responded to these challenges by repealing the Water Resources Act and incorporating some of its key provisions in the new Environment Act. The new legislation removes the cumbersome bureaucratic red tape in obtaining a license under the three different pieces of legislation namely, the Environmental Planning Act; the

Environmental Contaminants Act and the Water Resources Act. The new legislation also enabled the introduction of several new pieces of subordinate legislation aimed at clarifying some of the ambiguities and gaps in the former legal regime.

4.3 Conservation of Biological Resources (Protected Areas)

The conservation of biological resources and areas of cultural and natural significance are promoted by the Conservation Areas Act. This statute and the National Parks Act give effect to the Convention Concerning the Protection of the World Cultural and Natural Heritage 1971 (World Heritage Convention) and also the Apia Convention. The former establishes a National Conservation Council under section 4, comprising at least five persons who should have technical and specialized knowledge in environmental matters. After the enactment of the legislation in 1978, the government failed to establish the National Conservation Council. It was only in 2003 that the Council was formally established. The establishment of the Council now means that the Act is now in force (although by 2006 it had still not met).

The Conservation Areas Act provides a mechanism for declaring a conservation area especially on customary land. The key provision of the legislation is section 12. Under this provision, the Minister for the DEC has to cause a recommendation to be prepared for an area to be declared a conservation area if he or she thinks the area has particular biological, topographical, geological, historical, scientific or social significance or value to the present and future generations. Because conservation areas will mostly be declared over customary land, the recommendation must include an inventory of persons living in the area, land ownership of the area, use to which the land is put within the area and its boundaries.

It is interesting to note that the 'area' designated for conservation by section 12 is not restricted only to areas of biological, topographical, geological or social significance, but also extends to the conservation of structures of historical value. It then becomes apparent that a site, place or region which has a particular biological, topographical, geological, social or scientific value or a building or a structure which has historical value can be conserved by the Act. And an area need not be declared as a conservation area for its special value solely for the present generation, but can be conserved for future generations.

The National Parks Act provides the procedure for declaring a national park on State land and land leased from customary landowners as provided under the Land Act 1962 (which has now been replaced by the Land Act 1996). An area can be declared as a national park for the preservation of the environment and of the national inheritance by conserving sites and areas which have a particular biological, topographical, geological, historical, scientific or social importance. Where an area has been declared a national park, no development activities can be undertaken in the area without the consent of the Director of National Parks. However, interestingly, the Mining Act 1992 and the Oil and Gas Act 1998, which were enacted many years after the enactment of the National Parks Act, declare that all lands in PNG are eligible for exploration. Although no mining or petroleum exploration licenses have been issued over existing national parks, it is possible to argue that national parks are not precluded from the ambit of the two pieces of legislation.

The Fauna (Protection and Control) Act is small in length, and yet very fundamental. The Act seeks to protect and control the harvesting and destruction of fauna. The administration of the Act is vested in the Conservator (usually the DEC Secretary) who is appointed by the

Minister. The legislation empowers the Minister to declare any fauna species (usually those which are endangered or threatened with extinction) as protected fauna and also establishes a mechanism for their protection and management. The legislation empowers the government to designate certain areas for this purpose. Three different types of areas are designated by the legislation. The first is “wildlife sanctuary”; the second, “protected areas” and third, “wildlife management areas” (WMA). The taking and killing of protected fauna is prohibited in these three areas. Two sanctuaries and one protected area have been declared so far under the Act. Currently there are 48 WMA in the country.

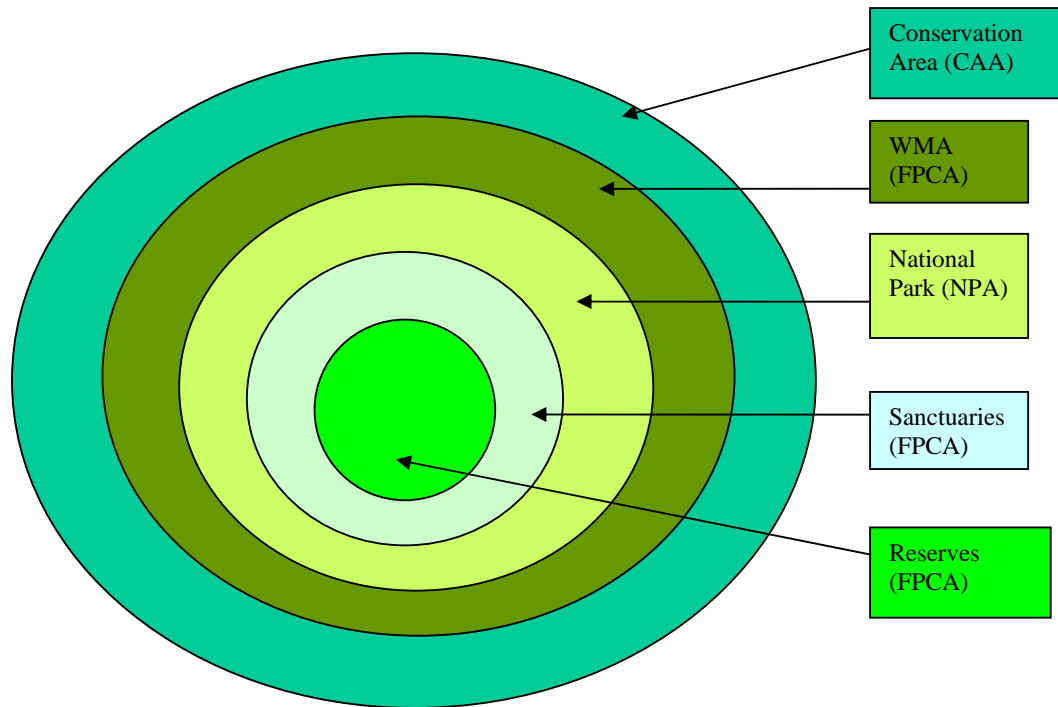
Protected areas, sanctuaries and WMA are usually declared over customary land. Thus, in the case of WMA, with the exception of the Sawataetae WMA on the Normanby Island in the Milne Bay Province, all the WMA have been established on customary land. To encourage the active involvement of customary landowners in the conservation program, the legislation made provisions for their participation in the protection and management of sanctuaries, protected areas and WMA. Customary landowners are involved in protected areas through their membership of the committees, and their engagement as rangers for the protected areas. The involvement of customary owners in the protection and management of these areas is an effective method for ensuring that the legislation is effectively implemented.

The establishment and management of protected areas under the Fauna (Protection and Control) Act was influenced largely by the government through DEC and in some cases the provincial governments. Over the years since 1978, government support for protected areas through funding and technical support dwindled. The decreasing support from the government led to many WMA, sanctuaries and even National Parks being run down and even non-functional. In the light of this dilapidated situation, many non-governmental organizations (NGOs) particularly environmental NGOs in collaboration with the government through DEC, began to take over this function from the government. This arrangement was established in light of limited resources by the government through its 1996 Total Catchment Environmental Management Policy where one of the main shared arrangements with respective provincial governments and other partners was on management of protected areas.

The involvement of NGOs in the sector is influenced largely by the need for government-NGO partnership and stewardship for biodiversity protection and management. Through this partnership the NGOs have moved into local communities and encouraged them to set aside large tracts of customary land for biodiversity conservation purposes. The landowners were informed that if they set aside their customary land as PA, they will benefit from appropriate economic development activities within the PA. One of these mechanisms is the disbursement of funds through various global environmental funds and new economic initiatives through integrated conservation and development projects (ICAD) such as eco-forestry coupled with carbon trade. Thus, the concept of ICAD was born in PNG.

When these conservation laws are read together, it becomes clear that there are several categories of protected areas. Each of these areas is defined by its size and the component of biodiversity that the law is designed to protect. Figure 1 highlights the protected areas regime in PNG.

Figure 1: Protected Areas Regime in PNG



The smallest protected area is ‘reserves’ that may be established under the Fauna (Protection and Control) Act. The largest protected area is the ‘conservation area’ envisioned by the Conservation Areas Act. Between these two regimes are the sanctuaries, national parks and WMA. The scheme of the law allows the government to reclassify a designated protected area upwards (from reserve to a sanctuary etc) or downwards (from a conservation area to a WMA, etc) depending on the biodiversity status of the protected area.

The International Trade (Fauna and Flora) (Amendment) Act 2003 was enacted to repeal the International Trade (Fauna and Flora) Act 1979 which was itself enacted to meet PNG’s obligation under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) which PNG acceded to in 1976. The CITES Act protects the importation and exportation of endangered fauna and flora species identified under the CITES Convention. The 1979 CITES Act basically adopted the CITES Convention into domestic law. The legislation regulated the exportation, re-exportation and importation of species protected under the CITES Convention. The new legislation adopts the latest CITES lists of protected fauna and flora species as at the beginning of 2003. The legislation introduces six new Schedules to the Act. Schedules 1, 2 and 3 basically adopt the updated Appendix I, II and III of the CITES Convention.

Schedule 4 contains a list of native species which are exempt from permit requirements under the Act. Schedule 5 enumerates exotic species which are exempt from the permit requirements of the Act. And Schedule 6 adopts the full text of the CITES Convention without the Appendices. Exports and imports of these species can only be allowed with a permit issued by the Management Authority.

There are four key features of the new legislation. Firstly, it adopts the updated list from the CITES Secretariat. Secondly, it includes two new lists clearly distinguishing native and exotic fauna and flora existing in PNG from those flora and fauna species on Appendix I to III which are not present in Papua New Guinea. Thirdly, the Minister has now been given the power to amend the Schedules whenever there is a change in the status of endangered fauna and flora. Fourthly, the Act now clarifies that the Management Authority accepted by CITES is the Secretary for DEC.

A new regime for biodiversity conservation was introduced in 1995 with one of the biggest political and legal reforms in the history of PNG. In that year the Parliament amended the Constitution and repealed the Organic Law on Provincial Governments which established the provincial government system in the country since 1976. A new Organic Law – Organic Law on Provincial Governments and Local-level Governments was enacted to repeal and replace the old Organic Law. The new Organic Law ‘decentralized’ administrative, political, law-making and financial powers to provincial governments and the third layer of government, the local-level governments. It was envisioned that through this reform, provincial and local-level governments would take control of development within their political jurisdictions. This objective was to be achieved through mechanisms such as:

- Rolling five year development plans
- Joint District Planning and Budget Priorities Committee
- Ward (village) Development Committees (development planning by communities themselves)
- District treasuries
- Primarily law-making matters of provincial and local-level governments

The government anticipated that through this ‘decentralization process’, the people in local communities would determine their own development programs. An important provision of the Organic Law is section 44 which empowers local-level governments to enact their own environment and biodiversity laws. A number of local-level governments have utilized this provision to develop and enact their local environment and conservation laws.

The challenge for the government is to make certain that these local laws are consistent with the national laws and also that they are consistent throughout the country.

A new proposal for biodiversity conservation specifically on marine biodiversity is currently being pursued by the National Fisheries Authority. Under the current draft Fisheries Management Bill, the Authority will be empowered to designate certain areas of the country as Marine Protected Areas. This proposal is an attempt by the Authority to give legal status to some of the proposed marine protected areas that are being promoted by several NGOs.

If this proposal is accepted and the Bill is enacted by Parliament, it will add a new dimension to the protected areas regime. The declaration of marine protected areas will no doubt lead to duplicity of powers and functions between DEC and the National Fisheries Authority and will result in confusion. Both State agencies are aware of this dilemma and have resolved to settle this issue before it is presented to Parliament for approval.

4.4 *Pollution Control*

The control and management of environment pollution was undertaken under the auspices of the Environmental Contaminants Act, the Summary Offences Act, the Dumping of Wastes at Sea Act and the Prevention of Pollution of the Sea Act. The first legislation regulated the importation and use of environmental contaminants; the importation, use, manufacture and sale of hazardous environmental contaminants; and noise pollution. In 1994, a minor amendment was made to the Environmental Contaminants Act to incorporate some of the matters contained in the Vienna Convention on the Ozone Layer 1985 and the Montreal Protocols 1987. The Environment Act repealed the legislation 2000.

The Summary Offences Act was enacted to cater for minor offences which would be dealt with by the District and Local Courts. Under this legal regime, several minor offences relating to the environmental pollution were created. Thus, minor offences relating to activities such as burning of rubbish, offensive smells, the breaking of glass and the polluting and obstructing of watercourse can be prosecuted in the District or Local Courts. The other two laws basically regulate the pollution of the sea.

The Dumping of Wastes at Sea Act was enacted in 1979 for two principal reasons. First, to provide for the prevention of pollution of the sea by the dumping of waste and other matter which may create hazards to human health, harm living resources and marine life, damage amenities or interfere with other legitimate uses of the sea; and second, to give effect in PNG as far as may be, to the International Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter, 1972.

The legislation prohibits the discharge of wastes from vehicles, ships, aircrafts and marine structures. Although the legislation may seem very stringent on waste management, it actually regulates the dumping of wastes into the territorial waters of PNG. The legislation allows for the dumping of wastes and other materials in the territorial waters through a licensing process provided for under the legislation. Section 4 sets out the permit application requirements and section 5 provides the criteria for determining an application. Interestingly, section 6 permits the disposal of wastes in the territorial waters in emergency situations where the continued possession of the waste on the vehicle, ship, aircraft or marine structure poses health risk to humans.

The focus of this legislation is on marine biodiversity. The prevention of dumping in PNG waters, of wastes and other materials, ensures that the fragile marine eco-systems are protected and used on a sustainable basis.

The Prevention of Dumping of Wastes at Sea Act was also enacted in 1979 for two main reasons. First, the legislation provides for the prevention and control of pollution of the sea by oil and other substances; and second, to give effect in PNG to four international treaties relating to oil pollution. These treaties are:

- The International Convention for the Prevention of Pollution of the Sea by Oil, 1954, as amended in 1962, 1969 and 1971;

- The International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, 1969 and the Protocol Relating to Intervention on the High Seas in Cases of Marine Pollution by Substances other than Oil 1973;
- The International Convention on Civil Liability for Oil Pollution Damage, 1969 and the Protocol to the International Convention on Civil Liability for Oil Pollution Damage, 1969 (1976); and
- The International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971 and the Protocol to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971 (1976).

Unlike the Dumping of Wastes at Sea Act, this legislation is specifically concerned with oil pollution in PNG's internal waters and the EEZ. It brings into force in PNG the provisions of the four oil pollution treaties. According to section 4, any discharge of oil or any oil mixture in PNG waters will attract a penalty for the owner and captain of the ship. The legislation covers oil discharge from ships registered in PNG and outside the country. Under section 14 a person who discharges a marine pollutant (which is a substance that will create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea) and does not inform the relevant State agency (in this case the Department of Transport), he or she will be liable to a fine of K20,000.00.

The focus of the Prevention of Dumping of Wastes at Sea Act is similar to that of the Dumping of Wastes at Sea Act – marine biodiversity. Given the movement of people and birds in PNG waters, terrestrial species are also covered by these two laws. An oil spill would not only impact on the marine eco-system but also people and other biological species which depend on the sea for their livelihood. These two pieces of legislation are usually enforced by the Department of Transport. Attempts have been made by the Department to review these two statutes. A draft bill is currently in circulation for comment and hopefully will see the light of day soon.

4.5 Summary

A lot of work remains to be done to ensure the environmental law framework is strengthened to promote the sustainable use and management of biological diversity. The present legal regime lacks a cohesive framework for the implementation of biodiversity conservation. The government has acknowledged the inadequacy of the law by making some progress in enacting the Environment Act 2000 and also amending the International Trade (Fauna and Flora) (Amendment) Act 2003.

However, in the area of biodiversity conservation, there is some anxiety about the status of protected areas. The situation is exacerbated by the *Mining Act* and the *Petroleum and Gas Act* and the proposed Fisheries Management Bill. A firm decision is required to clarify the law on this subject.

Chapter 5: Strategies and Action Plan for Biodiversity Conservation

5.1 Introduction

The rich and diverse biological diversity of the country is recognized both locally and internationally. PNG has acknowledged the cultural, economic and social value of this biological diversity by initiating a series of programs aimed at protecting the country's biological diversity. These initiatives became more prominent in the early 1990s and at the turn of the new century.

5.2 Biodiversity Conservation Initiatives

Since 1992, PNG has introduced a number of initiatives aimed at conserving the country's biological diversity. Table 6 contains a chronological summary of the major initiatives undertaken since 1992.

Table 6: Some Main Developments on PNG's Response to Biodiversity Protection and Sustainable Use

1992	PNG produced its own <i>National Report For Rio</i> (Unisearch 1992) PNG signed at <i>Rio</i> the various Rio instruments (June) PNG Post-UNCED Seminar (November) NFCAP AusAID ISP-DEC Strategic Plan Project (June) NFCAP USAid/BSP Conservation Needs Assessment Project (1992-1994) DEC-WWF-EU Protected Areas Rehabilitation Project (Phase 1)
1993	UPNG assisted this process by running the 1993 Waigani Seminar around the theme "From Rio to Rai" (June-July) PNG commenced developing its own National Sustainable Development Strategy NFCAP DEC-UNDP-GEF Biodiversity Conservation and Resource Management Project (1993-1999)
1994	PNG National Executive Council endorsed the PNG National Sustainable Development Strategy UN Mission to PNG on Sustainable Development DEC-UNEP-GEF PNG Country Study on Biological Diversity Project (1994-1996)
1997	<i>No report</i> on PNG at UNGASS, New York, Rio+5 (June 1997). GOPNG Medium Term Development Strategy 1997-2002 (MTDS) DEC-UNEP-GEF Biodiversity Data Management Project (1997-1998)
1998	DEC-World Bank-GEF Biodiversity Rapid Assessment (BioRAP) Project (1998-1999)

	<p>GOPNG endorsement of Policy on Establishment and Development of Conservation-Based Industry through Research and Development, and the creation of the Papua New Guinea Institute of Biodiversity (PINBio) to implement the Policy under the auspices of DEC.</p> <p>DEC-UNDP-GEF PNG Climate Change Assistance Project (1998-2000) – development of the First National Communication under UNFCCC..</p>
1999	<p>PNG Human Development Report published</p> <p>DEC-World Bank-GEF National Biodiversity Strategy and Action Plan (NBSAP) – included the components of Country Report and Clearing House Mechanism. Terminated in 2003 after two extensions (1999-2003).</p> <p>GOPNG-Australia Ministerial Forum which provided the arrangement for DEC-DEH (Environment Australia) to advance some specific policy elements in the PNG forestry sector.</p>
2000	<p>United Nations Millennium Development Goals</p> <p>GOPNG-World Bank-GEF Forestry Conservation Program in preliminary negotiations</p>
2002	<p>National Assessment Report for the World Summit on Sustainable Development in Johannesburg in August-September 2002</p>
2003	<p>Ongoing formulation of the NSDS</p>
2004	<p>DEC-CI led PNG Protected Areas Initiative on eve of CBD-COP7</p> <p>DEC-WWF led Rapid Assessment of Priority Protected Areas Management (RAPPAM)</p>
2005	<p>The adoption of the Medium Term Development Strategy (MTDS) 2005 – 2010</p> <p>PNG's MDG First Progress Report approved in 2004</p> <p>DEC-UNEP-GEF Draft Biosafety and Biotechnology Policy</p> <p>GOPNG Draft Carbon Trade Policy</p> <p>DEC-CI led re-formulation of PNG NBSAP through the <i>Alliance for Policy and Legal Frameworks for Biodiversity Conservation in PNG</i> Project</p> <p>GOPNG Draft Energy Policy 2005</p> <p>GOPNG Draft Rural Electrification Policy</p> <p>DEC-UNDP-GEF National Capacity Self Assessment (NCSA) Project</p> <p>GOPNG-UNDP-World Bank National Dialogue on GEF</p>
2006	<p>GOPNG-University of Columbia, USA arrangement on the UN PNG MDG-7 Initiative on environmental sustainability and economic growth.</p> <p>DEC-CI Project on NBSAP concludes (September)</p>

Some of these main programs are briefly discussed below.

5.2.1 National Report for the UNCED 1992

This document was prepared by the University of Papua New Guinea for the government for presentation to the UNCED. The National Report was a status report on the state of environment and development in PNG.

5.2.2 PNG Signed The Rio Documents 1992

PNG was represented at the UNCED by the Governor-General and the Minister for DEC. At the UNCED, five international environmental instruments were adopted by members of the UN. These were: (1) the Rio Declaration; (2) the CBD; (3) the UNFCCC; (4) Agenda 21 and (5) the Forest Principles. PNG showed its support to the international community by signing

the CBD and the UNFCCC and adopting the other three instruments. These five documents together set the stage for the global implementation of sustainable development. PNG followed through with its commitment at Rio by ratifying the CBD and UNFCCC in March 1993.

5.2.3 Post-UNCED Seminar 1992

A few months after the UNCED, the government through the DEC and the Department of Foreign Affairs, and with the assistance of its partners organized a national seminar to address the issues of sustainable development. One of the major recommendations of the seminar was for the government to establish and develop a NSDS.

5.2.4 UPNG Waigani Seminar: From Rio to Rai 1993

The call by the participants at the Post UNCED Seminar was strengthened at the UPNG Waigani Seminar the following year. Participants and speakers representing various sections of the community attended the Waigani Seminar. The primary outcome of the Seminar was the formulation of a set of principles which was to be used as a guide to develop the NSDS. The NSDS framework was consequently adopted by the government in 1993.

5.2.5 GOPNG-World Bank-NFCAP 1993-1995

In 1993, the government through the DEC and National Forest Authority as the lead agencies initiated a series of projects under the National Forests and Conservation Action Program (NFCAP). There were 40 different projects which were split between the two government agencies. Four of these projects under DEC require mention in that they contributed significantly to the development of the NBSAP. These were:

- DEC-AusAID Strategic Plan 1992
The DEC Strategic Plan process commenced in 1992 with funding from the New Zealand Government and the World Bank. The final phase of the process and the Strategic Plan were established by the AusAID Institutional Strengthening Project (ISP). This process also supported DEC in 1995 to outline its strategy following the Parliament approval of the *Organic Law on Provincial Governments and Local-Level Governments*. The plan sets out goals, objectives, strategies and priority actions to focus work in all DEC programs. Four features of the Strategic Plan were:
 - (1) The adoption of the total catchment environmental management (TCEM) policy in 1996;
 - (2) The adoption of the 10 Year Vision of DEC – one of them being biodiversity conservation;
 - (3) The transfer of protected areas management to other authorities and partners including the NGOs who have come in to take over this function on the ground; and
 - (4) The need for institutional capacity building.
- DEC-USAid-BSP Conservation Needs Assessment (CNA) 1992-1994
This project was funded by the BSP and USAid. There were two main components of the project: (1) biological and (2) social aspects of biological resources

conservation. Basically it was an exercise to prioritize biodiversity conservation. The major outcome of the project was for the first time the development of the priority biodiversity areas in PNG authorized by the Government for official use in any planning and development interventions in PNG. These included digital products and hard versions of CNA maps.

- DEC-WWF-EU Protected Areas Rehabilitation Project (Phase 1) 1992-1994
The principal objective of this project was to assess the management effectiveness and deficiencies of PNG's existing conservation areas system and develop recommendations for strengthening protected areas. The objective of the project was similar to the CNA as it was again a prioritization exercise by WWF and DEC but specifically to assess the status of PA. The second Phase of the Project (Conservation Strengthening Project) has never materialized through the Government's bureaucratic procedures although the EU had expressed interest to consider the initiative.

After almost 10 years, a similar project Rapid Assessment of Priority Protected Areas Management (RAPPAM) was undertaken by WWF-DEC in conjunction with other environmental NGOs. The review was undertaken with financial agreement between WWF and DEC. The project was undertaken in 2004 and was completed in November 2006.

- DEC-UNDP-GEF Biodiversity Conservation and Resource Management Project 1993-1999
The two principal aims of this project were: (1) capacity building for biological resources conservation and (2) implementation of the Conservation Areas Act through the ICAD concept. The DEC/UNDP/GEF project was managed for five years with a year's extension and ceased in 1999.

Three major outcomes were achieved through the project:

- (1) The Lak and Bismarck-Ramu pilot ICAD projects (1995-2000);
- (2) The establishment of the Conservation Resource Centre in DEC Conservation Division as a capacity boosting institution (1993-2000), and
- (3) The feasibility study of a PNG Conservation Trust Fund which resulted in the establishment of the PNG Mama Graun Conservation Trust Fund.

5.2.6 DEC-UNEP-GEF-ACRE Country Study on Biological Diversity 1994-1996

This project was aimed at providing a comprehensive country report on the status of biological diversity. Unlike previous country reports which focused especially on environmental and social aspects of biodiversity conservation, this report emphasized the mutual intricacies of biodiversity, social and economics. The report articulated the call for mainstreaming of biodiversity development and conservation in the national development strategies and presented arguments based on environmental economics.

5.2.7 NEC endorsed the Framework for NSDS 1994

In 1994 the government responded to the call of the community expressed at the Post-UNCED Seminar in 1992 and the 20th Waigani Seminar in 1993 by adopting a document entitled “A Guide to National Sustainable Development Strategy”. The document provided a framework for the development of the NSDS. The government also endorsed the formulation of a NSDS. The development of the NSDS was to be undertaken under the supervision of a NSDS Steering Committee which was established in April 1994. Unfortunately by the end of 1994, the initiative came to an abrupt end.

5.2.8 UN Mission to PNG on Sustainable Development 1994

To assist the NSDS Steering Committee, the government requested the UNDP for assistance. The UN sent a Mission to PNG to assist the government through the NSDS Steering Committee by providing an integrated package of policy advice to the Government of PNG on:

- Integrating environment and development at all levels of the decision making process;
- An integrated approach to the management of renewable and non-renewable natural resources;
- Strengthening mechanisms for effective people’s participation in decision making; and
- Capacity building for villages and communities, grassroots NGOs and village/community government.

The UN Mission approached the task by first conducting an audit of the environment and development issues affecting the country. The Mission completed this goal with the publication of its report entitled “*Yumi Wankain: Report of the United Nations Joint Inter-Agency Mission to Papua New Guinea on Sustainable Development*”. The report provided a holistic perspective to development planning and also provided an integrated package of policy advice to the Government on sustainable development.

The UN Mission’s core message was that there was an urgent need to transform the policy, legal and administrative systems to achieve: (1) better governance; (2) stronger and efficient management of the country’s natural resources and (3) stronger community empowerment. These recommendations if implemented would achieve the three main goals identified above. The report of the UN Mission was however, not acted on by the government.

5.2.9 DEC-UNEP-GEF Biodiversity Data Management Project 1997 – 1998

The aim of this project was to conduct an inventory of PNG’s biodiversity data holdings all over the world and in PNG. The objective of the project was to produce a catalogue and also develop procedures and tools for accessing the data. The first objective was achieved but unfortunately the latter was not developed as it required a more comprehensive scope and time frame in PNG to develop and establish biodiversity databases and information management systems. This entailed appropriate protocols on data collections, storage, access and sharing regimes. In 2005 a final draft of the protocols was developed and is being tested under a number of arrangements.

5.2.10 Rio+5 New York 1997

This event was an international gathering to review and assess the progress of sustainable development in countries around the world since the UNCED in 1992. The Commission on Sustainable Development requested States to submit their National Assessment Report (NAR) for the conference but many States failed to provide their NAR. PNG was one of those countries.

5.2.11 GOPNG Medium Term Development Strategy 1997

In 1996, the government introduced the MTDS 1997-2002. Against the backdrop of the surge in environmental movement in the 1990s, the MTDS failed to adopt biodiversity conservation as a core goal of the government. Over the years biodiversity conservation took backstage in national development planning.

5.2.12. GOPNG Creation of the Papua New Guinea Institute of Biodiversity (PINBio) for the Establishment and Development of PNG's Conservation-Based Industry - 1998

This establishment of this program was a land-mark commitment to primarily develop options for the development of various industries based on biodiversity conservation objectives under the auspices of DEC through research and development. This was PNG's major response to the CBD particularly on: new innovations relating to the development of protected areas and their management that must entail viable economic initiatives and incentives; sustainable utilization of biodiversity including from the prevailing and traditional agricultural systems for agrobiodiversity conservation; and, opportunities for the development and conservation of its genetic resources through relevant access and benefit sharing regimes. Other noted elements in this program also include technology transfer and developments on intellectual property rights.

PINBio is a consortium of PNG research, tertiary educational institutions, public agencies and NGOs that operate in a networking to facilitate for R&D applications. It is governed by an independent Board and a Technical Steering Committee who are elected by the networking members. The PINBio secretariat is hosted by DEC full time appointments by DEC within its structure.

5.2.12 DEC-World Bank-GEF BioRAP Project 1999

This was a primarily a desktop biodiversity rapid appraisal project that was executed by the Australian National University. It built on some developments in the DEC-UNEP-GEF BDM Project. Its key objectives included biodiversity data access arrangements with prominent custodians of PNG data in international and national institutions, application of various computer softwares in the BioRAP toolbox with a key feature being to extrapolate scenarios of a status of species to other possible regions in PNG. The BioRAP manipulated the PNGRIS, PNGFIM and other relevant databases to develop for the first time in a comprehensive analytical tool for environmental assessments including for protected areas. The project was completed in 1999 and the data and the BioRAP toolbox are in the possession of DEC.

Building on this project a more user-friendly biodiversity database and its accompanying GIS system was completed in 2004 by DEH (Environment Australia) as the PNG Species

Information Management System (SIMS) for fauna and flora. This is housed in the DEC Conservation Division.

5.2.13 UN PNG Human Development Report 1999

This document contained essential data on the economic, health and social conditions of Papua New Guineans. It was meant to be a planning tool for decision and policy makers to assist them in designing development programs for PNG. Although the Human Development Report does not specifically address biodiversity, it provides useful information which is critical for fashioning biodiversity conservation programs.

5.2.14 UN Millennium Development Goals (MDG) 2000

The MDG are global goals which the State governments have committed themselves to pursue. Unlike previous global goals, the MDG are actual targets which are anticipated to be achieved within prescribed timeframes. Goal 7 of the MDG is pertinent as it relates to environmental sustainability. The key objective of Goal 7 is that significant biodiversity loss must be minimized by 2010. One of the outcomes of the NBSAP is to provide the strategies for PNG to achieve this goal.

5.2.15 GOPNG-World Bank-GEF Forestry Conservation Program 1997-2004

The Forestry Conservation Program was initiated in 1997 with funding from the World Bank. The project was aimed at strengthening sustainable forestry development and conservation programs in PNG. This was to be achieved through the four main components of:

- Landowners Awareness
- Sustainable forest management
- PNG *Mama Graun* Trust Fund
- Environmental Assessment

The Forestry Conservation Program was meant to be implemented in late 1990s and early 2000 but after protracted negotiations, it was withdrawn by the World Bank in 2004.

5.2.16 National Assessment Report for WSSD 2002

The NAR is a periodic report required by the Commission on Sustainable Development of the UN to assess the progress of sustainable development in States. One of the requirements of the Commission on Sustainable Development was that countries submit to the Commission its NAR for presentation at the WSSD in 2002.

In the case of PNG, it had not prepared its NAR by March 2002. The UNDP intervened by persuading the Department of Planning and Rural Development to organize a team of experts to formulate the NAR for PNG. A team of national consultants were engaged and compiled the NAR in August 2002.

The NAR showed that since 1992, PNG had not achieved most of the objectives on biodiversity conservation and sustainable development. Several constraints have contributed to this scenario. These constraints include:

- Weak Governance;
- Lack of coordination amongst State agencies
- Poor and declining social services;
- Inadequate information gathering and dissemination;
- Corruption and mismanagement practices in all levels of public office;
- Poor and inefficient implementation processes; and
- Inadequate health and educational facilities particularly in rural areas.

These factors have and will continue to hinder the progress of biodiversity conservation and sustainable use in PNG. These are problems that are pertinent in many of the developing countries within the region.

5.2.17 On-going formulation of NSDS 2003

In 2003 the government resurrected the NSDS which was abandoned in 1994. In an attempt to recapture the spirit of the 1990s and in response to the NAR, the government directed the Department of National Planning and Rural Development in 2003 to begin resurrecting the NSDS initiative of 1994. The Department was tasked to establish an Inter-Agency Working Committee on National Sustainable Development Strategy immediately to commence work on the NSDS. The NSDS Working Committee initially comprised officers from the Department of National Planning and Rural Development, DEC and several other government departments and agencies. There are nine Terms of Reference for the NSDS Working Committee. These are:

- Design an agreed structure of the NSDS;
- Determine the core focus, objectives and elements of the Strategy based on global conventions, agreements and commitments and national laws and policies and other strategies;
- Review and analyze existing sectoral strategies and outcomes of international conventions;
- Deliberate on relevant issues and reach understanding on strategic options within the context of the agreed framework and taking into account the core focus, objectives and thrust of the Strategy;
- Draft the NSDS;
- Consult other Government agencies, provinces, non-State organizations and the community in general and incorporate comments and feedback into the draft Strategy;
- Seek formal endorsement of the Strategy;
- Facilitate publication, printing and distribution of the NSDS; and
- Undertake awareness on approved Strategy.

At the first meeting of the NSDS Working Committee on 7 August, 2003 the Committee agreed that it would complete a draft NSDS within six months. It was envisioned that the draft NSDS was to be completed by February 2004. By 2006, the NSDS Working Committee had still not developed a draft NSDS.

5.2.18 DEC-CI PNG Protected Areas Initiative 2004

The PNG Protected Areas Initiative (PNG-PAI) was introduced in 2004. The objective of the program is to establish and maintain, by 2010, comprehensive, effectively managed and ecologically representative national and regional systems of protected areas. The project is a direct response to the MDG enunciated by the *Millennium Declaration* 2000. MDG 7 focuses on Environmental Sustainability. Under the JPOI member States are required to take measures to reduce biodiversity loss significantly by 2010. The Protect Areas Initiative is an attempt by PNG to implement its commitment under the *Millennium Declaration* and the JPOI.

The project is a joint collaboration by DEC and major environmental NGOs in PNG, namely the CI, WWF and TNC. There are four principal goals of the Protected Areas Initiative. These are:

- (1) To use the 2004 CBD-COP7 commitments on Protected Areas as its basis to adjust activities in PNG on protected areas;
- (2) The complete assessment of protected areas to identify gaps for correction;
- (3) The implementation of capacity strengthening for protected areas management; and
- (4) The provision of sustainable finances for protected areas management.

5.2.19 DEC-WWF-EU RAPPAM 2004

The Rapid Assessment of Protected Areas Management (RAPAM) was undertaken in 2004 under the leadership of WWF. It is envisioned that RAPAM will provide direction for the second and third goals of the Protected Areas Initiative. The findings of RAPAM will greatly enhance the identification of approaches and programs that will be developed for the protection of biodiversity in PNG.

5.2.20 GOPNG Medium Term Development Strategy 2005-2010

The master plan for the development of PNG in the medium term is provided by the latest MTDS 2005-2010. In the next five years the government intends to pursue five goals. These are:

- Good Governance;
- Export-driven Economic Growth;
- Rural Development;
- Poverty Reduction; and
- Human Resource Development.

Although the MTDS does not explicitly provides clear strategies to deal with biodiversity conservation and the sustainable use of biological resources, the underpinning of the MTDS is that this issue is an integral component of the programs designed to achieve its five goals. As mentioned above, the MTDS merely provides a table on environment sustainability without any substantive programs for achieving significant biodiversity loss by 2010. The NBSAP fills this gap.

5.2.21 PNG's UN-MDG First Progress Report 2004

This is another government document which provides a snapshot of PNG, focusing on the country's attempts in implementing the MDG. The document provides bold statements on the status of the eight MDG in PNG. The Progress Report on Goal 7 is very brief and merely states the *status quo*.

5.3 Summary

The various government initiatives that have been undertaken in addressing biodiversity conservation are encouraging. However, many of these initiatives are temporal and unsustainable. They have either not achieved their initial objectives or have been disjointed and have very little connection to the other programs. In some cases some of the programs such as the MTDS, the NSDS and the PAI show little or no interconnectedness. There is an urgent need to synergize some of the existing programs and projects to enable a concerted and consistent effort in promoting biodiversity conservation. The NBSAP should provide that missing link and guide the development process to enable PNG to encourage biodiversity conservation and sustainable use of biological resources.

Chapter 6: Institutional and Human Capacity

The problem of institutional and human capacity is endemic in PNG. The DEC acknowledged this factor as a significant concern when it conducted its review in the 1990s. The DEC Strategic Plan of 1992 emphasizes the need for DEC capacity strengthening projects. The key areas for capacity building in terms of support and development for conservation management are:

- Conservation System Design;
- Rehabilitation Activities;
- Advocacy and Awareness Programs;
- Training; and
- Management Systems Strengthening.

A decade after the 1992 Strategic Plan was adopted the government through DEC acknowledged in 2002, that there were gaps and discrepancies within the institutional and legal frameworks. It promised to undertake seven (7) programs to rectify some of these problems. These programs are:

- Incorporating environmental considerations in the MTDS by developing a National Environment Strategy and Action Plan as an outcome of the MTDS and formulate a National Biodiversity Strategy and Action Plan as an outcome of the MTDS;
- Implementing and strengthening the policy and regulatory framework through: (1) the enforcement of the Environment Act 2000; (2) consolidating and modifying biodiversity conservation-based legislation and development of specific policies on biodiversity and trade and the intellectual property rights law on traditional knowledge, and establishment of new revenue incentives and improvements to collections; and (3) developing and establishing a process to review and implement the Fourth National Goal and Directive Principles of the Constitution, the Policy Statement on Environment Principles 1976, the Organic Law on Provincial Governments and Local-Level Governments 1995, the recommendations by the Constitutional Review Commission on the Fourth Goal 1996, and considerations of an Organic Law on Natural Resources and Environment;
- Strengthening the work of the Papua New Guinea Institute of Biodiversity;
- Developing and strengthening partnerships on environment and conservation among the various stakeholder groupings to address environmental governance, environmental economics, and the vicious cycle of environment-poverty;
- Developing, establishing and strengthening partnership on environment and conservation enterprise development with the private sector and non-governmental organizations;
- Improving and strengthening PNG's regional and international commitments and obligations in various agreements to be incorporated in national policies to promote environmental impact assessments as a requirement by investment projects and to promote biodiversity trade. This entails the Ministry to enter into State negotiations with international donors and finance, which will be supported

- by an Ambassador on Environment to primarily raise environmental financial resources; and
- Reviewing and strengthening the capacity of DEC in terms of its human and financial capacities.

These seven programs are ongoing and some of them are currently being implemented by the government. The government has also taken the bold move to pursue a rigorous approach to protect this important national resource through establishing and funding capacity building programs for PINBio and also supporting the PNG PAI.

Several new institutions have also been established or are being created which require institutional strengthening and human capacity building. These include PINBio; the Environment Council (Environment Act); the National Conservation Council (Conservation Areas Act); and the National Biosafety and Biotechnology Council (draft Biosafety and Biotechnology Bill). These institutions will require both institutional and physical support to effectively function.

Apart from these institutions, there are several learning and research and development institutions that are engaged in activities and programs that have a bearing on biodiversity conservation and sustainable use. These institutions include the universities, agriculture research institutions such as the National Agriculture Research Institute; the Coconut and Cocoa Research Institute; the Forest Research Institute and the Institute of Medical Research. Biodiversity research methodologies and applications employed by these institutions need to be coordinated so that both institutional and human capacity needs of these institutions are identified and appropriate strategies introduced to rectify the incapacities.

An important area of concern is the Organic Law on Provincial Governments and Local-level Governments. This law establishes provincial governments and local-level governments who have been given certain legislative powers which also have a bearing on biodiversity conservation. The capacities of these two institutions require additional institutional and human support to enable them to develop programs which promote and encourage biodiversity conservation and sustainable use of biological resources at the provincial and local levels.

At the core of institutional and human capacity building is collaboration and coordination. The sharing of information and experiences in biodiversity management is critical to capacity building. This will require skills and resources for biodiversity data collection, storage and use. Innovative strategies must be identified to allow access and control over the use of data.

There is ample evidence to indicate that a strong collaboration exists between the government and environmental and community based organizations relating to biodiversity management. Many of the environmental non-government organizations are currently actively involved in biodiversity conservation and management. These NGO include: Conservation International; The Nature Conservancy; WWF and Conservation Melanesia. Strengthening this collaboration and networking between NGOs, the government and other stakeholders is imperative. For instance, since the transfer of protected areas management to NGOs in 1992, DEC has depended on the goodwill of the NGOs to effectively manage a number of protected areas. Further training in database management, operational management skills and community participation skills are required to strengthen the work of both the NGOs and DEC.

Chapter 7: Analysis of Adverse Impacts on Biological Diversity

The country's rich biodiversity and natural environment has been and continues to be threatened from various fronts. These threats include large-scale natural resources development projects such as mining, logging and fishing; large-scale agricultural projects such as oil palm, coca and coconut plantations; natural disasters such as earthquake, floods, droughts and volcanic eruptions; and unsustainable traditional farming methods such as slash and burn. These various activities adversely affect the environment of the country.

Several activities are blamed for biodiversity loss in PNG. The three main activities which have caused a lot of controversy in this area are: large scale mining; logging projects; and large-scale agricultural projects such as oil palm. The challenge in the area of biodiversity conservation and management is for PNG to develop innovative strategies to control the deleterious effects of these activities on the environment. This is a diabolical task given that much of the natural environment and resources are located on customary land which is owned by customary landholders who are grouped into clans and tribes, and the country depends on the natural resources sector to generate national income and other socio-economic benefits.

The five main threats to biodiversity loss in PNG are:

- Large-scale Logging and Agricultural Projects

Logging is a major cash earner for PNG. However, the sector has been criticized from various quarters for biodiversity loss, corruption, abuse and general environmental degradation. Uncontrolled logging near protected areas is a growing concern for many Papua New Guineans and environmental groups. In some parts of the country logging concessions have been issued for areas which have been designated as high priority biodiversity areas by the DEC. Logging companies pay less regard to environmental consideration because they environmental conditions as impediments to economic gains derived from logging activities.

Agricultural projects such as coconut, coca, coffee and oil palm plantations use up a lot of fertile land which are home to many of the birds, animals and insects. Economic pursuits take precedence over biodiversity conservation and management in land allocation and use. In the majority of cases, biodiversity loss is not taken as an important consideration in land use planning for these purposes.

The draft Eco-Forestry Policy which is being actively pushed by the government is aimed at addressing some of the biodiversity issues in the forestry sector. If adopted, the Policy will enable the sector to actively participate with other stakeholders in biodiversity conservation programmes.

- Mining

Mining is the top money earner for PNG. PNG's revenues depend largely on receipts from gold and oil exports. There are currently six mining projects and one

petroleum project in PNG. Biodiversity loss is achieved through open pit mining and the establishment of mining and petroleum townships. Where the mine waste is dumped into the river, it causes river pollution and adversely affects the aquatic life and the lives of people who depend on the river system for their livelihood. River pollution is very real in PNG because most of the mining projects are situated in remote highland locations, thus mining waste tend to be dumped into the river.

The draft Sustainable Mining Policy 2003 seeks to provide some inroads between mining and sustainable development. The adoption of the policy will lay the foundations for greening the sector.

- Traditional Farming Methods particularly slash-and-burn

Almost 85 percent of Papua New Guineans live in rural areas, living of their traditional land. Many of these people continue to apply traditional methods of gardening with the use of modern tools such as machetes, axes, spades and forks. In some areas, village people use chain saws to fell trees and tractors to plough the land. The most common method of making a new garden is slash-and-burn. With modern tools, land is cleared more quickly and a lot more land is cleared for planting crops. Unfortunately, it is difficult to regulate these activities because they are conducted on traditional land which the State has very little control.

- Increasing Population

This is a serious problem given that PNG's population rate is 2.5 percent. A booming population coupled with land scarcity is posing a real threat to biodiversity conservation programs. There is ample evidence to prove that some of the existing national parks and wildlife management areas have been breached by people who have sought new land areas for gardening. These people's first consideration is not about biodiversity conservation but rather food for survival.

Increasing population is also affecting biodiversity in urban areas where biological habitats are being destroyed to make way for urban settlements, commercial enterprises, and garbage and sewerage disposal. In urban areas, trees and plants are not usually taken into consideration in urban development planning.

- Policy Failures

The failure of government to successfully implement development policies is a serious concern in PNG. The failure of government policies can be attributed mainly to the frequent changes in government and the bureaucracy. A change in government also means a change in priorities.

The failure of government policy results in financial, human and institutional wastages. The failure of government policy also leads to misdirection of focus and misapplication of resources. Moreover, policy failure contributes to lack of enforcement of environmental legislation, lack of coordination among government agencies and overexploitation of the country's natural resources.

Chapter 8: Gaps and Needs for Biodiversity Conservation

A national plan can only be effective if appropriate policy, legal and institutional frameworks that promote and strengthen biodiversity conservation are put in place. These systems are needed to ensure that a national plan such as the NBSAP are adopted by the relevant stakeholders and implemented cross-sectorally. The multi-sectoral implementation of the NBSAP will result in the realization of the NBSAP's goals. This outcome can however only be achieved if the following gaps and needs (not an exhaustive list) are addressed and rectified in a timely manner:

- Develop and adopt a national biodiversity policy;
- Harmonize the government's commitments to biodiversity conservation and sustainable use of biological resources espoused by the various government policies;
- Review existing legal framework to synergize the procedures for designating protected areas;
- Strengthen institutions responsible for biodiversity conservation and management;
- Institutional strengthening for biodiversity data inventory, storage and access;
- Incorporate environmental costs in decision-making for development;
- Develop a framework for access, benefit sharing arising from the use of genetic resources;
- Introduce awareness programs to educate the people on biodiversity conservation and its potential to contribute to sustainable development;
- Strengthen intra-agency and inter-agency interlinkages for biodiversity conservation;
- Strengthen and promote biodiversity research and development by local institutions;
- Strengthen provincial and local-level governments in environmental decision making and biodiversity conservation management; and
- Support the programs of provincial and local-level governments and local communities that promote the sustainable use and management of biological resources.

The rectification of these gaps and needs does not necessarily mean that the NBSAP will successfully be implemented. Some of these gaps and needs are interrelated and thus require multi-sectoral programs to rectify them. Also some of these gaps and needs require firm political commitment by the government and leaders of the State agencies to overcome them.

Chapter 9: The Strategy and Action Plan

The adoption of the NBSAP must of course be complemented with effective and functional government mechanisms. When these systems are operational from planning to policy formulation, and implementation, the decision-making structures, processes and institutions should act as the ‘catalyst’ in making biodiversity conservation objectives attainable in the long-term. With effective planning and informed decision-making based on a multi-sectoral approach at all levels of government, biodiversity conservation and sustainable use of biological resources can be achieved. It must be recognized, however, that biodiversity conservation is a process of continual improvement. The challenge facing PNG at the national level is how to build on the achievements to date in order to make further progress in the practical implementation of the principles of biodiversity conservation and sustainable use.

The NBSAP seeks to build on the foundations of the previous and existing government initiatives. It does not seek to replace them nor compete with them. The NBSAP is the government’s overall biodiversity conservation and sustainable use strategy. The goals and objectives and activities of NBSAP must therefore be realistic, overarching and at the same time be flexible to enable complementarity between the NBSAP and other government initiatives.

The NBSAP has six principal goals. These are:

- Goal 1 To conserve, sustainably use, and manage the country’s biological diversity;
- Goal 2 To strengthen and promote institutional and human capacity building for biodiversity conservation, management and sustainable use;
- Goal 3 To strengthen partnership and promote coordination for conserving biodiversity;
- Goal 4 To strengthen existing protected areas and ensure that protected areas for terrestrial species and marine species are increased to 10% by 2010 and 2012;
- Goal 5 Ensure a fair and equitable sharing of benefits arising out of genetic and ecosystem resources; and
- Goal 6 Promote and strengthen research of the country’s biological diversity and the sustainable development of the country’s biological resources.

These six Goals are to be achieved through nine (9) broad programmes over the next five (5) years and beyond. These Programmes have been prioritized into four (4) different categories. Priority 1, Priority 2, Priority 3, and Priority 4.

- Priority 1 programmes are: (1) Policy and Legislation; (2) Financial and Technical Resources; and (3) Human Capacities;
- Priority 2 programme is: Access and Benefit Sharing;
- Priority 3 programmes are: (1) Research and Information on Biodiversity; and (2) In situ and ex situ Biodiversity Conservation.
- Priority 4 programmes are: (1) Measures of Sustainability of Biodiversity Use; and (2) Education and Public Awareness.

- Program nine (9): Monitoring and Evaluation applies equally across the breadth of the four different priority areas.

The nine (9) Programmes, their objectives and activities are tabulated below.

<i>PROGRAMME AREAS</i>	<i>PROJECT</i>	<i>OBJECTIVES</i>	<i>ACTIVITIES</i>	<i>PARTNERS</i>	<i>TIME</i>	<i>BUDGET (PGK'000)</i>
1. Policy, Legislation and Administration	1. Strengthening of the National Conservation Council and establish a NBSAP Coordination Sub-committee	1. Establish the NCC, expand mandate beyond advisory role and establish a NBSAP Coordination Sub-committee 2. Review the functions of PINBio immediately to strengthen biodiversity conservation programs	1. Establish Council and call inaugural meeting 2. Establish functional Secretariat 3. Form NBSAP Sub-committee 4. Develop guidelines for the Council including orientation and training workshop for members of the Council such as: biodiversity planning; project development and management; fundraising; negotiation. 5. Improve administrative and other support services so as to create better systems of disseminating information, servicing meetings, tracking project status, record keeping, etc. 6. Document interests and competence of the NCC members and match with responsibilities, tasks and accountability 7. Establish requirements for continuity of attendance at meetings, the implementation of tasks and the development and management of projects 8. Establish a Task Force of the NCC for purposes of future planning 9. Improve technical support to ensure the NCC's ability to process applications for national conservation areas and applications for research, conduct field work etc 10. Initiate incentives for increased levels of participation by members and expanded use of the pool of expertise in the Sub-Committee (e.g. honoraria for attendance at meetings of NBSAP and Sub-committee etc.) 11 Improve level of preparation prior to attendance and reporting afterwards. 12 Liaise with PINBio TSC for review 13 Establish a Task Committee to review functions of PINBio	DEC, NCC, PINBIO, DNP&M, DOF	2 nd Wk Feb 2007 Quarterly Meets	500.00 50,000.00 / annum

<i>PROGRAMME AREAS</i>	<i>PROJECT</i>	<i>OBJECTIVES</i>	<i>ACTIVITIES</i>	<i>PARTNERS</i>	<i>TIME</i>	<i>BUDGET (PGK'000)</i>
	2. Comprehensive review and updating of national legislation on natural resources and linkages to MEAs and other relevant arrangements	<ol style="list-style-type: none"> 1. An effective legal framework for the implementation of the CBD and related Conventions 2. Develop innovative policy and law that protect the intellectual property rights of organizations and individuals engaged in biodiversity research and development 	<ol style="list-style-type: none"> 1. Review and update the national legislation to ensure complementarity in sustainable resource use and the incorporation of biodiversity conservation considerations including protection of intellectual property 2. Develop a national policy statement on biodiversity 3. Approval of NBSAP by NEC 4. Review and develop a national policy statement on microbes, fauna and flora 5. Skills training of personnel in negotiations in international and regional arrangements 	<p>DEC, DJ&AG & widespread consultation</p> <p>DEC, DJ&AG</p> <p>DEC, CI</p> <p>DEC, TNC, CI, WWF</p> <p>DEC, UNDP, UPNG and partners</p>	<p>Jun 2007 -2008</p> <p>By Mar 2007</p> <p>Dec 2006</p> <p>On-going</p> <p>2007-2009</p>	<p>200,000.00</p> <p>4000.00</p> <p>4000.00</p> <p>20,000.00</p> <p>500,000.00</p>
	3. A legal regime for promoting the protection, compensation for local knowledge, innovations and techniques relating to biodiversity	<ol style="list-style-type: none"> 1. To regulate the introduction and use of Living Modified Organisms (LMOs)/Genetically Modified Organisms (GMOs) and alien species 	<ol style="list-style-type: none"> 1. Implement the Science and Technology Council Act 1996 2. Institute the formulation and adoption of a national intellectual property rights policy and law within two years 3. Parliamentary approval of Biosafety Policy and Bill 4. Implement Biosafety and Biotechnology Policy and law 	<p>OHE, DEC</p> <p>DEC, PINBio</p> <p>DEC, NEC</p> <p>DEC, PINBio, UNDP, UNEP, NARI, UPNG, Unitech and partners</p>	<p>On-going</p> <p>By Nov 2007</p> <p>By Jan 2008</p>	<p>100,000.00</p> <p>5000.00</p> <p>30,000.00/annum</p>
	4. Enhance the enforcement of Biodiversity-related Laws	<ol style="list-style-type: none"> 1. Improved effectiveness of existing legal mechanisms by creating greater awareness of conservation regulations and enhancing the capacity of law enforcement agencies (including the police, customs, airlines and NAQIA). 	<ol style="list-style-type: none"> 1. Provision of training to relevant officers in identifying the species listed in CITES Appendices I and II, and Protected Fauna (and Flora?) 2. Recognise the right of citizens, community-based organizations (CBOs) and NGOs to challenge administrative decisions which they believe have been taken in violation of conservation law. 3. Take immediate remedial measures to protect species that are presently being subject to illegal trade. 4. Take all necessary measures to fulfil the commitments of the agreements already signed under related International Conventions. 	<p>DEC, UPNG, NAQIA, IRC-Customs, Police, DFAT, DCI, Industries, PNGFA</p> <p>DEC, NAQIA, SPC et al</p> <p>DEC, NAQIA, SPC, SPREP</p>	<p>2008</p> <p>2008</p>	<p>50,000.00 / annum</p> <p>100,000.00</p> <p>100,000.00 /annum</p>

<i>PROGRAMME AREAS</i>	<i>PROJECT</i>	<i>OBJECTIVES</i>	<i>ACTIVITIES</i>	<i>PARTNERS</i>	<i>TIME</i>	<i>BUDGET (PGK'000)</i>
			5. Strengthen the national quarantine and biosafety processes	DEC, NAQIA, IRC, ICC, Unitech, NARI	2008	100,000.00 /annum
2. Financial and Technical Resources	Short and long term financing and sustainability for NBSAP	<ol style="list-style-type: none"> 1. To develop the human capacity to ensure the short- and long-term financing and sustainability of NBSAP 2. To design and implement a spectrum of sustainable financing mechanisms for NBSAP implementation 3. Obtain necessary financial support for biodiversity initiatives 4. Encourage local investment in biodiversity conservation as a complementing measure to foreign donor support 5. 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. 	<ol style="list-style-type: none"> 1. Create and fill a position of Fund Raising Specialist at DEC. The responsibilities of this position are to identify and obtain financial and technical support for projects under NBSAP. 2. Develop the following initiatives (by the Fund Raising Specialist): <ul style="list-style-type: none"> - mobilisation of financial resources from the regional and international donor community, public/private mobilisation of financial resources from national sources - community mobilisation of financial resources from the sustainable use for biodiversity and other new and innovative funding mechanisms (including support for the PNG Mama Graun Conservation Trust Fund) - mobilise technical assistance from regional and international sources 3. Coordinate the management of projects by the Biodiversity Project Coordinator, once funds have been accessed by the Fund Raising Specialist. 4. Develop demonstration projects to test selected priorities 5. Support the development and activities of the PNG Mama Graun Trust Fund as a local initiative funding source. 	DEC, DPM, PSC et al	2007	250,000.00
3. Human Resources and Institutional Capacity Building	1. Strengthening DEC's capacity for administration and integrated planning of the biodiversity sector	<ol style="list-style-type: none"> 1. Enhance the administration, planning and mobilizing funding and technical resources for the implementation of NBSAP 2. Better coordination of the required policy, legal, scientific and economics work 3. Enhance capacity as implementer, coordinator, delegator, mobiliser and motivator of 	<ol style="list-style-type: none"> 1. Review and if needed create necessary positions, recruitment of staff to fill them and orientation of staff once in place 2. Consolidate the biodiversity work programme (The necessary permanent DEC positions could include: Fund Raising Specialist; Biodiversity Project Coordinator; Environmental Lawyer, Senior Environmental Officer, Biodiversity 	DEC, DPM, DOF, UNDP-GEF DEC, UNDP-GEF, PGs & LLGs, PA Committees, NGOs, Industries	2007-2012	K1 million

<i>PROGRAMME AREAS</i>	<i>PROJECT</i>	<i>OBJECTIVES</i>	<i>ACTIVITIES</i>	<i>PARTNERS</i>	<i>TIME</i>	<i>BUDGET (PGK'000)</i>
	2. Partnership strengthening and coordination for biodiversity conservation capacity building	stakeholders (i.e. helping them to help implement NBSAP) 1. Strengthening human capacity in Biodiversity Conservation and Management 2. Strengthen existing partnerships that promote biodiversity conservation and sustainable use of biological resources 3. Identify new partnerships to encourage biodiversity conservation and sustainable use of biological resources. 4. Devise programs that promote greater collaboration 5. Introduce better mechanisms for stronger coordination 6. Source funds to strengthen partnership collaboration 7. Develop stronger partnerships with provincial and local-level governments 8. Develop programs to build stronger partnerships with local communities	Information Technology Specialist and Resource Economist) 1. Assess current capacity and the biodiversity-related training needs of natural resource managers, conservation professionals and other concerned staff, and the extent to which these are currently being fulfilled 2. Design and implement in-service training courses to address immediate gaps and priority requirements 3. Develop programmes that promote greater collaboration, create innovative project documents and encourage donor support 4. Enhance existing training programmes in natural resource management, through the provision of funding, staff, and equipment. Explore opportunities for "twinning arrangements" with institutions in other countries (universities, botanical gardens, national park authorities, etc) 5. Support the Conservation Strengthening Project as a creative initiative to establish one university degree programme in biodiversity and conservation biology particularly as it relates to community-based management of natural resources 6. Create at least one vocational diploma-level course to train protected area managers 7. Promote, through grants and other means, post-graduate specialization in biodiversity-related fields, (e.g. taxonomy) in a structured way 8. Strengthen the capabilities of NGOs and community institutions to play an effective role in the conservation and management of biodiversity; in particular, initiate training programmes with "umbrella NGOs" which have large networks of community-based organisations. 9. Integrate biodiversity	DEC, UPNG-SCCP, DEC, UNDP-GEF, NGOs, Industries DEC, UPNG-SCCP, WCI, RCF DEC, UNDP-GEF, UPNG-SCCP, RCF DEC, UNDP/GEF, UPNG-SCCP, RCF DEC, UPNG, DOE, UNDP-GEF, TAFE, GONZ DEC, Universities, NGOs, overseas institutions DEC, UNDP-GEF DEC,	ASAP 2007 2007 2007-2008 2007-2008 2008 2008 2008-	500,000.00 (RAPPAM, NCSA) 100,000.00 50,000.00 500,000.00 200,000.00 100,000.00 100,000.00 500,000.00 500,000.00

<i>PROGRAMME AREAS</i>	<i>PROJECT</i>	<i>OBJECTIVES</i>	<i>ACTIVITIES</i>	<i>PARTNERS</i>	<i>TIME</i>	<i>BUDGET (PGK'000)</i>
			concerns into the training curricula of rural development and extension staff, particularly in the fields of agriculture, forestry and fisheries	Enforcement Agencies	2012	
			10. Design simple procedures for exchange of information between stakeholders, donors etc.	DEC	On-going	50,000.00
			11. Formalize existing partnerships through Memorandum of Understanding or Memorandum of Agreement or other formal arrangements	DEC, DJ&AG, Partners (Communities), PINBio, NCC	On-going	250,000.00
			12. Enable greater involvement of DEC staff in collaborative programs that promote biodiversity conservation to build their capacity	DEC, Partners	2007	500,000.00
			13. Strengthen partnerships that lead to better capacity building of provincial and local-level government officials	DEC, PGs, LLGs, Districts	2008	200,000.00
			14. Strengthen partnerships that lead to better capacity building of local communities	DEC, Communities	2008	300,000.00
4. Benefit sharing	Policies and Laws to regulate access to genetic resources and promote the equitable sharing of benefits between resource owners and users	<ol style="list-style-type: none"> 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 of biodiversity. Ensure benefits arising out of genetic and ecosystems resources use promote sustainable rural development Genetic and ecosystems to be harnessed for the development of agricultural products to ensure food security Genetic and ecosystems to be harnessed for the development of pharmaceuticals products that support human health. 	<ol style="list-style-type: none"> Ensure that the draft Biosafety and Biotechnology Policy and Bill are approved by the Parliament Initiate the formulation of the ABS Policy and Bill Promote public awareness on biosafety issues and access to genetic resources Develop simple procedures for obtaining prior informed consent of local communities regarding access to genetic resources located on their customary land Collate, storage and management of baseline data relating to genetic resources and on current practices of access to such resources for academic and commercial purposes Prepare an existing legal and institutional profile relating to the import, export, and use of genetic resources and traditional knowledge Develop scoping paper 	DEC, NEC, Parliament DEC, PINBio, UNDP DEC, PINBio, UNDP DEC, PINBio, NCC, NBBC DEC, FRI, UPNG, NARI, Unitech, NGOs DEC, PINBio, UNDP	2007 On-going 2008 2008 2008 2007	(Ref to Program 1, Project 3, Activity 3 and 4) 300,000.00 200,000.00 100,000.00 K1 million 50,000.00 5000.00

<i>PROGRAMME AREAS</i>	<i>PROJECT</i>	<i>OBJECTIVES</i>	<i>ACTIVITIES</i>	<i>PARTNERS</i>	<i>TIME</i>	<i>BUDGET (PGK'000)</i>
			for process for rules and guidelines for control of internal movements of biological species 8. Development of rules for the control of internal movements of alien/invasive species	NARI, Unitech, UPNG, UNDP DEC, NAQIA, NARI, Unitech, UPNG, UNDP	2007	50,000.00
5. Research and Information on Biodiversity	1. National clearing house mechanism for biodiversity information	1. To ensure timely availability and access by all to biodiversity information	1. Develop a meta-database of biodiversity information sources (internal & external) 2. Define and establish a national clearinghouse mechanism as a distributed network 3. Develop standardized formats and establish guidelines on the responsibilities of storing, access, sharing and use of biodiversity information among local institutions involved in biodiversity issues 4. Obtain the physical and human requirements for establishing a computer network between institutions involved in biodiversity issues 5. Procure and install the physical infrastructure for the network and to train personnel for operating it within the stipulated guidelines	DEC (includes CHM-BCHM), PINBio, NCC, NSO, Other Databases	2007	K1.5 million
	2. National Biodiversity Inventory	1. Establish national needs and priorities for biodiversity inventory and research 2. Develop sub-projects for the prioritized national needs of biodiversity research 3. Secure funding and research bodies to implement sub-projects 4. Strengthen capacities of locally based institutions and Papua New Guineans in biological research and development.	1. Appoint a national centre (or several centres) to coordinate biodiversity identification, survey and monitoring activities. The centre(s) could: strengthen other institutions or organizations involved in biodiversity work; provide guidance on the design and maintenance of national and provincial inventories; coordinate existing and new specimen collections; promote standardization of data collection and storage to ensure the comparability and transferability of information among databases; disseminate information on biodiversity to policy makers, natural resource managers, educators, and other parties; 2. Develop a database based on BIORAP and other	DEC, NCC, PINBio	2008	K5 million

<i>PROGRAMME AREAS</i>	<i>PROJECT</i>	<i>OBJECTIVES</i>	<i>ACTIVITIES</i>	<i>PARTNERS</i>	<i>TIME</i>	<i>BUDGET (PGK'000)</i>
			relevant databases handling biodiversity data			
			3. Preparation and implementation of a prioritized programme of biodiversity research for PNG			
			4. Enhance contact with institutions outside PNG (e.g., the British Museum of Natural History, Kew Gardens etc.) to obtain information about those collections of PNG origin which are currently being held abroad			
			5. Enhance the capacity of relevant national and provincial institutions to collect, store, analyse, and supply information on biodiversity, through the provision of funding, equipment, staff, and training			
			6. Develop a position paper on research and development to show the intricate link between biodiversity research and national development	DEC, PINBio, NCC	2007	50,000.00
			7. Introduce a national policy that encourages the government to provide research grants for biodiversity research and sustainable use	DEC, PINBio, NCC	2007	100,000.00
			8. Review the research and development programs of PINBio and strengthen the programs	PINBio, DEC, NCC	On-going	50,000.00
			9. Strengthen existing collaborative biodiversity research between local institutions, and local and international institutions and organizations (cross-reference to MOUs/MOAs)	DEC, PINBio, NCC	2007	500,000.00
			10. Establish species extinction rates	DEC, PINBio, NGOs	2007	100,000.00
	3. Climate Change	1. Vulnerability due to climate variability and climate change. 2. Adaptation strategies for biodiversity.	1. Review National Communication 1 and 2 2. Implement recommendations of National Communication 1 and 2	DEC, PINBio, GEF/REF/UN DP DEC, PINBio, GEF/REF/UN DP	2007 Ongoing	50,000.00 K1 million
	4. Desertification	1. Sustainable land-use strategies 2. Prevention and control of desertification.	Implement Sustainable Land Use Management Strategy to control/prevent desertification	DEC, PINBio, DOL, DNPRD, GEF/UNDP	Ongoing	K1 million
	5. The genetic characterization of important biodiversity groups/species of PNG	To develop the capacity to use genetic technologies to characterise PNG biodiversity and aid monitoring of illegal	1. To train personnel in the field of plant and animal molecular genetics (especially DNA barcoding) through developing a strategic	DEC, NBBC, PINBio, NCC	2008	100,000.00

PROGRAMME AREAS	PROJECT	OBJECTIVES	ACTIVITIES	PARTNERS	TIME	BUDGET (PGK'000)
		trade	partnership with reputable international institutions 2. To establish a molecular genetics laboratory at the University of PNG and other Universities or research institutions	DEC, UOT, NBBC, PINBio, NCC	2008-2012	K10 million
6. In situ and ex situ Biodiversity Conservation	1. Developing a national system of protected areas	1. Review the current national protected areas system in PNG	1. Implement the findings of RAPPAM (Rescue Plan)	DEC, NGOs, DEC-Partners	2007-2012	K5 million
		2. Empower local communities and promote the full and active participation of landowners in biodiversity conservation programs	2. Strengthen the PAI (CASP) through the provision of human and financial and other resources to strengthen the project	DEC, NCC, Partners	2007-2012	K5 million
		3. Increase the number of protected areas to ten percent by 2010	3. Initiate a review of the policy and legal framework on protected areas	(Cross-reference to Policy-Legal Programme)		
		4. Rehabilitate and encourage better management of existing protected areas	4. Devise a simple procedure for consultation with customary landowners for setting aside land for biodiversity conservation	DEC, partners	2007	100,000.00
		5. Develop a national conservation/ protected areas policy	5. Identify relevant partners to assist in the setting up of new protected areas	DEC, partners	2007	50,000.00
		6. Design and utilize methodologies and indicators for monitoring and evaluating impacts	6. Identify funding for the establishment of new protected areas	DEC, partners	2007	20,000.00
			7. Identify a pilot project (PA) to implement some of the propositions in the NBSAP	DEC, Partners	2007	K3 million
			8. Adopt agriculture, forestry and fishery practices that will enhance biodiversity conservation	DEC, NARI, NAQIA	2007	50,000.00
			9. Ensure that development personnel, land use planners, aid agencies and national, provincial and local level authorities have access to, and use biodiversity information in their work	DEC, PINBio, communities	2007	50,00.00
			2. Coordination and expansion of <i>ex situ</i> activities	1. Strengthen <i>ex-situ</i> programmes and their contribution to biodiversity conservation 2. To document all <i>ex situ</i> conservation activities currently being pursued 3. To develop a cohesive national network involving agencies engaged in <i>ex situ</i> conservation 4. Select priorities in the light of PNG's specific cultural and social context.	1. Develop a national policy on <i>ex-situ</i> conservation including biological national collections/specimens. 2. Compile a directory of existing <i>ex-situ</i> conservation initiatives, including herbaria, livestock breed farms, genome banks, germplasm collections, plant breeding centres, zoological gardens and private collections (link to data management) 3. Identify priority species	DEC, NCC, PINBio, NAQIA, institutions DEC, PINBio, NCC DEC, PINBio,

PROGRAMME AREAS	PROJECT	OBJECTIVES	ACTIVITIES	PARTNERS	TIME	BUDGET (PGK'000)
		5. Develop demonstration projects to test selected priorities	and genetic resources in need of further <i>ex-situ</i> conservation efforts. This should include an assessment of the need for captive breeding programmes for commercially valuable, threatened species of indigenous wild fauna and medicinal plants	NAQIA, NARI		
			4. Supporting community-based <i>ex-situ</i> enterprise development (SME)	DEC, NAQIA, NARI, DTI, partners	2008	K2 million
			5. Strengthen the capacity and scope of <i>ex-situ</i> conservation programmes through the provision of additional funding, equipment, and training	DEC, partners	2008	500,000.00
			6. Promote integration of <i>ex-situ</i> conservation efforts among institutions	DEC, UPNG, RCF, Unitech	2008	300,000.00
			7. Ensure that institutions involved in captive breeding / artificial propagation of rare species set aside resources for rehabilitation schemes and for protection of natural habitats of those species	DEC, partners	2008	500,000.00
			8. Initiate measures to ensure that the collection of genetic resources from the wild does not endanger the survival of remaining wild populations.	DEC, NCC, PINBio, NAQIA, institutions, NGOs	2008	K1 million
	3. Develop watershed conservation programmes to integrate conservation activities and protected areas management with land use planning and marine resources use planning.	1. Develop regional (watershed/provincial) conservation programmes to integrate conservation activities and protected area management with regional (watershed/provincial) land use planning.	1. Review and implement the Watersheds Policy 2. Develop provincial and local level working groups alerted to the requirements of this policy process.	DEC, PINBio, NCC, partners	2008	K5 million
		2. Enhance the capacity of local communities and NGOs to conserve, manage, and sustainably use biodiversity.	3. Develop marine protected areas policy 4. Establish marine protected areas 5. Implement fisheries and maritime laws	DEC, PINBio, NCC, NFA, NGOs	2007	K2 million
		3. Ensure that protected areas and adjacent buffer zones are treated as a single planning unit. Of particular importance in this regard, is to support implementation of an integrated coastal zone management (ICZM) plan for the entire coast of PNG.				

PROGRAMME AREAS	PROJECT	OBJECTIVES	ACTIVITIES	PARTNERS	TIME	BUDGET (PGK'000)
	4. Take measures to control invasive alien species of flora, fauna and microorganisms to prevent further introductions	Protect native species and habitats	1. Develop appropriate control mechanism 2. Skills training	DEC, NAQIA, NCC, PINBio	2008	(see Program 4)
	5. Biodiversity conservation outside Protected Areas	Linking development activities and EIA (application of EIA for resource management)	1. Strengthening the EIA process through training 2. Strengthen EIA through the implementation of the Environment Act 2000	DEC, Environment Council, PINBio	2008	K1 million
7. Measures of sustainability in Biodiversity use and incentives and alternatives	1. Criteria and indicators for sustainability of biological resources	1. Develop mechanisms to incorporate biodiversity values into National Accounting and decision making at different levels of government 2. Strengthen inter-sectoral and National/Provincial coordination in Biodiversity Conservation and Management 3. Create an integrated system of incentives and disincentives at the National and local level to encourage the conservation and sustainable use of biodiversity	1. Develop, document, and adopt standardised criteria and methodologies for economic valuation of biodiversity, tailored to the requirements of individual decision-making agencies 2. Initiate measures to "green" the system of national accounts ('user-pay') 3. Create inter sectoral steering committees at both the national and provincial levels to oversee the implementation of the NBSAP	DEC, UNDP-SA, ASF, Universities, Institutions DEC, IRC, DOF DEC, NCC	2007 ASAP 2008	200,000.00 100,000.00 200,000.00
	2. Review of incentives and disincentives for conservation and sustainable use of biodiversity and the identification of sustainable economic alternatives to activities that threaten biodiversity	1. Promote biodiversity conservation 2. Promote sustainable financing of protected areas	1. Introduce a system of direct incentives to promote the conservation and sustainable use of biodiversity that could include the provision of subsidies to encourage communities to retain local cultivars and crop varieties, and to adopt practices such as Integrated Pest Management, agro-forestry, and multi-species cropping; the provision of grants for the protection of threatened species or habitats, and the restoration of degraded land; incentives to encourage <i>ex-situ</i> propagation/breeding programmes for traded species of wild plants and animals, in order to reduce the drain on wild populations. 2. Introduce a system of	DEC, NARI, DAL, PGs & LLGs DEC, IRC,	2007 2008	100,000.00 250,000.00

<i>PROGRAMME AREAS</i>	<i>PROJECT</i>	<i>OBJECTIVES</i>	<i>ACTIVITIES</i>	<i>PARTNERS</i>	<i>TIME</i>	<i>BUDGET (PGK'000)</i>
			<p>indirect incentives to promote the conservation and sustainable utilisation of biodiversity that could include tax exemptions or deductions for the conservation of particular habitats or species; tax reductions for the importation of equipment used in conservation programmes; and tax deductions for donations to conservation NGOs.</p> <p>Service-oriented incentives, designed to link community development programmes with the conservation of biodiversity. For example, communities living adjacent to protected areas could be accorded priority for public education programmes and technical assistance in agriculture, forestry, and other fields.</p>	PGs & LLGs		
			<p>3. Introduce a system of disincentives to discourage unsustainable utilisation and practices which deplete biodiversity. These could include e.g. increasing the size of fines for the violation of conservation laws; using fiscal disincentives (e.g. pollution and effluent charges) for activities which are damaging to biodiversity. This could also include the use of a "polluter pays" policy, requiring developers to take measures to mitigate the environmental damage caused by their activities</p>	DEC, IRC, Universities, PG & LLGs	2008	200,000.00
			<p>4. Carry out a comprehensive review of GoPNG programmes and policies, to identify "perverse" incentives and suggest measures to ameliorate their impacts.</p>	DEC, IRC, Universities, PGs & LLGs	2008	200,000.00
	3. Bio-enterprises initiative	To develop a policy and scanning proposal for bio-enterprises	<p>1. Engage consultant(s) to scan bio-enterprise potentials, develop initiative documentation and potential development plans</p>	PINBio, Industry, NGOs	2008	200,000.00
			<p>2. Promote and strengthen bio-industries (rural and island communities)</p>	DEC, NPRD, PINBio, NARI, UNDP	2008	K5 million
			<p>3. Implement MTDS 2005-2010 and the MDG</p>	DEC, NPRD, PINBio, UNDP, Prov Gov, LLGs,	2008	K5 million

PROGRAMME AREAS	PROJECT	OBJECTIVES	ACTIVITIES	PARTNERS	TIME	BUDGET (PGK'000)
				private sector		
8. Education and Public Awareness	1. Enhance biodiversity conservation within the formal education system	<p>1. Review and enhance national curricula which emphasises biodiversity's contributions to local and national welfare, emphasises biodiversity's contributions to the health of ecosystems, and tie ecological, economic, and social themes together to ensure that students of all schools receive formal instruction on the nature and value of biodiversity, and on the interrelationship between biodiversity and the environment</p> <p>2. Non-formal approaches may also be pursued, where these may help to reinforce concepts covered in the formal syllabuses.</p>	<p>1. Review the current curricula for biodiversity content</p> <p>2. Develop a strategy on biodiversity conservation and sustainable use education</p> <p>3. Develop linkages with Universities, Teacher training colleges, teachers and NGOs to prepare appropriate curricula and support materials</p>	DOE, DEC, Universities, NGOs, Churches	On-going On-going 2008	200,000.00 /annum
	2. Training of teachers to teach courses on environment and biodiversity	To train teachers to teach the course(s) on environment and biodiversity developed from the above	<p>1. Liaise with Universities and Teacher Training Colleges</p> <p>2. DEC conducting public awareness</p>	DEC, Universities, NGOs	On-going On-going	200,000.00 100,000.00
	3. Preparation of instructional material for biodiversity education and awareness programmes	To ensure that relevant material is available for guidance of students, lecturers, drafters of curricula and syllabuses, as well as producers of audio-visual and non-formal education aids, based on on-going monitoring and evaluation.	Develop linkages with Universities, teacher training colleges, teachers and NGOs to prepare appropriate curricula and support materials	UPNG-SCCP, UOG-RCF, DEC-WCS, PNGEI, Adcol, JICA, Eda Ranu, NCDC	On-going	200,000.00
	4. Develop non-formal methods of promoting biodiversity education and awareness	<p>1. 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 (<i>genes, species and ecosystems</i>).</p> <p>2. Ensure that development personnel, land-use planners, aid agencies and the national and provincial planning authorities have access to information about biodiversity. This should include</p>	<p>1. Encourage the role of the media and in particular radio, through easy access to the biodiversity information clearinghouse and regular information briefs, interviews and stories.</p> <p>2. Exploit the opportunity to link biodiversity themes with community assistance programmes, including primary health care programmes, primary education programmes and agricultural and forestry extension programmes. Integrate biodiversity concerns into the training curricula for rural development extension</p>	<p>PNG Media Council, National, provincial and private radios, newspapers, TV stations</p> <p>DOH, NARI, FRI, NGOs</p>	On-going Mid 2007	200,000.00 500,000.00

<i>PROGRAMME AREAS</i>	<i>PROJECT</i>	<i>OBJECTIVES</i>	<i>ACTIVITIES</i>	<i>PARTNERS</i>	<i>TIME</i>	<i>BUDGET (PGK'000)</i>
		information about the location of biological "hot spots" and rare and endangered species.	workers 3. Develop biodiversity interpretive facilities, including field centres, at selected protected areas and interpretive programmes in all botanical gardens, zoos, herbaria, genebanks, natural history museums, etc 4. Develop affordable, popular, accessible, and comprehensive field guides to the birds, animals, and flora of PNG 5. Encourage public-private partnerships in the above activities, including partnerships between educational and environmental authorities, between the government, NGOs and churches, with international collaboration where appropriate	DEC, NCC DEC, DOE, Universities, PNG Media Council, TPA, Publishers, Printing Houses (same parties as above)	2007 2008	500,000.00 200,000.00
9. Monitoring, Evaluation and Adaptive Management of NBSAP	Monitoring, evaluation and adaptive management of implementation of NBSAP	1. Internally monitor and evaluate implementation of NBSAP on a regular basis 2. Identify and commission an external independent evaluation of the implementation of the first half of the Plan period 3. Make appropriate adaptive changes following the review.	1. Design and utilise methodologies and indicators for monitoring and evaluating the effectiveness and impacts of plan implementation within the first six months. Application of indicators over mid to long-term. 2. Establishing of links for monitoring of the NBSAP (cf. MDG, NSDS) with PGs & LLGs, international and regional requirements	DEC, DNP&RD, UNDP-GEF, SPREP-NBSAP DEC, DNP&M, UNDP-GEF, SPREP-NBSAP	2007 2007-2008	200,000.00 300,000.00 /annum

The matrix above clearly sets out the major biodiversity conservation programmes that will be undertaken in PNG beginning in 2007 and beyond. The programmes are quite unique as they contain specific projects and activities that will be undertaken in a programme and also the financial costing for each of these activities. The indicative costings provided by the matrix serve as a guide to the government and its partners in their planning for biodiversity conservation initiatives in PNG.

Chapter 10: Sustainable Financing

10.1 PA as a Revenue Raising Venture

The long-term success of biodiversity conservation and sustainable use in PNG will depend largely on the continued flow of sufficient funds to implement and sustain the programs envisioned in the NBSAP. To identify and capitalize on sustainable sources of funding, actual or estimated costings of each of the strategy and action plans need to be quantified. In so doing PNG can be able to strengthen and create new partnerships in financing these programs.

In PNG, many PA such as WMA, sanctuaries and parks are established in many remote parts of the country. These PA are mostly inaccessible by road or air and there is little or no government or donor support (both personnel and physical) and consequently most of these PA have either deteriorated or become dilapidated. A corollary difficulty is that due to the remoteness of these areas, the government structures in these areas are either non-existent or ineffective. The RAPPAM exercise clearly highlights these issues.

The locations of existing and emerging PA are in the remote areas of the country and thus the challenge is developing appropriate strategies which can attract funding and also sustainable finance to strengthen PA.

What activities can proponents of biodiversity conservation and sustainable use promote and establish in PA that will alleviate some of the problems identified above and lead to sustainable use and management of biological resources? The answer to this question lies in understanding the value or values of biodiversity conservation and the PA and linking it or them with the development goals of communities in the proposed PA and connecting them to the overarching national goals and priorities such as those reflected in the MTDS 2005-2012.

It is important to firstly identify the traditional sources of funding for biodiversity projects. This would entail an assessment of the normal government budgetary allocations for biodiversity conservation and also donor funding for such initiatives. A distinction has to be made between direct donor funding for biodiversity conservation initiatives and tied donor funding through the normal budgetary process for biodiversity conservation. When these sources of funding are identified, the linkage between these funds and biodiversity conservation programs must be clearly established to ensure that the transfer of these funds from the source to the PA is achieved.

Secondly, funding for targeted development goals through either the normal budgetary process or from donors for these goals must be identified and harnessed by proponents of biodiversity conservation to achieve the development goals which in themselves will promote sustainable development in PA. Given that biodiversity conservation programs are cross-sectoral, the utilization of these funds for the development programs would have a multiple effect in achieving the protected area objectives and also the government's development goals.

Once these two sources of funding have been identified and clearly connected to tangible development programs within biodiversity conservation areas, funding should be sourced to support sustainable income generating self-help activities in protected areas.

What are the best self-help income generating activities? In PNG, these activities have taken the shape of:

- Eco-tourism;
- Small Walkabout Sawmills;
- Research and access fees;
- Handcraft and other artifact marketing; and
- Marketing of non-timber forest products.

Many of these initiatives are customer driven and thus depend on the goodwill of customers to PA. Many times, proponents of biodiversity conservation initiatives forget that some of these areas are in remote parts of the country and are accessible only by air or sea, thus, these customer designed income generating activities are unrealistic. In PNG, some of the WMA and sanctuaries failed because of their dependence on this concept. When visitations by customers to the WMA and sanctuaries declined, (income to these areas also declined) the managers of these biodiversity for conservation found it difficult to manage these areas.

There must be a realignment of thinking by proponents of biodiversity conservation and sustainable use. The CBD which promotes at the international level, the creation of PA, encourages the initiation of sustainable economic activities in biodiversity conservation areas which will improve and enhance the living standards of local communities. This means forging new approaches to biodiversity conservation from a multi-sectoral perspective. Some of the key concepts such as agro-biodiversity should be encouraged in biodiversity conservation areas so that local communities are able to utilize and manage their natural resources to alleviate poverty, improve their health standards and increase their literacy levels.

When appropriate compatible economic programs such as agro-biodiversity programs are fashioned for biodiversity conservation areas, donor funding can be sought to support these programs. The funding support from external sources is usually temporal in nature, thus, this precious gift must be channeled to local communities to enable them to initiate and maintain projects on a sustainable basis.

10.2 Potential Sources of Financial and Technical Resources

There a number of partners who can be approached to assist the government in implementing the NBSAP. These include private organizations and international institutions. Some of these include:

International Agencies

United Nations Organizations and Specialized Agencies

Secretariat for the Convention on Biological Diversity

United Nations Development Programme

Global Environmental Facility

Biodiversity Planning Support Programme of UNDP/GEF

United Nations Environmental Programme

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
 Africa-Caribbean-Pacific Organisation (ACP)

Regional Organizations

South Pacific Regional Environment Programme
 Forum Fisheries Agency
 South Pacific Forum
 SOPAC

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
Netherlands	:	Ministry of Foreign Affairs
New Zealand	:	Ministry of Foreign Affairs and Trade
Norway	:	Norwegian Agency for Development Cooperation
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
Packard Foundation
Wildlife Conservation Society
The Nature Conservancy
Conservation International
World Wildlife Fund for Nature
Inter-Christian Church Organisation (ICCO)
The Rockefeller Brothers Fund
The Rockefeller Foundation
The Tinker Foundation
Weeden Foundation
The Indigenous Peoples' Fund
Peoples Trust for Endangered Species
Carnegie Corporation of New York

Private Enterprise

Sustainable Development Company
Others

Potential sources for technical resources

University of Papua New Guinea
University of Technology
University of Goroka
University of Vudal
Divine Word University
National Agricultural Research Institute
Institute of Medical Research
PNG Bintang Research Centre
PNG MamaGraun Trust Fund
Wildlife Conservation Society
The Nature Conservancy
Conservation International
World Wildlife Fund for Nature

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 and their affiliated researchers

This list is not exhaustive. Given the huge task in implementing the NBSAP, it is imperative that the government explore various avenues to secure funding and other resources from relevant partners in implementing this strategic policy.

Chapter 11: NBSAP Outcomes

The NBSAP will have five (5) main outcomes. These are:

- (1) Implementation of the nine (9) NBSAP Programmes;
- (2) Policy reform;
- (3) Legislative reform;
- (4) Strengthening of the PNG-PAI; and
- (5) Institutional and Human Capacity Building.

11.1 Implementation of the Nine NBSAP Programmes

The NBSAP will be implemented through nine (9) major programmes that have been identified and accepted by the PNG government and the stakeholders. The nine (9) programmes contain a series of projects and specific activities with relevant costings. The implementation of these programmes will require strong financial and technical support of all the stakeholders to ensure that the NBSAP is successful.

The other four (4) initiatives are intricately linked to the nine (9) programmes. Thus, the implementation of the nine (9) programmes will significantly boost the achievement of the other four (4) initiatives.

11.2 Policy Reform

Biodiversity conservation is spread throughout the existing body of national policies. This pragmatic approach has resulted in confusion over functions and responsibilities of lead agencies. A comprehensive and all embracing national policy on biodiversity is required. The NBSAP provides the impetus for the adoption of such a policy.

11.3 Legislative Reform

The DEC has already identified a serious gap in the legal framework – an Organic Law on Natural Resources (or Biodiversity). The existing legal framework on biodiversity conservation is cumbersome and has over the last 30 years proven to be problematic in terms of implementation. Several layers of protected areas are promoted sparingly through the law.

A review of the legislative framework with a view to making amendments to the existing conservation laws or developing a new law is required. A more simple and workable legal mechanism is required to achieve the goals of the NBSAP.

11.4 Strengthening the PNG-PAI

The protected areas concept has been in existence in PNG since time immemorial. The formal designation of protected areas emerged only in the colonial period and buttressed at

independence. The existing policy and legal frameworks have impeded the creation of new protected areas. A new procedure for designating protected areas is required. The process has already begun with RAPPAM - a component of PAI. The findings of RAPPAM must be implemented by the government and other stakeholders to improve the protected areas regime.

11.5 Institutional and Human Capacity Building

Biodiversity conservation and sustainable use cannot be achieved without the relevant institutional capacities and human knowledge and skills. Skills training in biodiversity data collection, storage and access; and research and development is lacking in PNG. Properly educated and adequately trained Papua New Guineans are needed to safeguard and promote the unique biological resources of the country.

An inventory of institutional capacities and skills training needs of Papua New Guineans is required immediately. Based on these findings, capacities of institutions can be improved through renovation, upgrading and establishment of new and modern facilities and equipment and the introduction of innovative skills training programs.

The networking and collaboration of institutions and personnel involved in biodiversity conservation and sustainable use must be strengthened or promulgated to strengthen institutional and human capacities. The sharing of biodiversity data and research and development in biological resources must be promoted amongst local institutions and Papua New Guinean researchers.

11.6 Monitoring and Evaluation

11.6.1 Monitoring

The implementation of the NBSAP requires the concerted effort of all the stakeholders to make it work. Stakeholders such as the government, the private sector, local communities, NGOs, academic institutions and civil society should combine their resources in partnership to promote and strengthen biodiversity conservation.

It is imperative for lead agencies responsible for the implementation of the NBSAP and the national policies which have a bearing on biodiversity conservation to monitor and review changes in the environment and progress in attaining the objectives of the plan. To monitor the progress of the NBSAP, appropriate environmental indicators need to be designed to measure progress.

11.6.2 Evaluation

The evaluation of the NBSAP must be a continuous and formal process. The DEC through an appropriate institution (preferably one which has fair representation of all stakeholders) should evaluate the document quarterly and develop strategies to overcome any obstacles that impede the successful implementation of the NBSAP.

The evaluation process should also identify capacity needs of the relevant State agencies to monitor biodiversity conservation and design capacity building programs to address this issue.

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