



Suriname



The Fourth National Report to the Convention on Biological Diversity

December 2012
Paramaribo, Suriname

The Ministry of Labour, Technological Development and Environment

Suriname

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Acronyms

ABS	Statistics Bureau (<i>Algemeen Bureau voor de Statistiek</i>)
ACT	Amazon Cooperation Treaty
ACTO	Amazon Cooperation Treaty Organization
ADEKUS	Anton de Kom University of Suriname
ASP	Agricultural Sectorial Plan
ATM	Ministry of Labour, Technological Development and Environment (<i>Ministerie van Arbeid, Technologische Ontwikkeling en Milieu</i>)
BBS	National Herbarium of Suriname (<i>Nationaal Herbarium van Suriname</i>)
BNP	Brownsberg Nature Park
CBD	Convention on Biological Diversity
CELOS	Centre for Agricultural Research in Suriname (<i>Centrum voor Landbouwkundig Onderzoek in Suriname</i>)
CI-Suriname	Conservation International Suriname
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLME	Caribbean Large Marine Ecosystem
DC	District Commissioner (<i>Districts-Commissaris</i>)
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
FAO	Food and Agricultural Organization
GB	Government Gazette (<i>Gouvernementsblad</i>)
GDP	Gross Domestic Product
GMO	Genetically Modified Organism
GEF	Global Environment Facility
GoS	Government of Suriname
HFLD	High Forest Low Deforestation
ICZM	Integrated Coastal Zone Management
ISAP	Interim Strategic Action Plan
IUCN	International Union for Conservation of Nature
LVV	Ministry of Agriculture, Animal Husbandry and Fisheries (<i>Ministerie van Landbouw, Veeteelt en Visserij</i>)
MDG	Millennium Development Goals
MOP	Multi-Annual Development Plan (<i>Meerjaren Ontwikkelingsplan</i>)
MUMA	Multiple Use Management Areas
NBS	National Biodiversity Strategy
NBSC	National Biodiversity Steering Committee
NBAP	National Biodiversity Action Plan
NIMOS	National Institute for Environment and Development in Suriname (<i>Nationaal Instituut voor Milieu en Ontwikkeling in Suriname</i>)
NH	Ministry of Natural Resources (<i>Ministerie van Natuurlijke Hulpbronnen</i>)
NMR	National Council for Environment (<i>Nationale Milieuraad</i>)
NR	Nature Reserve

NZCS	National Zoological Collection of Suriname (<i>Nationale Zoölogische Collectie van Suriname</i>)
NTFP	Non-Timber Forest Products
OW	Ministry of Public Works (<i>Ministerie van Openbare Werken</i>)
PLOS	Ministry of Planning and Development Cooperation
RAF	Resource Allocation Framework
RAP	Rapid Assessment Program
REDD+	Reducing Emission from Deforestation and Forest Degradation
RO	Ministry of Regional Development (<i>Ministerie van Regionale Ontwikkeling</i>)
ROGB	Ministry of Physical Planning, Land and Forest Management (<i>Ministerie van Ruimtelijke Ordening, Grond- en Bosbeheer</i>)
SB	Government Gazette (<i>Staatsblad</i>)
SBB	Foundation for Forest Management and Control (<i>Stichting Bosbeheer en Bostoezicht</i>)
SCBD	Secretariat of the Convention on Biological Diversity
SCF	Suriname Conservation Foundation
SLM	Sustainable Land Management
STAR	System for Transparent Allocation of Resources
TCT	Ministry of Transport, Communication and Tourism (<i>Ministerie van Transport, Communicatie en Toerisme</i>)
TBI	Tropenbos International
UNCCD	United Nations Convention on Combating Desertification
UNFCCC	United Nations Framework Convention on Climate Change
US EPA	US Environmental Protection Agency
WHO	World Health Organization
WWF	World Wildlife Fund

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Acknowledgement

“We, the people of Suriname, value and protect our biological diversity, including all natural and cultural resources, through equitable and sustainable use for present and future generations. A national commitment to Suriname’s biological wealth, integrating all sectors of society, will allow people to experience the full benefits of sustainable management and wise use while maintaining and enhancing the diversity of the country’s cultural and natural heritage”, is the vision statement of our National Biodiversity Strategy.

This reflects the commitment of the people of Suriname to value and protect the national biodiversity.

With this Fourth National Report (over the period 2009-2011), Suriname fulfills its commitment under the Convention on Biodiversity. This document reflects the status and trends of and threats to the national biodiversity.

The Ministry of Labour, Technological Development and Environment (ATM) wishes to express its sincere gratitude to all who contributed to the development of this report. Without their support, expertise and criticism, the development and finalization of this report would not have been possible.

We owe special thanks to the Global Environment Facility (GEF) for providing funding for the preparation of this Report and to the United Nations Environment Programme (UNEP).

Particular recognition goes to Ir. I. Fong Poen for his work during the initial phase of the development of this report, as well as to the members of the National Biodiversity Steering Committee, the staff of the Directorate for Environment, Mr. Stanley A.J. Malone of SCF, Ms. Annette Tjon Sien Fat of CI Suriname and many others not mentioned by name, for their time and the expertise they contributed to this report.

And finally, we would also like to acknowledge all other participants and stakeholders who participated in workshops and interviews for their efforts and inputs.

The Minister of Labour, Technological Development and Environment,

H.E. Michael Miskin

Executive summary

Country profile

The Republic of Suriname is located between 2° and 6° North latitude and 54° and 58° West latitude on the Northeastern coast of South America. It borders on the Atlantic Ocean to the North, the Republic of Guyana to the West, the Federative Republic of Brazil to the South, and French Guiana to the East.

The country's terrain consists of a young and old coastal plains interspersed with brackish and freshwater wetlands and, a central plateau region with sizable savannas and swamp forests, and a highland region in the South with densely forested tropical vegetation.

With a total land area of 163,820 km² and a total of 524,143 ¹inhabitants, the population density is approximately 3.1 inhabitants per km². This makes Suriname a low populated country. The average density, however, does not reflect the spatial distribution of the population in Suriname, for the population distribution is unequal (see table 1). In 2004, the population density in the coastal area was 20.1. The districts of Paramaribo, Wanica and Commewijne have highest densities.

Table 1: Population density by district and domain ²

District and domain	Density
Urban	
Paramaribo	1327.6
Wanica	194.1
Rural	
Nickerie	6.8
Coronie	0.7
Saramacca	4.4
Commewijne	10.5
Para	3.5
Interior	
Marowijne	3.6
Brokopondo	1.9
Sipaliwini	0.3

In recent years, the annual population growth has been around 1.37 %³. The population consists of several ethnic groups, such as Hindustani 27.4%, Creoles 17.7%, Maroons 14.7%; Javanese 14.6%; Mixed 12.5%; Miscellaneous others (Chinese, Indigenous peoples, Lebanese, European, etc.) 6.5%; Not reported, 6.6%.

¹ ABS 2009

² ABS 2010, Environmental Statistics

³ ABS 2009

Dutch is the official language, but more than 16 other languages are spoken as well. The national lingua franca is Sranan Tongo. Suriname has a literacy rate of 89.6%. All major religions, such as Christianity, Hinduism and Islam are practiced, next to traditional religions.

The country has a tropical climate, with an average daily temperature in the coastal region of 27⁰ C and an annual average rainfall varying between 1900 mm along the coast to 2700 mm in the central part of the country. There are two wet seasons, from April to August and from November to February, as well as two dry seasons, from August to November and February to April.

The Republic of Suriname formally obtained full independence on November 25, 1975 and is a constitutional democracy based on its 1987 Constitution. The government is made up of the President, Vice-President and Ministers. The President and Vice-President are elected by the National Assembly for a 5-year term and can be re-elected. Legislative power is exercised jointly by the government and parliament. The legislative branch consists of a 51-member unicameral National Assembly, the members of which are simultaneously elected by popular vote for a 5-year term. The last elections were held in May 2010.

There are 10 administrative districts: Brokopondo, Commewijne, Coronie, Marowijne, Nickerie, Para, Paramaribo, Saramacca, Sipaliwini and Wanica. District council members are elected locally and are required to work with the District Commissioner (DC) in addressing issues of general concern. An ongoing decentralization process (started in 2002) provides an operating budget for the DC and district council, although this has not yet been realized in all districts.

The largest contributors to Suriname’s GDP are (see table 2 and figures 1 and 2):

- a) Manufacturing (bauxite processing, crude oil refining)
- b) Agriculture
- c) Mining and quarrying
- d) Wholesale and retail

Table 2: GDP of economic activities at current prices⁴

Industries of origin	GDP of activities in 2009 (in 1000 SRD)
Manufacturing	1,532,061
Fishery	37,371
Mining and quarrying	939,205
Wholesale and retail	776,163
Agriculture, animal husbandry and forestry	375,211
Construction	336,177
Electricity, gas and water	309,193

Exchange rate: 1: 2.80

GDP of the informal sector was estimated to be 1,395,191 (in 1000 SRD) in 2009⁵.

⁴ ABS 2010, Environmental Statistics

⁵ ABS 2010, Environmental Statistics

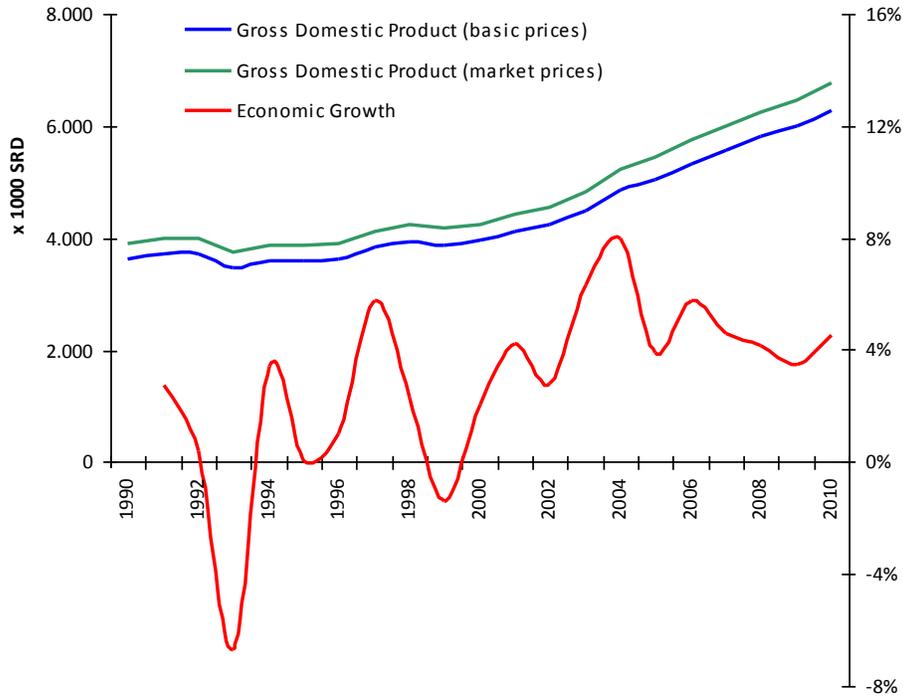


Figure 1: GDP and GDP growth rate between 1990 and 2010
Based on ABS 2010; figures include the informal sector and are corrected for inflation (1990 = 100).

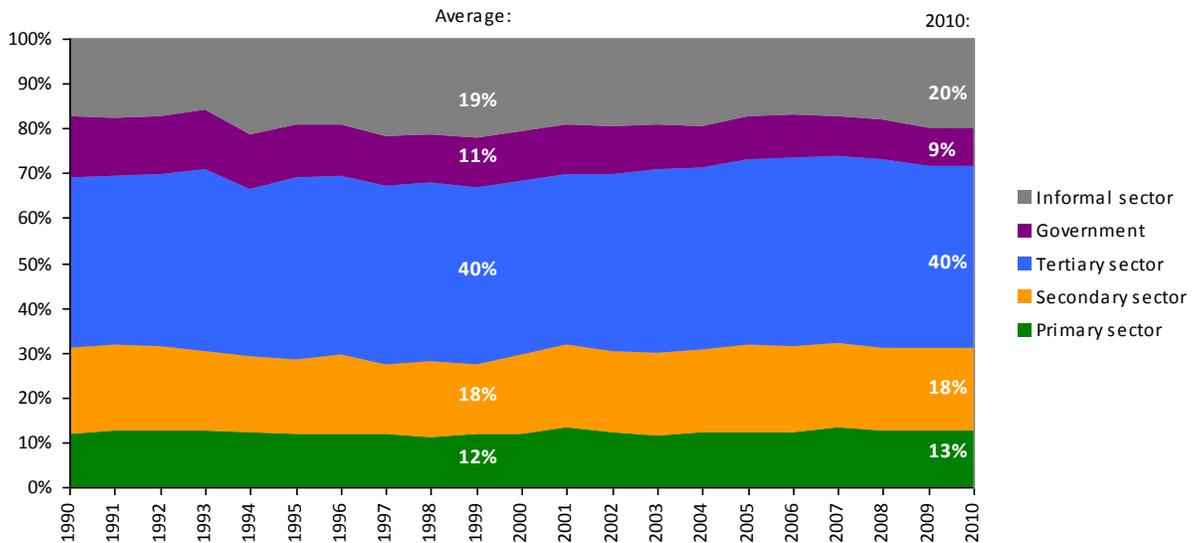


Figure 2: Contribution of different sectors to GDP (1990 – 2010) based on ABS 2010

Primary sector: agriculture, hunting, forestry, fishery, mining, quarrying

Secondary sector: manufacturing, electricity, gas and water supply, construction

Tertiary sector: wholesale and retail trade, hotels, restaurants, transport, communication, financial intermediation, real estate, renting and business activities, other community, social and personal activities

Government: public administration, education (government), health and social work (government)

Implementation of UNCBD

With over 80% of the land surface (appr. 164,000 km²) covered by tropical rainforest and 16 protected areas covering more than 13% of the total land area, Suriname shows a strong tradition and good record of nature conservation. Following this tradition, the National Biodiversity Strategy (NBS) was developed in 2006 as well as a National Biodiversity Action Plan. In the NBS, seven goals were distinguished and described:

1. Suriname's biological diversity is conserved by protecting biological species and by protecting and enhancing their natural habitat (at local and national scales);
2. Sustainable use of biological resources and (related) cultural resources is rooted in the local and national economy;
3. Access to genetic resources and biodiversity-related traditional and native knowledge is regulated and controlled, with equitable distribution of the benefits derived from use thereof;
4. Research and education results in i) environmentally friendly and safe (technological) development, ii) the exchange and use of biotechnology and its products (e.g. genetically modified organisms), and iii) fair distribution of associated benefits;
5. The necessary capacity exists for sustainable management of national biodiversity, including monitoring and law enforcement, and is adequate at individual and institutional levels;
6. Education and communication are utilized to enhance i) public awareness in relation to biodiversity, and ii) planning and management for the conservation of biodiversity and (related) cultural resources;
7. Local and international participation and cooperation are encouraged by local communities, the scientific and the business community.

There are more than one hundred "strategic directions" guiding the seven goals in the NBS. The NBS serves to guide the development of the NBAP. The draft NBAP has regrouped the NBS goals and formulated them more simply, while an additional goal was added. The seven NBS goals have become eight main goals in the draft NBAP:

1. conservation of biodiversity;
2. sustainable use of biodiversity;
3. access to genetic material and related knowledge, with equitable benefit sharing;
4. acquisition of knowledge through research and monitoring;
5. capacity building;
6. enhancement of awareness and empowerment, through education and communication;
7. cooperation at local and international levels;
8. sustainable financing.

The main goals were subdivided into sub-goals which relate to important themes or sectors and which, for the larger part, were already identified in the NBS. The first three goals of the NBAP are core goals, i.e. the essential goals that need to be achieved, and the rest are regarded as supporting goals, i.e. goals to be achieved to facilitate the core goals.

Chapter I Overview of Biodiversity Status, Trends and Threats

1.1 Overview

The Third National Report to CBD, as submitted by Suriname in 2009, serves as the baseline for this Fourth National Report. Major adjustments are dealt with over the reporting period.

Suriname signed the Convention on Biological Diversity in June 1992 and ratified it in December 1996. The Third National Report to the Convention was submitted in 2009 to SCBD.

In 2006, the National Biodiversity Strategy for Suriname was also submitted to SCBD. The National Biodiversity Strategy for Suriname for the period 2006-2020, reflects on the national vision, goals and strategies as determined by the actors dealing with protection and sustainable use and equitable distribution. The National Biodiversity Strategy serves as a framework for a Biodiversity Action Plan in which activities, tasks and results are identified.

The goals of Suriname's Biodiversity Strategy are quoted below from the NBS:

Goal 1: Biodiversity will be conserved in Suriname through protection and enhancement of habitat and species at local, regional and national scales.

Goal 2: The sustainable uses for biological, cultural and natural resources will be enacted in local and national economies.

Goal 3: Research and education will be applied to create access to environmentally sound and safe developments, transfer, handling and use of biotechnology and modified organisms, and increased benefit sharing among all citizens for these resources.

Goal 4: Access to genetic resources and the associated traditional knowledge and equitable benefit-sharing will be regulated and monitored.

Goal 5: Institutional capacity will be enhanced to sustainably manage and monitor biodiversity.

Goal 6: Education and communication opportunities will be strengthened to improve public awareness of biodiversity, cultural and nature conservation planning, management and monitoring at local and national levels.

Goal 7: Local participation of communities, scientific community and businesses in biodiversity planning, management and monitoring will be enhanced as well as participation with other countries, by strategic alliances with members of, among others; the Amazon Cooperation Treaty, SIDS and CARICOM.

As indicated in the Third National Report⁶, the overall picture of the biodiversity in Suriname can be described as follows:

- Functionally intact coastal wetlands, including mangrove forests which are of global importance for migratory birds, of regional importance as fish and shrimp nurseries, and of local importance for fishery, agriculture, forestry, mining and tourism;
- A vast, pristine rainforest expanse which is globally and regionally important as a wildlife refuge and a storehouse of living biodiversity, and of local importance for forestry, NTFP, agro-forestry, mining, water resources and tourism;
- Savannas, including the Sipaliwini (connected to the Paru in Brazil), which are partly man-made, partly of natural origin, and of local importance for water resources, mining and tourism;
- High diversity of species, several globally endangered ones, many species are Guiana Shield endemics;
- High genetic diversity – mainly due to high species diversity – which translates into a great variety of traditional uses of biodiversity, e.g. medicinal use;
- Approx. 13.5% of the total land area is legally protected.⁷

1.2 Status and trends

Ecosystems profile

A comprehensive inventory and subsequent mapping of the ecosystems (vegetation-soil associations and faunal data) was conducted in the Suriname lowlands before 1980⁸.

The land is very diverse in terms of ecosystems and habitats, and in the northern part of the country - in the Coastal Plain - these ecosystems and habitats have been studied, described and mapped. Only a few locations in the Interior, the hilly land in the middle and South of the country, have been investigated, and much of this area remains unknown. It is obvious, however, that the areas in the Interior above 400 m represent peculiar landscape features, with rare and potentially unique habitats, such as cloud forest (see figure 4).

Suriname's total land territory, including the coast, is part of larger Amazonia. The territory is customarily subdivided into four main zones; the first 3 are of marine-estuarine origin and collectively better known as "the Coastal Plain" (the Northern 20% of the country, along the coast), the fourth is the crystalline basement of the Guiana Shield itself and better known as "the Interior" (80% of the country – the mid and southern part) (see figure 3):

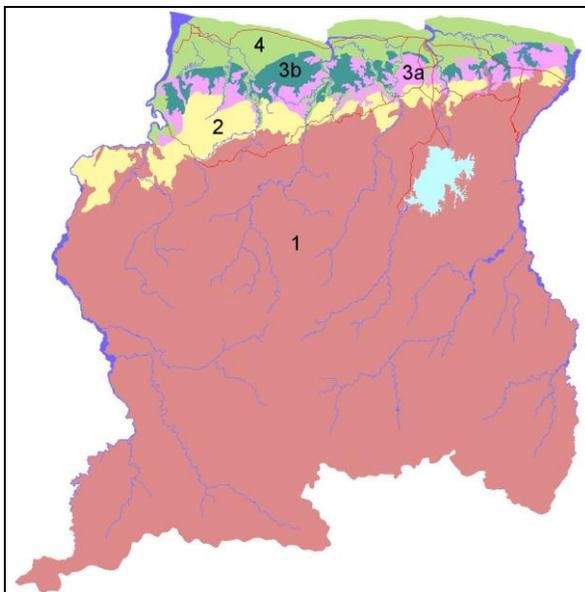
- the Young Coastal Plain, a mostly clayey marine deposits of recent origin

⁶ Ministry of Labour, Technological Development and Environment (ATM) 2009, The Third National Report to the United Nations Convention of Biological Diversity

⁷ At present, Suriname has 16 legally established protected areas which cover 21,383 km² (i.e. 13.5% of the country's land territory). The Central Suriname Nature Reserve is by far the largest, covering 15,920 km² (i.e. 9.7% of the land surface), more or less in the middle of the country.

⁸ Reconnaissance Map Suriname Lowland Ecosystems (Coastal Plain and Savanna Belt), P.A. Teunissen 1978

- (Holocene), which is flat and very low-lying (up to 4m above sea level), and features a variety of natural wetland habitats, as well as man-made rice fields and polders used for agriculture and habitation;
- the Old Coastal Plain, clay and sand marine deposit of recent origin (Pleistocene), which is flat and low-lying (up to 12 m. a.s.l.), and features a variety of seasonally flooded and dry land forest habitats, cleared to a considerable extent for habitation and intensive agriculture;
 - the Cover Landscape (better known as “the Savanna Belt”), a mostly sandy, much older (Tertiary) coastal plain which is more elevated (ca. 10-100 m a.s.l.), and features savannas and forests, only few of which have been converted by man; and
 - the Guiana Shield (in the strictest sense of the word), the zone where the ancient (Precambrian) rock formations are covered only by their own weathering products (typically clayey-sandy material); this zone is mostly low-lying (below 250 m) and hilly (with discrete ranges till ca. 1200 m a.s.l.); most of it is pristine and covered with dry land forest, except where poor soil or repeated burning of the vegetation have led to the creation of savannas.⁹

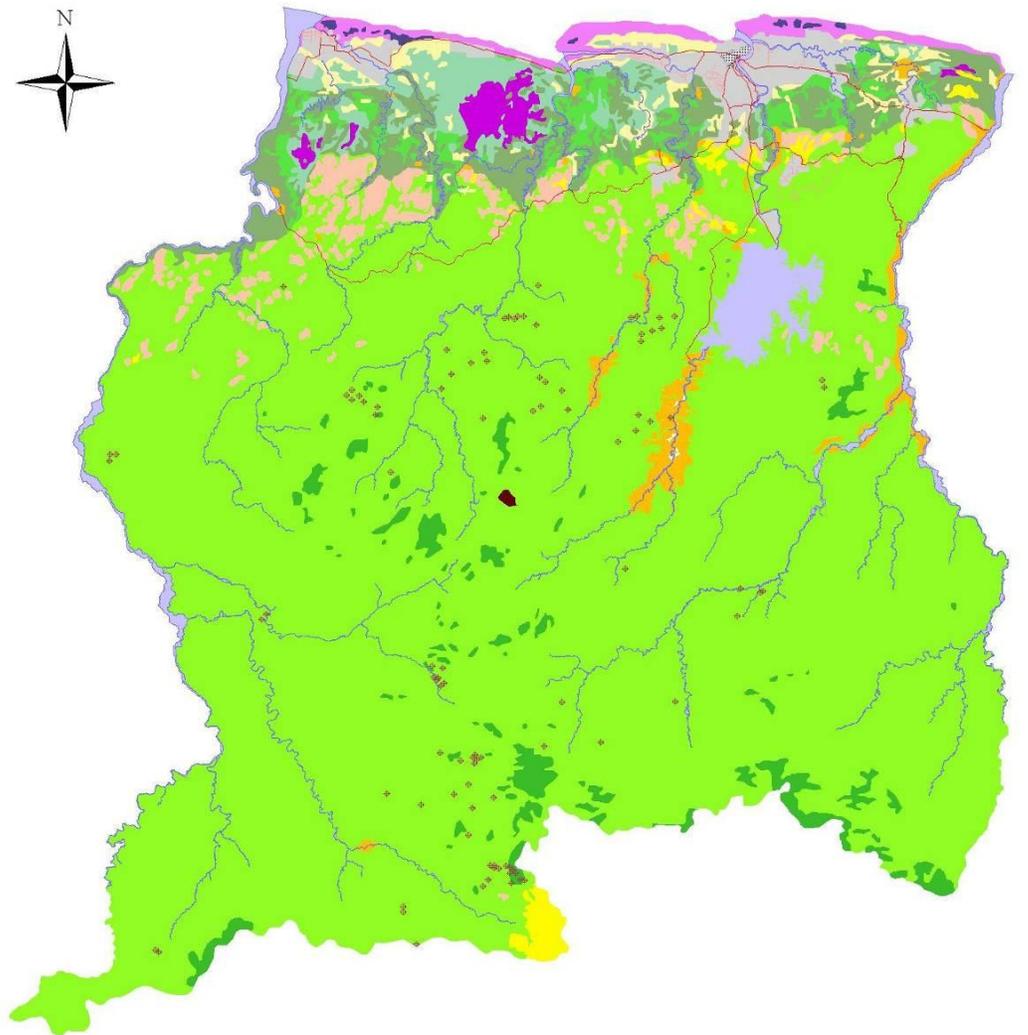


LEGEND

1. Precambrian Guiana Shield area, popularly also known as the Interior, the Interior Uplands, or the Hill and Mountain Land
2. Cover landscape; also known as Zanderij or Savanna Belt (Late Tertiary)
3. The Old Coastal Plain:
 - a. Old ridges and sea clay flats (Pleistocene)
 - b. Swamps (Early Holocene)
4. Young Coastal Plain (Late Holocene)

Figure 3: Outline of the major physiographic regions of Suriname

⁹ Ministry of Labour, Technological Development and Environment (ATM) 2009, The Third National Report to the United Nations Convention of Biological Diversity



LEGEND

- | | |
|---|---|
| ■ Mangrove forest, and brackish to freshwater herbaceous swamp | ■ High dryland forest |
| ■ Lagoon | ■ Mountain forest (> 500 m) |
| ■ Freshwater herbaceous swamp | ■ Tepui (Tafelberg) |
| ■ Swampwood | ■ High and low xerophytic forest |
| ■ Swamp forest | ■ Savanna |
| ■ Marsh forest and dryland forest | ■ Shifting cultivation |
| ■ Open ombrogenous herbaceous swamp | ■ Cultivated and abandoned land |
| | ⊕ Inselbergs |



Figure 4: Ecosystems of Suriname (adapted from Planatlas 1988) ¹⁰

¹⁰ Ministry of Labour, Technological Development and Environment 2012, Second National Communication to UNFCCC

Suriname's marine area is subdivided into four zones; the first three are part of the Continental Sea, a shallow area that used to be dry land during Ice Age glacial periods:

- the Continental Inner or Brown-water Zone: the water reaches a depth of about 30 m and is brown due to the heavy load of mud; along the coast, there are extensive mud banks which move slowly to the west, and sand banks that either also move along or have fixed locations near the mouths of major rivers;
- the Continental Mid or Green-water Zone: the water is between 30 and 60 m deep and is still a bit muddy, but much less so than in the previous zone; the water has a greenish tint due to the abundance of algae and is thus biologically very productive;
- the Continental Outer or Blue-water Zone: the water is between 60 and 100 m deep and is clear, not muddy; the water has a blue tint due to the limited presence of algae, and is biologically less productive than the previous zone;
- the Deep Sea Blue-water Zone: the water is blue and deeper than in the previous zone; this zone starts where the continental slope begins to drop off (this slope starts at about 100 m and levels off at several 1000 m below the surface of the sea).¹¹

Freshwater ecosystems

The freshwater ecosystems of Suriname are subdivided based on water quality. The subdivision geographically follows that of the terrestrial ecosystems:

- in the Interior (above the first rapids), the rivers have clear and always fresh water which is poor in nutrients but rich in oxygen, plant and animal life; the smaller creeks have a relatively poor flora and fauna compared to the main rivers;
- in the Cover Landscape, the water of the creeks and rivers is fresh and clear, but very acidic and poor in oxygen; the fauna and flora is poor but with many special elements; and
- in the Young and Old Coastal Plains, the creeks and especially the rivers (below the first rapids) have less transparent water which can be brackish (depending on tides and seasons); the water is poor in oxygen, but rich in nutrients, aquatic plants and animals; the lower courses of the rivers are frequented by a number of marine animals, such as dolphins.

Marine ecosystems

The marine, near shore ecosystems of the continental shelf of Suriname are strongly influenced by the East-West directed Guiana Current, an extension of the North Equatorial Current off Brazil, and the outflow of fresh, sediment-laden water of the Amazon River, the so-called Amazon plume, a 5-10 m thick layer of water of low salinity (25-35 ‰) separated from underlying oceanic water (35 ‰) by a sharp, 5 m halocline (Lentz & Limeburner 1995), which creates a shallow surface mixed layer. In effect, the Amazon plume creates high-suspended-sediment, low-salinity, estuarine conditions in the shallow, near-shore waters off Suriname (e.g. Longhurst & Pauly 1987). Each year approximately 1.5×10^8 tons of Amazonian sediments are transported in suspension with

¹¹ Ministry of Labour, Technological Development and Environment (ATM) 2009, The Third National Report to the United Nations Convention of Biological Diversity

the Guiana Current and about 1×10^8 tons move along the coast of the Guianas in the form of mud banks (Eisma et al. 1991, DHL 1962).¹²

A special habitat that is known to occur off the coast of Suriname is that of old coral reefs. These reefs occur at about 100 m below the surface of the sea, at the transition of the Continental and Deep Sea; the reefs are fossil structures formed during Ice Age glacial periods.¹³

Forest ecosystems

Approximately 90% of Suriname's total land area is classified as forest land (14.8 million hectares). The vegetation of Suriname has been traditionally classified into three main types: *hydrophytic*, *xerophytic* and *mesophytic* (see table 3).

Table 3: Forest and vegetation types¹⁴

Vegetation Type	Area (ha)
<i>Hydrophytic</i> vegetation	
Mangrove forest	115,000
Swamp forest	
Low swamp forest	240,000
<i>Triplaris</i> forest	210,000
<i>Virola</i> / mixed swamp	275,000
Ridge forest	35,000
Marsh forest	470,000
<i>Xerophytic</i> vegetation	
Savanna / Low savanna forest	18,000
High savanna forest	132,000
<i>Mesophytic</i> vegetation	
Lowland high forest	13,360,000
TOTAL	14,855,000

According to the 1992 Forest Management Act (article 1), the forests in Suriname are classified in the following categories:

- ✓ permanent forest
- ✓ permanent production forest
- ✓ permanent protection forest
- ✓ special protected forest
- ✓ conversion forest
- ✓ transitional forest
- ✓ community forest

¹², Jan Mol 2011, Environmental and Social Impact Assessment for the *Staatsolie* (State Oil Company) River Seismic Project

¹³ Ministry of Labour, Technological Development and Environment (ATM) 2009, The Third National Report to the United Nations Convention of Biological Diversity

¹⁴ Source: LBB (1990) in Mitchell (1996) and Forest and Freshwater resources, J. Hendrison, 2002

A broad East to West extended forest belt of some 40-100 km, covering about 2.5 million ha, has been appointed for forest production. It has the potential for 1-1.5 million m³ timber production, but the deforestation rate is only between 0.03 and 0.04 % per year¹⁵.

In 2010 142 valid logging permits were issued with a total area of 2 million ha and 62 logging concessions with a total area of 1.3 million ha were issued¹⁶.

Table 4: valid logging permits ¹⁷

Status	Total	Total area in ha
Logging concession	62	1.295.552
Logging permits	61	448.859
Community forests	17	113.685
Total	140	1.858.096

Species diversity

Suriname's species diversity is known for a number of taxa (groups of plants¹⁸/ animals):

- ca. 5100 species of (mostly higher) plants;
- 343 species of ferns
- 187 species of mosses
- 318 species of freshwater fishes;
- 277 species of herps (102 amphibians and 175 reptiles);
- 715 species of birds; and
- 192 species of mammals

The number of taxa reflects that Suriname has:

- 2.0 % of the world's higher plant species;
- 3.1 % of the world's fish species;
- 2.4 % of the world's amphibian species;
- 2.8 % of the world's reptile species;
- 7.9 % of the world's bird species; and
- 4.8 % of the world's mammals species

In the 3rd National Report¹⁹ specific data were already mentioned.

(New) species found

Under coordination of Conservation International rapid biodiversity assessments, so-called RAPs were conducted in certain areas in Suriname. In August – September 2010 a RAP was conducted in the southern part of Suriname (near the village of Kwamalasamutu). The following shows some major results from this RAP:

¹⁵ Ministry of Labour, Technological Development and Environment, December (ATM), 2012, Second National Communication to UNFCCC

¹⁶ Ministry of Natural Resources, 2005, National Forest Policy for Suriname

¹⁷ SBB 2011, Forestry sector analysis

¹⁸ Collection of The National Herbarium of Suriname (BBS), 2011

¹⁹ Ministry of Labour, Technological Development and Environment (ATM) 2009, The Third National Report to the United Nations Convention of Biological Diversity

Number of species recorded

Plants >240
 Ants >100
 Aquatic Beetles 144
 Dung Beetles 94
 Dragonflies and Damselflies 94
 Katydid and Grasshoppers 78
 Fishes 99
 Reptiles and Amphibians 78
 Birds 327
 Small Mammals 38
 Large Mammals 29

Number of species new to science

Aquatic Beetles 16–26
 Dung Beetles 10–14
 Dragonflies and Damselflies 4
 Katydid and Grasshoppers 7
 Fishes 8
 Reptiles and Amphibians 1

New records for Suriname

Plants 8
 Aquatic Beetles 45
 Dung Beetles 5
 Dragonflies and Damselflies 14
 Katydid and Grasshoppers 29
 Fishes 2
 Reptiles and Amphibians 2
 Birds 4
 Small Mammals 2²⁰

An earlier RAP was conducted in October - November 2005 at the Lely and Nassau Plateaus. Some significant and major results from this RAP²¹ were:

Lely and Nassau Plateaus

- High faunal diversity
- At least 27 species endemic to the Guiana Shield region
- At least 24 species new to science, illustrating how little we know of these areas and the Guiana Shield region overall
- Many species and individuals of large mammals and large birds (e.g. parrots, guans), indicating that these areas may serve as refuges for larger species

Species new to science**Amphibians**

Eleutherodactylus (4 species)

Adenomera (1 species)

Atelopus (1 species)

Fish

Guyanancistrus (1 species)

Harttiella (1 (sub) species)

²⁰ O'Shea, B.J., L.E. Alonso, & T.H. Larsen, (eds.). 2011. A Rapid Biological Assessment of the Kwamalasamutu region, Southwestern Suriname. RAP Bulletin of Biological Assessment 63. Conservation International, Arlington, VA.

²¹ Alonso, L.E. and J.H. Mol (eds.). 2007. A rapid biological assessment of the Lely and Nassau plateaus, Suriname (with additional information on the Brownsberg Plateau). RAP Bulletin of Biological Assessment 43. Conservation International, Arlington, VA, USA.

Lithoxus (3 species)
Trichomycterus aff. *conradi* (1 species)

Ants

Pyramica (1 species)

Dung Beetles

Anomiopus (~ 2 species)

Ateuchus (~ 2 species)

Canthidium (~ 3 species)

Eurysternus (~ 3 species)

Sylvicanthon sp. nov.

Genetic diversity

Several studies have been conducted on the cultivation of root crops such as manioc (*Manihot esculenta*) and grain crops. The studies focus on sustainable cultivation systems. A field gene bank for *Manihot esculenta* has been established.²² Other information on genetic diversity was not available.

1.3 Threats

One of the major threats is illegal small-scale gold mining and the associated use of mercury which, to a certain extent, has a negative impact on the ecosystems²³. The GoS has taken measures to regulate the illegal activities with the establishment of the Commission Regulation Goldsector (Commissie Ordening Goudsector). On this matter we will elaborate more in the fifth national report.

Ecosystems

Teunissen (1993) describes the following human impacts as significant: grass and peat fires, making polders (draining swamps for agriculture), dykes (damming for water storage and agriculture), discharge of agrochemicals, introduction of exotic plants, roads and transport canals, swamp forest exploitation (drainage and canalizing for logging), mining (bauxite), and industry.²⁴

Freshwater ecosystems

The expansion of small-scale or artisanal mining leaves a huge footprint, especially in creeks and tributaries of rivers lying within the green stone belt. Sea level rise will also affect the amount of freshwater.

Threats to the freshwater ecosystems are:

- (1) pollution (urban-domestic and industrial waste) e.g. mining activities,
- (2) changes in land use,
- (3) agriculture runoff (e.g. pesticides),
- (4) climate change (droughts, floods), and
- (5) sea level rise (saltwater intrusion).

²² Centre for Agricultural Research in Suriname (CELOS)

²³ Paul E. Ouboter, Gwendolyn Landburg 2010, Mercury Poisoning: A threat to Brownsveg villagers

²⁴ WWF 2008, Paramaribo Swamp Forests

Marine ecosystems

A potential threat to marine ecosystem is the expansion of oil exploration concession. Currently, the most important *threats* to marine biodiversity are:

- (1) over-exploitation ('fishing down the food webs'),
- (2) pollution (both local and oceanic; eutrophication, plastics, oil),
- (3) climate change (e.g. acidification); and
- (4) habitat change (e.g. dredging, bottom trawling).

Threats to the marine turtle populations are in particular natural threats and human-related threats. In approximately 2009, the Ministry of Agriculture, Animal Husbandry and Fisheries has taken measures by mandating the use of Turtle Excluded Device (TED) in the fishing nets of the sea bob vessels. Also a "no fishing zone" measure applies during the nesting period of the marine turtle species in the Galibi nature reserve for all type of fishing vessels.

The Bigipan MUMA area²⁵ on the coast, in which different economic activities are conducted, has brackish water. This area has a high biodiversity, but its biodiversity is *threatened* by (1) humans (fishing, hunting, etc.); (2) the sea (saltwater intrusion); (3) climate change (change of precipitation); and (4) irresponsible mining of shell and sand ridges.

Forest ecosystems

Human land use activities and climate change (causing droughts and floods) are the main factors that threaten biodiversity. In urban areas the main threat is the discharge of effluents that affect Suriname's freshwater. In the interior the threats are specifically from change of land use and thus change of tropical forests.

Even though the deforestation rate in Suriname is estimated less than 0.5%²⁶ and the rainforest is considered largely (and uniquely) intact, there is growing recognition that it is under a serious threat from all scales of mining for bauxite, oil, gold, logging and mining among others.²⁷

Species

As far as the (new) species found during the RAP near Kwamalasamutu are concerned, it was recommended that although this region faces few immediate threats, it should be managed to ensure that key ecological processes are not disrupted through contamination of watercourses, large-scale resource exploitation, or depletion of animal populations. It was also recommended that small-scale or artisanal gold mining activities be aggressively discouraged in the region and that a water quality monitoring program should be implemented by the local community to detect contamination from any mining activities. It is worth mentioning that 15 species listed on the IUCN Red List of Threatened Species (IUCN 2011) were encountered during the survey. Populations of game animals and fishes should be managed through means best suited to the interests and needs of the

²⁵ See table 6 and figure 6

²⁶ Ministry of Natural Resources 2005, National Forest Policy of Suriname

²⁷ Gabrielle Kissinger, Martin Herold, Veronique de Sy, Drivers of Deforestation and Forest Degradation

community, preferably through a network of reserves with limited hunting seasons for particular species. Domesticated animals should be encouraged as an alternative protein source²⁸.

In the remaining part of the Coastal Plain (the freshwater and savanna zone), the relatively small protected areas are located in areas with low resident populations. Nevertheless, the areas are almost always part of the lands traditionally used by local communities (in many cases Indigenous people). This is a cause of conflict, and complicates management of the protected areas.

Threats to the protected areas are (1) unregulated/illegal logging, (2) hunting, and (3) excessive animal collecting. This is mainly due to the fact that these protected areas are relatively accessible for outsiders. In the Interior, human population densities are very low, and the protected areas (all NRs, except BNP) are virtually uninhabited. Again, this does not mean that local communities are not claiming or using these areas.

In general, the main *threats* in the Interior are:

- (1) unregulated, small-scale or artisanal gold mining, and
- (2) unregulated/illegal logging and hunting, which goes hand in hand with the gold mining activities and causes additional problems.

These threats are very serious indeed in the Eastern part of the Interior.

1.4 Implications of changes on human wellbeing

Threats mentioned earlier (1.3) can have many adverse effects on the biodiversity, in particular on ecosystem integrity, but also for human well-being, local livelihoods and sustainable development.

The population density in Suriname is 3.1 inhabitants per km², but the population density is unequally distributed. In the coastal area the population density was 20.1 compared to the population density of the interior of 0.3 for the District of Sipaliwini (see table 1 and figure 5).

Environmental degradation can have substantial impacts on human health, such as exposure to environment-related risks such as poor or unsafe water supply and environment-related diseases (malaria, dengue fever). Fortunately, the incidence of malaria has decreased by more than 90% and no deaths due to malaria have been reported since 2006.²⁹

²⁸ O'Shea, B.J., L.E. Alonso, & T.H. Larsen, (eds.). 2011. A Rapid Biological Assessment of the Kwamalasamutu region, Southwestern Suriname. RAP Bulletin of Biological Assessment 63. Conservation International, Arlington, VA.

²⁹ ABS 2010, Environmental Statistics

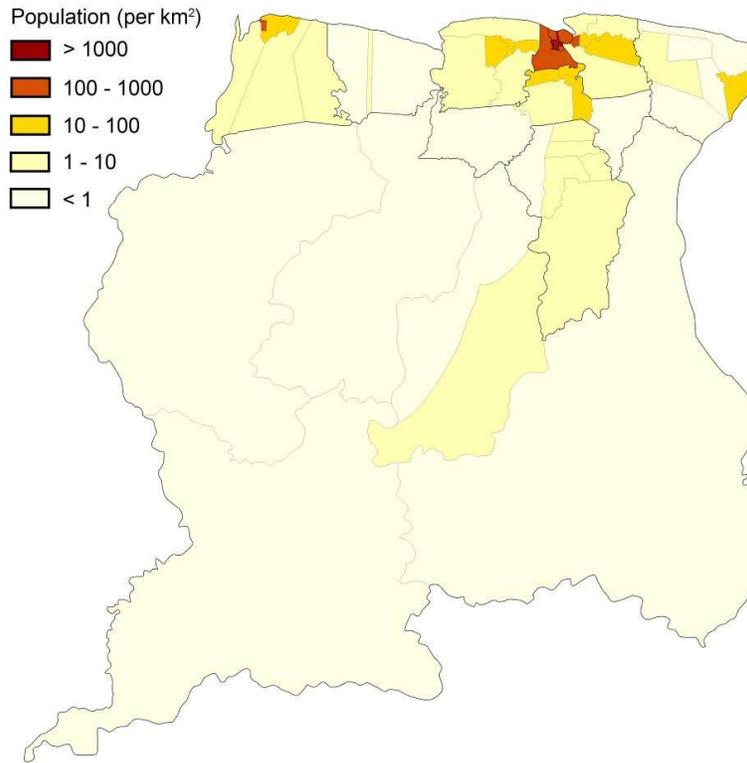


Figure 5: Population distribution and density per administrative area
(based on ABS 2004)

During an inventory near the Brokopondo lake, measurements were taken of mercury concentrations. They were found to be above international standards for mercury in freshwater organisms (0.1 µg/l), in sediments (0.14 µg/g) and for human consumption (0.5 µg/g). The WHO safety limit for mercury is 10 µg/g. It must be mentioned that Suriname does not have a national standard mercury limit except for occupational health.

Table 5: Overview of mercury measurements in the Brokopondo Lake³⁰

	Water µg/l	Sediment µg/g	Fish µg/g
Dry season 2005	0.11		
Dry season, average 2004/2005		0.27	1.5
Rainy season, average 2004/2005	0.28	0.2	1.16

³⁰ Paul E. Ouboter, Gwendolyn Landburg 2010, Mercury poisoning: A Threat to Brownsberg Villagers

Chapter II Current status of National Biodiversity Strategy and Action Plans

2. 1 National Biodiversity Strategy for Suriname (NBS) overview

In 2006, Suriname developed the National Biodiversity Strategy (NBS) for the period 2006-2020. The National Biodiversity Strategy sets out the national vision, goals and strategic direction in order to conserve, protect and sustainably use our rich biological diversity and biological resources and distribution. Seven goals of our Biodiversity Strategy were identified. The National Biodiversity Strategy serves as a framework for a Biodiversity Action Plan which identifies activities, tasks and expected outcomes.

The NBS is based on strengths and assets in our natural, social, institutional and infrastructure environment. It is believed that these serve as the basis of an achievable National Biodiversity Strategy.

A vision statement of the country's Biodiversity Strategy was developed in which the commitment of the people of Suriname is reflected to value and protect the national biodiversity. The vision statement reads as follows:

“We, the people of Suriname, value and protect our biological diversity, including all natural and cultural resources, through equitable and sustainable use for present and future generations. A national commitment to Suriname's biological wealth, integrating all sectors of society, will allow people to experience the full benefits of sustainable management and wise use while maintaining and enhancing the diversity of the country's cultural and natural heritage.”

The strategic direction is framed by several principles, including:

- The incorporation of biodiversity, cultural and nature conservation measures and values into national development plans and sector plans;
- Creation of financial and human resources to achieve and sustain the national vision;
- Improvement of the capacity of people to value biodiversity socially and economically and to understand the benefits of all forms of biodiversity;
- Establishment of an educational system that benefits from awareness on biodiversity issues.

Seven goals were established for the National Biodiversity Strategy:

Goal 1: Biodiversity will be conserved in Suriname through protection and enhancement of habitat and species at local, regional and national scales.

Goal 2: The sustainable uses for biological, cultural and natural resources will be enacted in local and national economies.

Goal 3: Research and education will be applied to create access to environmentally sound and safe developments, transfer, handling and use of biotechnology and modified organisms, and increased benefit sharing among all citizens for these resources.

Goal 4: Access to genetic resources and the associated traditional knowledge and equitable benefit-sharing will be regulated and monitored.

Goal 5: Institutional capacity will be enhanced to sustainably manage and monitor biodiversity.

Goal 6: Education and communication opportunities will be strengthened to improve public awareness of biodiversity, cultural and nature conservation planning, management and monitoring at local and national levels.

Goal 7: Local participation of communities, scientific community and businesses in biodiversity planning, management and monitoring will be enhanced as well as participation with other countries, by strategic alliances with members of, among others; the Amazon Cooperation Treaty, SIDS and CARICOM.

2.2 Contribution to the implementation of CBD articles

The goals of the NBS are linked as follows to the provisions in the Convention on Biological Diversity:

Goal 1 refers to articles 8a, b, c, d, f and 9c

Goal 2 refers to articles 8e, 10e

Goal 3 refers to articles 8 g, 9b, 15.1, 15.2, 15.7, 19.1 and 19.2

Goal 4 refers to article 8j

Goal 5 refers to articles 8b, 9c, 10a, 14.1a and 14.1b

Goal 6 refers to articles 12a, 13a, 17.1

Goal 7 refers to articles 10c, 10d, 14.1e and 18.2

Strategic directions are also identified per goal as cited in NBS.

While the goals of NBS pertain to several articles under the Convention, with the development of the Action Plan, several activities have been identified in the draft NB Action Plan, and Suriname is committed to upgrade a number of legislative products.

National legislation on the conservation of biodiversity components has been in place since before the 1950s. (1954 Nature Conservation Act, 1954 Game Act, Mining Decree).

The original Game Act, the 2002 Game Act and the last amended Game Act (2009) provide the framework for the protection of game as well as threatened species. In accordance with the framework, game species are categorized and subject to an open and closed hunting season. Prohibitive rules govern the possession of protected species and even parts of these, game species in closed hunting seasons, and also for exceeding the allowed bag limit for game species in open hunting seasons. The procedures for fines, confiscation or even imprisonment are also embodied in the aforementioned framework.

Targets regarding the use of biological natural resources are embedded in several current and draft laws (as mentioned in chapter 3).

The current state of protected areas is depicted in table 6 and figure 6.

Table 6: Protected areas according to type and size

	Name of the protected area	Type of area	Total area (ha)
1	Bigi Pan MUMA	Terrestrial/marine	67,900
2	Hertenrits NR	Terrestrial	100
3	North Coronie MUMA	Terrestrial/marine	27,200
4	North Saramacca MUMA	Terrestrial/marine	88,400
5	Coppename-monding NR	Terrestrial/marine	12,000
6	North Commewijne-Marowijne MUMA	Terrestrial/marine	61,500
7	Wia-Wia NR	Terrestrial/marine	36,000
8	Galibi NR	Terrestrial/marine	4,000
9	Peruvia NR	Terrestrial	31,000
10	Boven-Coesewijne NR	Terrestrial	27,000
11	Copi NR	Terrestrial	28,000
12	Wanekreek NR	Terrestrial	45,000
13	Brinckheuvel NR	Terrestrial	6,000
14	Brownsberg Nature Park	Terrestrial	12,200
15	Central Suriname NR	Terrestrial	1,592,000
16	Sipaliwini NR	Terrestrial	100,000
	Total		2,138,300

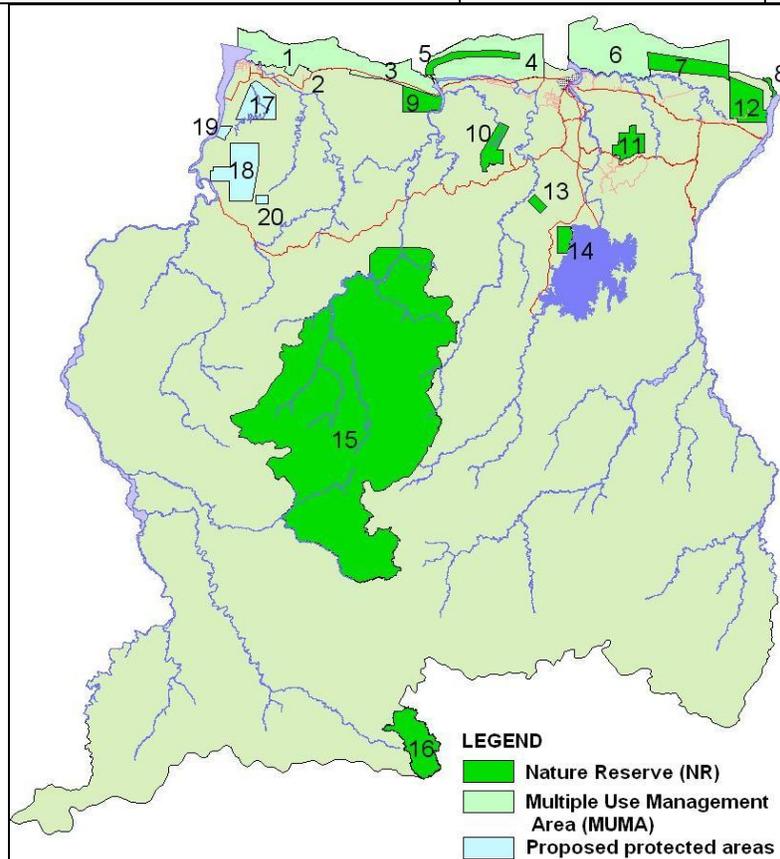


Figure 6: Protected areas of Suriname

To recapitulate, more than 13% of the total land area has a protected status. As part of the conservation of the biodiversity the Coppename – Monding Nature reserve has been named as RAMSAR site³¹

2.3 National Biodiversity Action Plan (NBAP)

The National Biodiversity Strategy serves as a framework for a Biodiversity Action Plan in which actions, activities, tasks and outcomes are identified. The process for formulating the NBAP with a focus on the coastal zone started in 2007. Then in 2010 the process for the formulation of NBAP continued with the focus on the interior and also an update on the NBAP drafted for the coastal area. Outputs from focal meetings, workshops and a validation workshop with key stakeholders from government, non-government and private institutions resulted in an integrated NBAP.

The seven goals as identified in the NBS were outlined with sub-goals and implementing activities. An important additional goal was further identified, which focuses on the financing of the implementation of the NBAP. With the additional goal, a distinction can be made in core goals (goals 1-3) and supporting goals (goals 4-8). The core goals are directly linked to provisions in the Convention on Biological Diversity.

In the process of identifying and formulating actions, they were divided into actions for the short term (1-2 years) and medium to long term (5 and 10 or more years).

Sub-goals and actions have been identified for each goal, as well as institutions involved in the implementation, while an estimated budget and expected outcomes and results have been identified. A coherent cooperation and policy is required for an effective and efficient implementation of the action plan.

2.4 Monitoring

As Suriname has committed itself to implement the United Nations Convention on Biological Diversity, the need for the establishment of an intergovernmental committee was recognized. In 2007, a National Biodiversity Steering Committee (NBSC) was established. The committee was charged with the following responsibilities:

- ✓ The monitoring and evaluation of activities associated with the implementation of the National Biodiversity Strategy;
- ✓ The monitoring and evaluation of activities associated with the formulation of the National Biodiversity Action Plan;
- ✓ The monitoring and evaluation of activities associated with the formulation of the National Report;

³¹ **Coppenamemonding.** (22/07/85); Saramacca; 12,000 ha; Western Hemisphere Shorebird Reserve; Nature Reserve. A wetland complex on the young coastal plain consisting of sand and shell ridges, alternating with swamps, dominated by mudflats with mangrove forests on high ground. Inland, saline and brackish lagoons have developed supporting halophytic (salt tolerant) vegetation. An internationally important area for breeding birds: up to 3,000 pairs of herons, egrets and passage and wintering water birds. Impressive numbers of *Eudocimus ruber* and *Calidris pusilla* gather at the site. There is limited ecotourism in the reserve and low-level subsistence use by fishermen. This is registered as Ramsar site no. 304.

- ✓ Assistance for the integration of the National Biodiversity Strategy and Action Plan into national development programmes and plans;
- ✓ The exchange of information and experiences among relevant institutions on, but not limited to, proposals for projects related to biodiversity research, data gathering on animal and plant species, ecosystems etc. and list all reports resulting from these projects, including their endorsements.³²

The committee was assigned responsibility for oversight of processes regarding implementation, and operated under the guidance of the Ministry of Labour, Technological Development and Environment, which was the official focal point for the Convention. The committee consisted of representatives from the Ministry of Agricultural, Animal Husbandry and Fisheries, the Ministry of Physical Planning, Land and Forest Management, the National Institute for Environment and Development in Suriname (NIMOS), the Association of Indigenous Village Leaders in Suriname (VIDS), the Suriname Conservation Foundation, and the Association of Surinamese Businesses

With guidance from NBSC, several publications were produced, such as the Third National Report, the National Biodiversity Strategy, draft National Biodiversity Action Plan, National Biodiversity Information Network system phase 1.

The tenure of the committee expired in June 2010 and it has been proposed that the committee be re-established to continue its work.

2.5 Follow up on the implementation of NBAP

Several institutions from public and private sectors are carrying out activities which contribute to the conservation and sustainable use of biodiversity. These activities are set out annually and a budget is allocated. For instance, every year ministries submit their annual budget and activities, and the budget debates commence in the National Assembly in October after the annual policy statement of the government. Actions identified in the NBAP are already in progress in various institutions, but we need to ensure that there is continuity in these conservation activities.

³² Terms of Reference for the National Biodiversity Steering Committee

Chapter III Sectorial and cross-sectorial integration of biodiversity

3.1 Introduction and background

The Constitution of the Republic of Suriname³³ provides the legal basis for a sustainable environmental policy in Article 6g: “The common objective of the State is to establish and encourage conditions required to preserve nature and to safeguard the ecological balance.”

In accordance with article 40 of the Constitution a Multi-Annual Development Plan (MOP) needs to be set out. The Multi-Annual Development Plan 2006-2011³⁴ is a multi-sector sustainable development policy of the Government of Suriname (GoS) and is formulated as: “an integrated approach of sustainable development in which human and economic development are mutually dependent and in which an equitable distribution is the basis for the common rights and duties of government and civilians”.

It is recognized that environment is a cross-cutting issue. Therefore, economic and social development needs to be implemented in a sustainable manner in order to safeguard a healthy environment.

In this MOP 2006-2011 environment receives significantly more attention than before and the plan is fully focused on sustainability. A healthy environment is considered one of the basic conditions for development: environmental protection should always be an integrated part of the development process and should no longer be considered as a separate issue. One of the 6 development policy priorities of the GoS is the sustainable exploitation of natural resources and development of new economic sectors.

The MOP 2006-2011 also states that the integrated national environmental policy is based on the following principles:

- a precautionary approach
- conducting environmental impact assessments (EIA)
- the polluter pays
- information, participation and legal protection.

Mining

Sub-sector: gold mining

One of the sectoral contributors to the GDP is gold mining. In 2010, there were significant increases in price of gold and the production of gold mining. In comparison with the total production of 2009, there was an increase of 5.8% in 2010³⁵.

³³ S.B. 1987 no. 116 (government gazette)

³⁴ Ministry of Planning and Development Cooperation, Multi-annual Development Plan 2006-2011

³⁵ Central Bank of Suriname 2010, Annual Report Central Bank of Suriname

Agriculture

Sub-sector: rice

The Agricultural Sector Plan (ASP) is drafted for the medium to long-term development of the sector and was approved for the period 2005-2008. The ASP gives direction to the policy to be pursued in that planning period. It pursues an integrated and sustainable agricultural system with the following main objectives:

1. food security and food safety for the total population;
2. income generation and growth for the entrepreneurs and workers in the sector;
3. a larger contribution to the national economy in the form of production, employment, exports and regional distribution of economic activities.

The Millennium Development Goals (MDGs) also give direction to the implementation of the ASP, while implementation is furthermore attuned to the Public Sector Reform program. The ASP will be implemented in 13 sub-areas that are divided by theme or by sub-sector.

Forestry

The legal framework for the forestry sector is the 1982 Forest Management Act. In 2003 a National Forest Policy for Suriname was formulated and was the step toward a coherent forest management. For the implementation of the National Forest Policy, an Interim Strategic Action Plan (ISAP) was formulated in 2009. This ISAP is set out for the period 2009-2013 and was developed in broad consultation with all stakeholders of the forest sector.

The following policy principles were set out in the Multi-Annual Development Plan:

1. Set up an efficient and effective structure for environmental conservation, guidelines for environmental management and effective control mechanisms;
2. Formulation of an integrated national environmental policy and establishment of adequate environmental laws;
3. Conservation of and the sustainable use of biodiversity, as well as a benefit-sharing mechanism for the use of biodiversity;
4. Sustainable use of biological resources;
5. Research and education for the responsible use of biotechnology, access to genetic resources and associated traditional knowledge with distribution in proportion to income;
6. Development of a strategy and guidelines for sustainable management of chemicals;
7. A structural and sustainable method of waste management;
8. Introduction of an appropriate policy for sustainable land use;
9. Set up a system for the sustainable use of water resources;
10. Protection of our fragile coastal area against the adverse effects of climate change;
11. Reduction of the concentrations of gases in the atmosphere in order to reduce the greenhouse effect by the use of "clean" energy boost.

The Ecosystems Approach as a strategy of the CBD has not received any significant attention in Suriname. However, the principles that are guiding this approach have also been guiding protected area management, and have been doing so well before the CBD

came into force. By the mid-1970s, the concept of integral management of the coastal zone was being discussed in Suriname, in line with the contemporary RAMSAR 'wise use' (of wetlands) concept. The concept became a reality when the first coastal Multiple Use Management Area (MUMA) was established in Suriname in 1987. Three more MUMAs in the coastal zone were established in 2002.

For the conservation of the mangroves and freshwater coastal wetlands the existing and pending legislation, protection regulations and management plans will be updated and implemented. Mangrove conservation is one of the cornerstones of the proposed resilience-based coastline strategy. Therefore, all mangrove forests will be given the status of 'Special Protection Forest'³⁶. More than two-thirds of Suriname's mangroves and other coastal wetlands are protected in nature reserves or managed as Multiple Use Management Areas (MUMAs). Management Plans have been drafted for all the MUMAs. From West to East: Bigi Pan MUMA³⁷; North Coronie MUMA³⁸, North Saramacca MUMA³⁹, North Commewijne-Marowijne MUMA⁴⁰.

MUMAs are established to optimize long-term natural productivity and conservation, which take into consideration the demands of vulnerable natural ecosystems. The status of an area as a MUMA means that there are special regulations for what is allowed and what not, and any planned developments will be subject to a thorough assessment of potential environmental impacts prior to approval. If this process is indeed continued, Suriname will then have a series of coastal protected areas that are managed in agreement with the Ecosystems Approach.

3.2. Processes and initiatives to integrate biodiversity into sectors

The sectorial and cross-sectorial integration of biodiversity in Suriname is for the greater part repeated from the Third National Report with here and there some replenishment.

International perspective

Other biodiversity-related conventions to which Suriname is signatory are (among others): CITES, Convention on Migratory Species, Ramsar and the World Heritage Convention, UNFCCC, UNCCD. Specific institutions in the public sector are assigned as focal points of these conventions. Thus policies and activities of these public

³⁶ Based on the Forest Management Act (SB 1992, No 80)

³⁷ McCormick, K.J. (1990). Bigi Pan Multiple Use Management Area Management Plan, Environment Canada and Ministry of Natural Resources (Suriname Forest Service), Paramaribo.

³⁸ Teunissen, P.A. (2000a). Coastal Management Plan for the North Coronie Area in Suriname. Project on behalf of the Ministry of Natural Resources (NH) / Suriname Forest Service (LBB) / Nature Conservation Division (NB), Paramaribo and sponsored by the RAMSAR Convention's Small Grants Fund, Gland, Switzerland . 117 pp + 22 pp Appendices.

³⁹ Teunissen, P.A. (2000b). Coastal Management Plan for the North Saramacca Area in Suriname. Project on behalf of the Ministry of Natural Resources (NH) / Suriname Forest Service (LBB) / Nature Conservation Division (NB), and sponsored by the Government of France through the RAMSAR Convention's Small Grants Fund, Gland, Switzerland. 139 pp + 24 pp Appendices.

⁴⁰ Teunissen, P. A. (1997). Coastal Management Plan for the proposed Multiple-Use Management Area Commewijne-Marowijne. UNEP-Caribbean Environment Programme/Regional Coordination Unit Kingston, Jamaica / Ministry of Natural Resources, Suriname Forest Service/Nature Conservation Division, Paramaribo. 123 pp + 14 pp Appendices.

institutions are also tailored to the goals and objectives of the aforementioned conventions.

Regional perspective

Suriname is signatory to the Amazon Cooperation Treaty (ACT), a treaty on development cooperation among South American nations with Amazonian territories. Since the early 1990s, Suriname participates in the programs and activities of the ACT and Amazon Cooperation Treaty Organization (ACTO), created in 1998 to support the implementation of the ACT. Suriname has had a prominent role in the CEMAA (Special Commission on Environment in the Amazon Region) network of ACT in the 1990s; this network focuses on environmental matters, incl. wildlife and protected areas. During the 1990s, activities took place in Suriname within the framework of a number of programs that were prepared and implemented or at least coordinated by ACT/ACTO.

National perspective

Environmental management structure

The Constitution of the Republic of Suriname (1987) provides the legal basis for a sustainable environmental policy in its Article 6g: “The common objective of the State is to focus on the establishment of and encourage conditions required for the preservation of nature and to safeguard the ecological balance.” Adherence to these principles is witnessed through participation in the major environmental conventions.

The following existing and draft legislation and other regulatory provisions are the basis for the conservation of biodiversity components:

Nature Conservation Act (1954) regulates the establishment of (strict) Nature Reserves. It is used among other things to protect some areas where globally important populations of marine turtles, migratory shorebirds and resident waterfowl occur.

Forest Management Act (1992) regulates timber and NTFP extraction and the collection of plants/plant products (for trade). It can be used to protect endangered or vulnerable plant species.

Species

- Game Act (1954), which was further regulated through the Game Acts of 2002 and 2009 (for *Oryzoborus crassiostris*); this law regulates hunting and the collection of animal species (for trade). It is also used to enforce CITES in Suriname
- Nature Conservation Act (1954)

Agriculture

- Plant Protection Act (Government Decree 1965 no. 102)
- Pesticides Act (Government Decree 1972 no. 151, amended 2005, no 18; 2005, no 21; 2012, no 65)
- Seed Act (Government Decree 2005 no. 51)

Fishery

- Maritime Fishery Decree (SB. 1980 no. 144). Law with regulations for marine fishery, including the regulation that prohibits nationals and foreigners to fish in the fishery zone without a valid license
- Law of 21 December 2001 (S.B.2001 no.120) to modify the 1980 Maritime Fishery Decree (this law adjusts the government fees to comply with global, social and economic circumstances)
- Fish Stock Protection Act (G.B. 1961 no. 44) (rules regarding fishery activities in the inland waterways)
- Fish Stock Protection Act (1961) regulates licenses and methods to catch fish and species/sizes allowed to catch. It can be used to protect endangered or vulnerable fish species and overexploitation.
- Fish Stock Protection Decree (G.B. 1961 no. 101) (includes rules to implement article 5 of the Fish Stock Protection Act regarding closed season and the size of some fish species)
- Fish Inspection Act (S.B. 2000 no. 107) (aimed at providing consumers with quality fish products, and to guarantee access of Surinamese fish products to important export markets)
- Fish Inspection Decree (S.B. 2002 no. 9) (includes rules to implement the Fish Inspection Act)
- HACCP- Order (S.B. 2002 no. 13) (complying rules to implement internal health controls)
- Fish Inspection Tariffs Order (S.B. 2008 no.41) (includes rules to implement article 11 paragraph 2 of the Fish Inspection Act (S.B.2002 no 107) on inspection taxes)
- Process Water Order (S.B. 2002 no. 11) (includes rules to set standards for process water and pure sea water)
- TVB-N-Order (S.B. 2002 no. 12) (includes rules to set reference methods and conditions to determine the concentration of the total fast basic nitrogen –TVB-N in fishery products)
- General Quality Order (S.B. 2002 no. 10), as last revised by S.B. 2008 no. 40 (includes rules to implement standards starting from the point of catch of the fishery products)
- Additional Order (S.B. 2002 no. 14) (existing rules to determine regulations on the use of additional foods in the preparation of fishery products, in view of article 2 paragraph 2 of the Fish Inspection Law (S.B. 2000, no. 107))

Animal Husbandry

Prevention and Combatting Animal Diseases Act:

- Control of animal diseases in the country
- Control of the import of animals and animal products
- Control of the export of animals and animal products
- Control on the keeping of animals.

Meat Inspection Act:

- Control on the slaughtering and processing of animals and the sale of meat and meat products

- Control on slaughterhouses, meat processing plants, butcheries and butchery shops.

New legislation on veterinary control will be incorporated in the laws of the Agriculture Health and Food Safety Unit, e.g. the Plant Protection Law, Pesticides Law etc.

Most of the aforementioned laws require updating/ amendment/renewal. The following draft laws are being prepared:

- Coastal Management Law (ATM/RGB)
- Fishery Law (LVV)
- Aquaculture Law (LVV)
- Tourism Law (TCT)
- Mining Law (NH)
- Intellectual Property Law (JP) and Waste Processing Law (OWV)
- Environmental Framework Law that will regulate pollution, waste management and environmental impact regulations (ESIA Regulations). Currently, specific ESIA guidelines have already been developed for the mining, forestry and energy sectors
- Biosafety Law (ATM) regarding handling genetically modified organisms (gmo).

Policy and legal framework

The Directorate for Environment of the Ministry of Labour, Technological Development and Environment (ATM) is responsible for the development of an overall environmental policy and the coordination and monitoring of all activities regarding these policies, including the implementation of the major environmental conventions: UNFCCC, UNCBD and UNCCD. This is done in collaboration with government and non-government bodies and institutions.

The National Council for the Environment (NMR) supports the GoS with regard to its national environmental policy and serves as an advisory body for the Ministry of ATM.

The National Institute for Environment and Development in Suriname (NIMOS) functions as the technical arm of the Ministry of ATM. NIMOS is responsible for: i) initiating and realizing national legal instruments; ii) preparing and realizing measures with regard to the protection of the environment; iii) coordinating and controlling the fulfillment of these measures including reviewing and monitoring of Environmental (& Social) Impact Assessments (E(S)IAs), and gathering and dissemination of relevant data on land use and land management.

In 2011, the government established the Climate Compatible Development Agency. This agency is responsible for attracting climate change funding.

There are also other governmental institutions with specific environmental management mandates relevant to the CBD and related conventions:

- Ministry of Physical Planning, Land and Forest Management (ROGB) is responsible for the formulation of the national policy on land use planning,

sustainable forest use and nature conservation, and has several sub-divisions responsible for the regulation, implementation, monitoring and control.

- Ministry of Finance has a National Planning Office in charge of preparing the National Development Plans. It has a sub-directorate Environment and Spatial Planning that is responsible for the coordination of physical planning and environment in Suriname. It updates an inventory of data relating to land and soil, natural resources, existing infrastructure and land allocation. It also maps the structural characteristics of urban and rural areas and keeps record of geographic data in order to map the environment in terms of ecosystems as well as socio-demographic and physical indicators.
- Ministry of Natural Resources (NH) provides control of the exploitation and management of minerals, water and energy and regulates domestic, public and commercial energy use.
- Ministry of Agriculture, Animal Husbandry and Fisheries (LVV) regulates the agrarian production sector and the proper use of agricultural lands and waters, formulates policies on agriculture, animal husbandry and fisheries including food security.
- Ministry of Public Works (OW) is responsible for planning and implementation of civil technical and infrastructural works, water management and drainage, hydrological and meteorological services, and waste management. The Ministry has developed a master plan on drainage of Paramaribo, incorporating climate change concerns and issues.
- Ministry of Regional Development (RO) administers Suriname's 10 rural districts, coordinating development activities and governance in these areas. The Council for Development of the Interior, within the Ministry, represents the interests of Indigenous and Maroon tribal communities.

Private sector

In the Multi-Annual Development Plan 2006-2011 it is recognized that the private sector has a significant role in realizing the vision of sustainable development. For the private sector has a large share in the Gross Domestic Product and in employment. It is embedded in the Multi-Annual Development Plan 2006-2011 that the Government will have to create a framework for further activities through regular and structural consultations with private sector partners and other stakeholders. This should lead to activities of the private sector which will ultimately contribute to poverty reduction. Besides the framework to be established together with Government, entrepreneurs should also be aware of their own social responsibility and act on this responsibility as well.

Facilitating the business community to operate on a national and international level via a revised Investment Act is based on the hypothesis that development is brought about by the availability of new capital, with which employment, economic growth and income from export can increase. As a result, access can be gained to required technology, capital and entrepreneurial power for further development. Furthermore, networks of commercial relations can emerge between local and foreign companies, which will simplify Suriname's incorporation into regional and international economic systems. The

extent to which international direct investments have the potential to truly lead to significant transfer of knowledge, technology and job creation will be part of sectorial investment policy and bilateral contracts.⁴¹

⁴¹ Ministry of Planning and Development Cooperation , Multi-annual Development Plan 2006-2011

Chapter IV Progress towards 2010 Targets and Implementation of the Strategic Plan

4.1 Progress towards 2010 targets

Although Suriname did not adopt the 2010 Strategic Plan and its targets at the national level, measures were nevertheless taken which meet the 2010 targets to some degree. This chapter provides key information and findings to assess how actions taken to implement the Convention at the national level have contributed to achieving progress towards the 2010 target and the goals and objectives of the Strategic Plan of the Convention.

Goal 1. Promote the conservation of the biological diversity of ecosystems, habitats and biomes

Target 1.1. At least ten percent of each of the world's ecological regions effectively conserved

Current status:

The 3rd National Report already mentioned that Suriname did not establish a national target corresponding to the 10% global target in order to promote the conservation of the biological diversity of ecosystems, habitats and biomes, but measures were taken in accordance with other targets, which have resulted in a dramatic increase in the amount of land area protected, to the extent that this now well exceeds 10%. Strictly marine protected areas, however, do not exist in Suriname, and the fraction of Suriname's Territorial Sea and EEZ that is protected is below 10%.

At present, Suriname has 16 legally established protected areas and four proposed protected areas. The legally established protected areas cover 21,383 km² (i.e. 13.5% of the land territory) and the proposed ones are 1,320 km² (i.e. 0.8%). The Central Suriname Nature Reserve, located in the Interior, is by far the largest protected area, covering 15,920 km² (i.e. 9.7% of the country's surface area). The other reserves are relatively small, no larger than 1,000 km² (i.e. 0.6 % or less), and most of them are located less than a 100 km from the coastal zone.

Under the IUCN categories⁴² Suriname has:

1 x category III⁴³

9 x category IV⁴⁴

1 x category IB⁴⁵

1 x category II⁴⁶

4 x category VI⁴⁷

Specific targets set by Suriname:

⁴² IUCN Protected Areas Management categories

⁴³ Category III Natural Monument or Feature

⁴⁴ Category IV Habitat/Species Management Area

⁴⁵ Category Ib Wilderness Area

⁴⁶ Category II national park

⁴⁷ Category VI Protected area with sustainable use of natural resources

- protection of representative ecosystems in the lowlands;
- protection of most of the coastline and coastal wetland habitats;
- protection of a large pristine rainforest and catchment area;
- protection of representative ecosystems in the Interior; and
- protection of vulnerable forest types from logging.

The first three targets have largely been met, at least in terms of formal protection (legal protected area status), the last two not yet.⁴⁸

In the National Biodiversity Strategy (2006), and the National Forest Policy (2003), as well as in the Conservation Action Plan (draft of 2001), the draft Biodiversity Action Plan, and the draft Interim Strategic Action Plan for the Forest Sector (ISAP 2008) the global target to promote the conservation of the biological diversity of ecosystems, habitats and biomes has been incorporated.

No indicators in relation to promoting the conservation of biological diversity were identified after 1992/1996, but in the 1970 and 1980s the following was done to establish areas representative of Suriname's (lowland terrestrial) ecosystems, namely to preserve representative samples of all the different ecosystems in strict protected areas:

- An inventory of lowland ecosystems (in the late 1970s), and subsequently establishment of additional nature reserves in the coastal lowlands (in the 1980s).
- Establishment of Multiple Use Management Areas to protect the entire coastal strip with its globally important wildlife populations; this has gradually been implemented from the 1980s onward.
- Similar targets for the Interior of Suriname, but a comprehensive inventory of the ecosystems of the Interior has not yet been done (to be followed by the eventual establishment of additional protected areas).
- An additional target of protecting a large, pristine forested catchment area in Suriname was proposed by CI during the late 1990s and was acted upon by the Government of Suriname with the creation of the Central Suriname Nature Reserve (1.6 million ha).

No targets have yet been set in relation to off-shore marine protected areas, and Suriname still lacks basic inventory data and protected areas in parts of its extensive Territorial Sea and Exclusive Economic Zone (EEZ) where the depth of the water exceeds 6 m. No time-tables have been set for expanding the protected area system in the Interior and in the Territorial Sea.⁴⁹

⁴⁸ Republic of Suriname Biodiversity Profile 2009

⁴⁹ Republic of Suriname Biodiversity Profile 2009

Challenges:

- Deficiencies in systemic and institutional capacity
- Limited baseline information on the biodiversity of the Interior and the marine area
- Limited consultations and hence very little monitoring: hardly any information and trends
- Indigenous and maroon hinterland communities desire legislation that recognizes and secures their collective rights on traditional lands and traditional resources;
- Limited zoning and land use planning.

Target 1.2. Areas of particular importance to biodiversity protected

Current status

Protected areas are established with specific objectives as stated in the 1954 Nature Conservation Act⁵⁰. For example, the Galibi Nature Reserve is a nesting place for the *Dermochelys coriacea*⁵¹, *Chelonia mydas*⁵², *Lepidochelys olivacea*⁵³ and *Eretmochyles imbricata*⁵⁴. The 1992 Forest Management Act also provides provisions to establish conservation forests.

Current status and trends on the promotion of conservation of biological diversity legally protect representative lowland areas. All protected areas have management plans. A comprehensive inventory of the biodiversity in the interior remains to be undertaken to serve as the basis for deciding on the possible protection of additional areas in the Interior. Decisions by the Government of Suriname remain to be made to protect vulnerable forest types from logging, based on a preliminary proposal and forest classification map.

Challenges:

- Biodiversity inventory of the Interior remains incomplete
- Deficiencies in systemic and institutional capacity
- Outdated management plans

Goal 2. Promote the conservation of species diversity
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Target 2.1. Restore, maintain, or reduce the decline of populations of species of selected taxonomic groups
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Current status

Specific targets set by Suriname pre-date the CBD (targets set before 1992):

- Protect important Non-Timber Forest Product (NTFP) trees from logging;
- Limit commercial hunting and collection of wildlife for trade / export (with ref. to

⁵⁰ Article 2 Law of 3 April 1954 (Government Decree 1954 no. 26)

⁵¹ Leatherback turtle

⁵² Green turtle

⁵³ Olive ridley

⁵⁴ Hawksbill turtle

- CITES);
- Protect globally important wildlife populations (e.g. migratory shorebirds (with ref. to RAMSAR) and leatherback turtles (with ref. to IUCN)); and
- Protect globally endangered wildlife species (with ref. to IUCN listings).⁵⁵

The 1954 Game Act, together with the most recent Game Act (2002), forms the current framework for the protection of threatened animal species.

Two sets of species are of major concern in Suriname because they are locally threatened:

- marine turtles (3 species that regularly nest in the country): the eggs of the Leatherback, Olive Ridley and Green turtle are harvested for sale and consumption, while the Olive Ridley population appears to have declined dramatically due to over-harvesting; and
- songbirds that are kept in Suriname and also exported, especially seed finches: two species (*Oryzoboris crassirostris* and *Oryzoboris angolensis*) are seriously threatened nation-wide due to excessive collecting (the first species is virtually extinct in the wild in Suriname and the second one has become very rare).⁵⁶

In 2009 an amendment was made under the Game Act to protect the *Oryzoboris crassirostris* as a closed cage species until December 2013⁵⁷.

Most of the above is implicitly incorporated in the National Biodiversity Strategy and remains to be elaborated further (in a final action plan).

Challenges:

- Deficiencies in systemic and institutional capacity
- Vast area to be inventoried, monitored and patrolled with very limited financial and human resources
- Limited funding to further develop and implement action plans and management plans.

<p>Target 2.2. Status of threatened species improved</p>

Current status

Most globally endangered species are considered to be under no serious threat in Suriname, at least not nation-wide, and their populations are assumed to be stable and viable (except locally and site specific, i.e. at locations where they are facing a major threat, such as hunting or habitat destruction due to mining). For example, the iguana species are classified as endangered but not in Suriname. They seem to even a problem for farm crops during certain periods. The 1954 Game Act protects the following species.

⁵⁵ Biodiversity Country Profile Suriname August 2009

⁵⁶ Idem

⁵⁷ Government Gazette 2009

Table 7: Species protected by the 1954 Game Act

Scientific name	Common name
<i>Myrmecophaga Tridactyla</i>	Giant anteater
<i>Leopardus Pardalis</i>	Ocelot
<i>Panther Onca</i>	Jaguar
<i>Sotalia Fluviatilis</i>	Grey dolphin
<i>Chelonian mydas</i>	Green turtle
<i>Lepidochelys olivacea</i>	Olive Ridley
<i>Dermochelys coriacea</i>	Leatherback turtle
<i>Dendrobates azureus</i>	Blue poison arrow frog
<i>Oryzoborus crassiostris</i>	Large billed seed finch
<i>Trichechus inunguis</i>	Amazonian manatee

Macaws and parrots are also of some concern due to presumed over-harvesting, at least in the recent past. These birds were exported in large numbers for the pet trade and seem to have declined in the course of the past century. Whether the tighter regulations on the export of these species will lead to a recovery of wild populations remains to be seen. In Paramaribo a parrot population has developed, but is experienced as a hindrance by some.

Also in accordance with the Fish Stock Protection Act an annual closed season applies for a local freshwater species kwie kwie (*Hoplosternum littorale*) from 1 April to 15 July⁵⁸.

Challenges:

- Deficiencies in systemic and institutional capacity
- Current status and trends of the populations of most threatened species not well known, specifically for sea turtles, seed finches, parrots and macaws.
- Vast area to be monitored and patrolled with very limited financial resources and human resources.
- Unsustainable harvesting practices of local communities and demands of wild traders based on national and international market may lead to eradication.

Goal 3 – Promote the conservation of genetic diversity
Target 3.1. Genetic diversity of crops, livestock, and of harvested species of trees, fish and wildlife and other valuable species conserved, and associated indigenous and local knowledge maintained

Current status

The use of genetic diversity by local communities is often linked to traditional practices. This type of use, also described as traditional knowledge, needs to be protected and maintained and should ensure the fair and equitable sharing of benefits deriving from their use. An Intellectual Property Law has been drafted in which traditional knowledge and the transfer of technologies related to the commercialization of genetically derived

⁵⁸ 1961 Fish Stock Protection Act (Governmental Gazette 1961 no. 44)

products has been excluded. A national definition for traditional knowledge still needs to be defined.

A cassava ex-situ field gene bank was developed by CELOS since 2008 with the purpose to support the development of the cassava processing sector in Suriname by conservation, characterization and stimulation of the use of the plant genetic material.⁵⁹

Ongoing (research) initiatives :

- Live collection of cassava varieties that are locally/traditionally used
- Awareness rising on the presence of the great diversity of cassava genetic material during several occasions (e.g. participation in the 'K'saba fair' and the Cassava conference in 2011)

Challenges:

- the restructuring of fragmented legislation in order to facilitate policies as indicated in NBS
- limited/insufficient research in genetic diversity and traditional knowledge and practices.

No more information available on this item.

Goal 4 – Promote sustainable use and consumption

Target 4.1. Biodiversity-based products derived from sources that are sustainably managed, and production areas managed consistent with the conservation of biodiversity

Current status

Apart from the mining sector, the agricultural sector is a large contributor to the GDP of Suriname, especially the fisheries sector: sea shrimps, seabob shrimp, fish and shrimp farming.

Livestock has different production systems, depending on the type of animal and the resources available to the farmers. There are few large farms in Suriname (farms with an area of more than 100 ha); more often the farms are 2 to 5 ha in size with intensive and semi-intensive production systems. In some cases the farmer has less than 1000m² and keeps his livestock in a shed alongside his house. Small farms are preferred, because of the small consumer market, inability to export animal products and great differences in consumer demands.⁶⁰

As far as beekeeping is concerned, consumption of honey has been estimated at 50,000 liters per year, part of which is obtained from imports. Most beekeeping is practiced in the districts of Coronie, Wanica, Saramacca and Commewijne. The different kinds of honey derive their names from the tree or flower from which the bees extract honey, such

⁵⁹ Centre for Agricultural Research in Suriname

⁶⁰ Ministry of Agriculture, Animal Husbandry and Fisheries 2005, Country Report of Suriname on the Farm Animal Genetic Resources

as *Parwa*, *Mira-Udu*, *Bebe*, *Djamun*, *Tapirira* and *Swiet Syria*. The most common honey is *Parwa*⁶¹.

The policy for the rice sector has partly focused on the competitiveness of farmers, processors, exporters and other stakeholders by increased productivity and higher quality production, more research, better information and creating better market opportunities. Special funding was available to support the policy.⁶²

With reference to the export of wildlife species an annual quota is established in accordance with CITES provisions by the Management Authority⁶³.

Challenges:

- Deficiencies in systemic and institutional capacity
- Information on growth/renewal rates of the biological resources that are being harvested remains very limited
- Vast area to be monitored and patrolled with very limited financial and human resources
- Low enrolment in agriculture and forestry studies at the University of Suriname and other higher and vocational education institutions in Suriname
- Lack of public and government awareness of the importance of conserving farm animal diversity.

Target 4.2. Unsustainable consumption of biological resources, or that impacts upon biodiversity, reduced

See target 4.1

Target 4.3. No species of wild flora or fauna endangered by international trade

See target 4.1

Goal 5 – Pressures from habitat loss, land use change and degradation, and unsustainable water use, reduced

Target 5.1. Rate of loss and degradation of natural habitats decreased

Current status

While there is no comprehensive land use policy yet, which would be the most effective overall tool to reduce pressures that lead to habitat destruction and degradation, several measures have been taken that contribute to reaching the above target.

In 2010, the Sustainable Land Use Management project was launched. After inventories, land degradation activities from mainly mining (sub-sector gold mining), forestry and agriculture sectors were identified. After inventories and other project activities such as a

⁶¹ Ministry of Agriculture, Animal Husbandry and Fisheries

⁶² Idem

⁶³ The Head of the Suriname Forest Division under the Ministry of Physical Planning Land and Forest Management is the Management Authority and the Nature Conservation Commission the Scientific Authority

communications strategy, a National Action Plan for Suriname will be developed, which encompasses measures to mitigate land degradation activities.

The Government of Suriname is also working towards Sustainable Land Management (SLM), and specifically in relation to the coastal area, namely the Integrated Coastal Zone Management (ICZM).

The national target to reduce the impact of land use is incorporated in the National Biodiversity Strategy, and the National Forest Policy, the draft Biodiversity Action Plan, and the Interim Strategic Action Plan for the Forest Sector (ISAP).

Current status and trends in relation to reducing the impact of land use show that habitat loss is a serious problem in the coastal wetland area, where agricultural, urban and infrastructure development have destroyed wetland habitats or have led to their degradation due to changes in water flow or pollution. It is also an issue in relation to mining, which in the Interior of the country has led to widespread destruction of creek forests and is increasingly leading to the destruction of forests on residual hills (with high biodiversity and rare habitats). Small-scale or artisanal gold mining is resulting in the pollution of a large part of entire river systems with sediment and mercury. With regard to forestry, one ESIA has been carried out to date on a voluntary basis, as part of the requirements for FSC certification of logging operations. No indicators were identified.

Challenges:

- Deficiencies in systemic and institutional capacity
- ineffective implementation of management plans of coastal protected areas (NRs and MUMAs)
- Legal framework for ESIA is applied only to a limited extent, in the absence of a law that sets standards and procedures; ESIAs are typically implemented ad-hoc, on a voluntary basis, and in the case of major international/externally funded projects; ESIAs are typically being applied to modify projects that have already been endorsed in principle
- Small-scale/artisanal mining has an adverse impact in and around the greenstone belt after so-called ‘Clean Sweep’ projects implemented by the authorities Changing lifestyles and land-use by local communities/users which lead to habitat destruction, degradation and pollution, such as small-scale mining

Goal 6 – Control threats from invasive alien species

Target 6.1. Pathways for major potential alien invasive species controlled

Current status

No comprehensive policies on alien invasive species exist and only in a few subsectors have some measures been taken that contribute to reaching control of major potential alien invasive species:

- Requirement of health certificates and sanitary inspection of imported plants and animals

- Monitoring and eradication of some introduced agricultural pests that affect native plants.

In the National Biodiversity Strategy, the draft Biodiversity Action Plan and the Agriculture Sector Plan a national target on control of invasive species has been incorporated.

There is no comprehensive overview of the magnitude of the problem that may exist in Suriname in relation to alien invasive species, except to some extent in relation to the agricultural sector (e.g. in relation to rice, and as far as fruit flies are concerned).

Several invasive species have been recorded in Suriname, many of them ruderal herbs, and their impact seems to be quite limited, restricted to areas where natural habitats have been converted and severely degraded.

The invasion of fish species imported as pets and for aquaculture has been reported and is having some effects on native fish fauna (this remains to be studied further). The impact of aquarium fishes released in the wild appears to be limited. The impact of (black) tilapia (an African species used in aquaculture worldwide) seems to be more serious. It has been observed to spread in the wild and displace native fish species.

It is assumed that invasive earthworm and ant species have spread throughout much of Suriname, but it is unknown to what extent and with what consequences for the native fauna. No indicators have been identified.

Challenges:

- Deficiencies in systemic and institutional capacity
- Extensive border area
- Limited human and financial resources to identify and monitor invasive species
- Inadequate quarantine facilities (borders)
- Inadequate laboratories
- Limited research data on invasive species in Suriname and the extent of their impact on the biodiversity in Suriname

Target 6.2. Management plans in place for major alien species that threaten ecosystems, habitats or species

There is no such management plan in place in Suriname.

Goal 7 – Address challenges to biodiversity from climate change, and pollution.
Target 7.1. Maintain and enhance resilience of the components of biodiversity to adapt to climate change

Current status

In 2009 a pilot project “ Enhancing resilience of the coastline through removing stress, rehabilitation and mangrove planting” was implemented by ADEKUS with funding of

the ministry of Planning and Development Cooperation. The expectation were Increased knowledge and experience regarding the possibilities of the coastal protection by means of the in vitro propagated mangrove plants.

In the Second National Communication to the United Nations Framework Convention on Climate Change an analysis was made on the impacts of sea level rise on ecosystems and coastal zone.⁶⁴

The main challenge is to initiate a national discussion on this topic, e.g. provide background information, indicate importance, and suggest some strategic directions.

Target 7.2. Reduce pollution and its impacts on biodiversity

Current status

In Suriname, the reduction of pollution is an issue that is addressed mainly in the context of policies on human health. No comprehensive overall policy exists on pollution, only in the agriculture sector. In relation to the environment in general some measures have been taken which contribute to the reduction of pollution and its impacts on biodiversity, for example there have been contributions to national targets for specific programmes of work on pollution:

- Agricultural - Regulation of the import and sales of pesticides, and training in the use of pesticides
- Inland water - ESIA guidelines for the mining sector.

Table 8: Amount of waste disposed of in m³⁶⁵

Waste type	2009
Household waste	145,236
Agricultural waste	5,160

Source: ABS 2010

In the National Biodiversity Strategy, the draft Biodiversity Action Plan, the Agriculture Sector Plan, the draft Environmental Framework Law, and the ESIA guidelines (generic ones, and the ones in relation to mining) national targets on pollution and impact on biodiversity have been incorporated.

The main sectors that pollute and have an impact on biodiversity in Suriname, based on our present knowledge, are the mining and the agricultural sectors. The main issue is the pollution of water with pesticides and mercury, and the accumulation and transmission of these chemicals via the food chain.

⁶⁴ Ministry of Labour, Technological Development and Environment 2012, Second National Communication to the United Nations Frameworks Convention on Climate Change

⁶⁵ Ministry of Labour, Technological Development and Environment 2011, Updated National Chemical Profile

The adverse impact of pesticide use on biodiversity is only known to some extent in relation to industrial-scale rice industry, although it is also assumed to be a problem in relation to small-scale vegetable farming. Both in rice and vegetable farming, pesticides are used; high amounts of pesticides have been recorded in birds in Suriname's main rice growing district. Recently, the import of pesticides is being scrutinized, and recently a pesticide screening facility in Suriname has been erected.

Figure 7 gives an overview of import and export of pesticides and fertilizers in the period 2005-2009. The peaks in 2008 for both the fertilizers- and the pesticides import is unaccountable. According to the Head of the Pesticides Department of the Ministry of LVV, there has not been an increase in cultivation in 2008. There is probably a human error in the calculation.⁶⁶

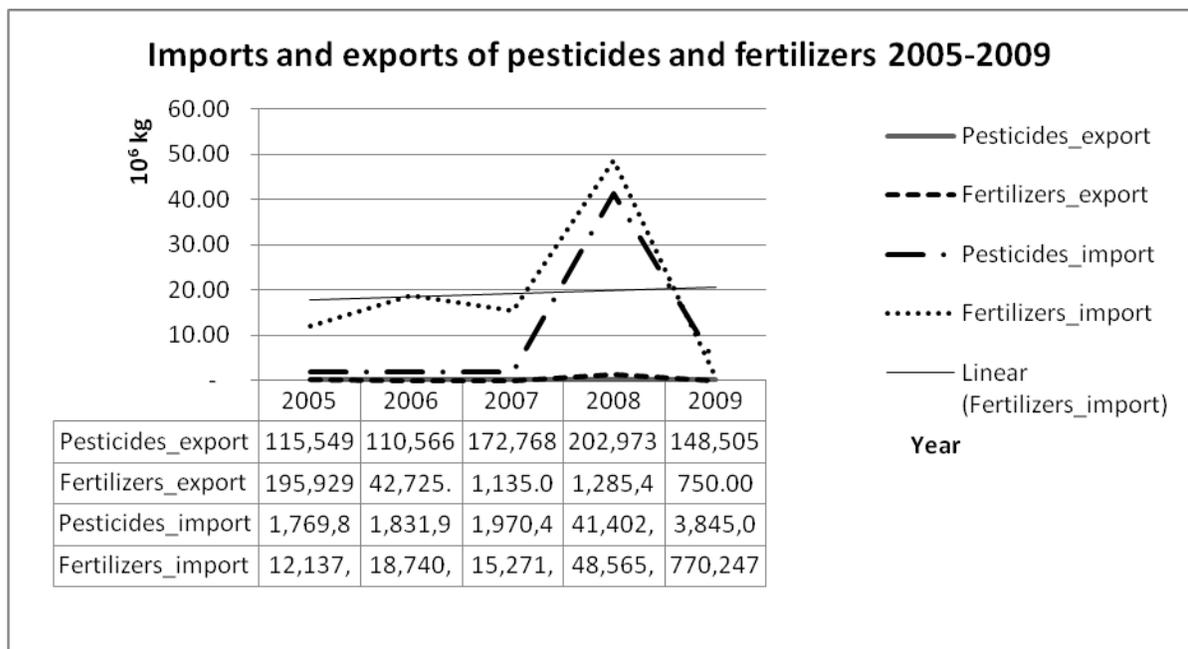


Figure 7 Imports and exports from pesticides and fertilizers 2005 - 2009

The adverse impact of the use of mercury in small-scale gold mining is better known, in the sense that there has been much research on mercury levels in water, sediment, fish and people. Recorded mercury levels downstream from small-scale gold mining operations are typically high, but the ultimate impact thereof on fish, wildlife populations and people remains poorly known. Measures are taken to regulate the small-scale gold mining and alternatives are introduced to avoid the use of mercury.

Challenges:

- Deficiencies in systemic and institutional capacity

⁶⁶ Ministry of Labour, Technological Development and Environment 2011, Updated Chemical Profile

- Lack of effective and comprehensive environmental legislation that would help to further limit the use of pesticides and mercury, and hold polluters accountable
- Limited political will and capacity to enforce existing laws and regulations that can be used to hold polluters accountable, but this has changed recently
- Lack of alternative economic activities in the Interior that can compete with gold mining
- Limited awareness in the agricultural sector, at least at the level of small farmers, of the adverse effects of pesticide use, and of alternatives to the use of pesticides
- No incentives to reduce pesticide use
- Shortage of professional and technically skilled employees and people at all levels in the public and private sectors and in communities

Goal 8 Maintain capacity of ecosystems to deliver goods and services and support livelihoods.

Target 8.1. Capacity of ecosystems to deliver goods and services maintained

Current status

Maintain capacity of ecosystems to deliver goods and services and support livelihoods has been addressed in Suriname in at least three ways:

- Maintenance of the productivity of coastal ecosystems in Multiple Use Management Areas (MUMAs), thus allowing continued use for e.g. fisheries, agriculture, eco-tourism
- Strict conservation of Nature Reserves (NR), but allowing the traditional use of the NRs by local Indigenous and Maroon inhabitants.
- Maintenance of forest cover through sustained yield forest management in forestry concessions. The National Forest Policy identifies two strategic goals and ten action points to maintain the capacity of ecosystems to deliver goods and services. The Government of Suriname has recently started to consider applying the principle of Payment for Ecosystem Services, which may lead to measures that will lead to the maintenance of ecosystems and their capacity to deliver goods and services other than timber and NTFPs.

National target for specific programmes of work on maintaining capacity of ecosystems are:

- Marine and coastal - Maintenance of the productivity of coastal ecosystems
- Forest - Strict conservation of Nature Reserves (NR); maintenance of forest cover and application of sustained yield forest management in forestry concessions

In the National Biodiversity Strategy, and the National Forest Policy, as well as in the Conservation Action Plan (draft of 2001), the draft Biodiversity Action Plan, and the draft Interim Strategic Action Plan for the Forest Sector (ISAP 2008) maintaining capacity of ecosystem production has been incorporated.

Suriname's extensive coastal wetlands, bodies of freshwater, and forests are an important source of wealth, due to the goods and services they deliver, such as favorable climate, protection against erosion, the production of (drinking) water, game, fish, timber, NTFP,

etc. For the traditional Indigenous and Maroon communities in the Interior, they are essential to economic and cultural survival. These communities depend on the natural freshwater and forest ecosystems for their food, shelter, health, and more.

The protection of coastal wetlands by establishing NRs and MUMAs has been an important step, but the implementation of management plans and law enforcement is lagging. The protection of forests based on the Forest Management Act is also important, but while the implementation of forestry laws has improved, mining activities are adversely affecting ecosystems that provide important goods and services, especially creeks and rivers, and the forests along these waters.

In the National Forest Policy the following is proposed, among other things:

- To investigate innovative financing mechanisms based on ecological forest functions, especially where they support livelihoods of forest-based communities
- To develop concepts to attach financial value to the contribution of the forest resource to water management and water quality
- To advocate that the international community expresses its responsibility for and interest in conservation of the environment through greater financial support
- To establish additional protected zones, also within production forests
- To conduct environment impact assessments in cases of planned activities that may have an adverse impact on forest integrity (e.g. leads to loss of forest cover, more erosion, reduced productivity/regeneration capacity, etc.)

Since 2008, Suriname is investigating possibilities to get payments for global ecosystem services, e.g. in the REDD+ context. Suriname mainly focuses on the protection of and thus payments for stored carbon in existing forests. Payments are mainly sought at the international level. No indicators have been identified.

Challenges:

- Deficiencies in systemic and institutional capacity
- Few studies done in Suriname on the actual value of ecosystems goods and services to various users, and the willingness to pay for these
- No financial incentive mechanisms in place
- Lack of effective land use planning
- Lack of comprehensive environmental legislation
- Shortage of professional and technically skilled employees and people at all levels in the public and private sector and in communities, especially for law enforcement and monitoring

<p>Target 8.2. Biological resources that support sustainable livelihoods, local food security and healthcare, especially of poor people, maintained.</p>

Current status

National targets for specific programmes of work on maintaining biological resources that support sustainable livelihoods, local food security and healthcare, especially of poor people, are:

- Marine and coastal - maintenance of the productivity of coastal ecosystems
- Forest - strict conservation of Nature Reserves (NR); maintenance of forest cover in forestry concession
- Local coastal communities (Bigi Pan)

The new National Forest Policy explicitly promotes sustainable forest management by villagers living in the interior ('community forestry'), which is exemplified in two strategic goals: the realization of optimum land use with a transparent system of allocation of land-use rights, and the increase of the physical and in particular financial contribution of non-timber forest products to e.g. the income of hinterland communities (Indigenous and Maroon), by increasing the commercial supply of sustainably extracted non-timber forest products. No indicators have been identified.

Goal 9 – Maintain socio-cultural diversity of indigenous and local communities.
Target 9.1. Protect traditional knowledge, innovations and *practices*

Current status

In the context of a project "Development Planning"⁶⁷, a household survey was conducted in 9 tribal communities. For this survey a model was developed where traditional aspects of tribal communities and modern aspects were distinguished. In this model 6 elements of a tribal community were highlighted:

- ✓ Governance structure
- ✓ Economy
- ✓ Social dimension
- ✓ Infrastructure
- ✓ Natural environment
- ✓ External relationships

One of the interesting questions these days for tribal communities is to what extent they still are "traditional" or whether they have become "modern". The terms traditional and modern are not defined. Instead a pragmatic approach to this question is taken.

Based on the results of the survey comparisons are made between the different tribal communities on different variables that could serve as indicators of a more modern or a more traditional livelihood.⁶⁸

⁶⁷ A project funded by IADB by order of the Ministry of Regional Development in 2009

⁶⁸ J. Marten W. Schalkwijk 2009, Traditional and non-traditional aspects of livelihoods in Maroon and Indigenous communities in Suriname

Goal 10 – Ensure the fair and equitable sharing of benefits arising out of the use of genetic resources

Target 10.1. All transfers of genetic resources are in line with the Convention on Biological Diversity, the International Treaty on Plant Genetic Resources for Food and Agriculture and other applicable agreements

Current status

Suriname is not party to the International Treaty on Plant Genetic Resources (ITPGR). However, the Ministry of Agriculture, Animal Husbandry and Fisheries is currently coordinating an assessment with regards to signing the ITPGR. There is ongoing exchange of information between FAO and Suriname. A Plant Genetic Resource Commission has also been installed in 2011 consisting of representatives of ministries, university, NGOs. The commission is charged with the task (among others) to develop a national action programme regarding the gathering and use of plant genetic resources in agriculture.

Goal 11. Parties have improved financial, human, scientific, technical and technological capacity to implement the Convention.

Target 11.1. New and additional financial resources are transferred to developing Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with Article 20

Current status

The Suriname Conservation Foundation (SCF)

The Suriname Conservation Foundation was founded on March 14, 2000 in an effective partnership between the Republic of Suriname and Conservation International, with substantial contributions from the United Nations Development Programme, the Global Environment Facility and the United Nations Foundation. SCF manages an endowment (trust) fund for the conservation of biodiversity. The trust fund is currently about USD15 million; some USD 0.5 to 0.75 million can be granted annually for conservation-related activities in Suriname.

SCF aims to support the management, conservation and sustainable use of biodiversity, including the following activities:

- Management of protected areas and buffer zones;
- Activities for conservation outside protected areas;
- Education and outreach, training and research in the field of nature conservation and environment, and activities aimed at generating income while the sustainable utilization and conservation of biodiversity is supported

SCF has also created a partnership with private sector for sustainable development (green economic development).

Out of the GEF RAF (cycle period 1 -7 -2006 – 30-6- 2010) USD 3.6 million was allocated for biodiversity projects. The Suriname Coastal Protected Area Management project (launched in 2010) is also funded from this cycle.

Out of GEF STAR (cycle period 1-7-201- 30-6-2014) USD 3 million dollars was allocated for biodiversity projects.

In terms of new/additional financial resources the following is noted:

The Foundation for Nature Preservation in Suriname (Stinasu) was set up in 1969 as an instrument for the Forest Service (LBB) to direct funds generated through ecotourism for nature conservation activities. Stinasu has continued to play this role, which proved to be particularly important in times when donor funds were very scarce (mid 1980s – mid 1990s).

WWF has established a Guianas Regional Office in Suriname, which disburses about USD 0.5 million annually in support of conservation and sustainable use of biodiversity in Suriname.

CI has a national subsidiary in Suriname (CI-Suriname) which implements its own program and also provides funds for collaborative conservation projects in Suriname, e.g. funds from GEF and IADB. CI has played a crucial role in the establishment of the above mentioned trust fund and SCF.

The Amazon Conservation Team also has a subsidiary in Suriname (ACT Suriname) which provides funds, e.g. from OAS, to conservation and development projects involving Indigenous and Maroon communities.

Financial strategies are incorporated in the National Biodiversity Strategy, and the National Forest Policy, as well as in the draft Biodiversity Action Plan, and the Interim Strategic Action Plan (ISAP) for the Forest Sector. In the National Biodiversity Action Plan estimated budgets and relevant institutions for implementation are identified.

Challenge:

- Deficiencies in systemic and institutional capacity

Target 11.2. Technology is transferred to developing country Parties, to allow the effective implementation of their commitments under the Convention, in accordance with its Article 20, paragraph 4

Current status

Out of one of the workshop sessions the following comment emerged: the Biodiversity Convention has resulted in this workshop and the introduction of software at the Ministry of RGB for development of wildlife trade software instructed by CITES secretariat.

4.2 Conclusions

With a total land area of 163,820 km² and 524,143 inhabitants, the population density is 3.1 inhabitants per km². But the population distribution is unequal.

Certain sectors are major contributors to the GDP (mining and agricultural sectors), therefore these activities should be monitored for impacts on the biodiversity.

With more than 13% of the total land area appointed as protected areas, over 14.8 million ha (more than 80%) as forest land and less than 0.03% deforestation on annual basis, with many species and many new species to be discovered, Suriname has a good record of nature conservation and is committed to continue in the same manner. This commitment is embedded in several policies.

Certain threats are identified and should not be underestimated, for they could develop into serious drivers for biodiversity loss with unforeseeable impacts, for example threats from (among others) the small-scale gold mining sector with the associated use of mercury, degradation of water quality, turbidity of water.

General principles regarding conservation, protection and sustainable use of biodiversity are embedded in NBS and will be further elaborated in NBAP.

Under coordination of the Ministry of Labour, Technological Development and Environment, activities are initiated and implemented for reporting and development of strategies and action plans. Other ministries with environment-related tasks also contribute greatly, such as the ministries of Physical Planning Land and Forest Management, and of Agricultural, Animal Husbandry and Fisheries.

The National Biodiversity Steering Committee (NBSC) was established in 2007 by the Ministry of Labour, Technological Development and Environment to support it in the activities under CBD. The Committee consisted of representatives of the ministries of Physical Planning Land and Forest Management and of Agricultural, Animal Husbandry and Fisheries, National Institute for Environment and Development in Suriname (NIMOS), Association of Indigenous Village Leaders in Suriname (VIDS), Suriname Conservation Foundation (SCF) and ATM.

With guidance and monitoring by NBSC (in the period 2008-2011), the following projects were executed:

- ✓ The Third National Report
- ✓ National Biodiversity Information Network (phase 1)
- ✓ Initial phase of the National Biodiversity Action Plan
- ✓ Initial phase of the Fourth National Report

As the tenure of NBSC has expired, the important contribution of the committee must again be emphasized. It is currently under consideration to re-install the committee

The continuation of current policies, such as the Agricultural Sector Plan (ASP) with special focus on food security, and the implementation of the National Forest Policy through the Interim Strategic Action Plan, are other current initiatives. Legislation should be revised and updated and new laws should be developed in accordance with international agreements with due consideration for national circumstances.

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Appendix I - Information concerning Reporting Party and Preparation of National Report

A. Reporting Party

Contracting Party	SURINAME
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Name and title of contact officer	
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SUBMISSION	
Signature of officer responsible for submitting national report	
Date of submission	