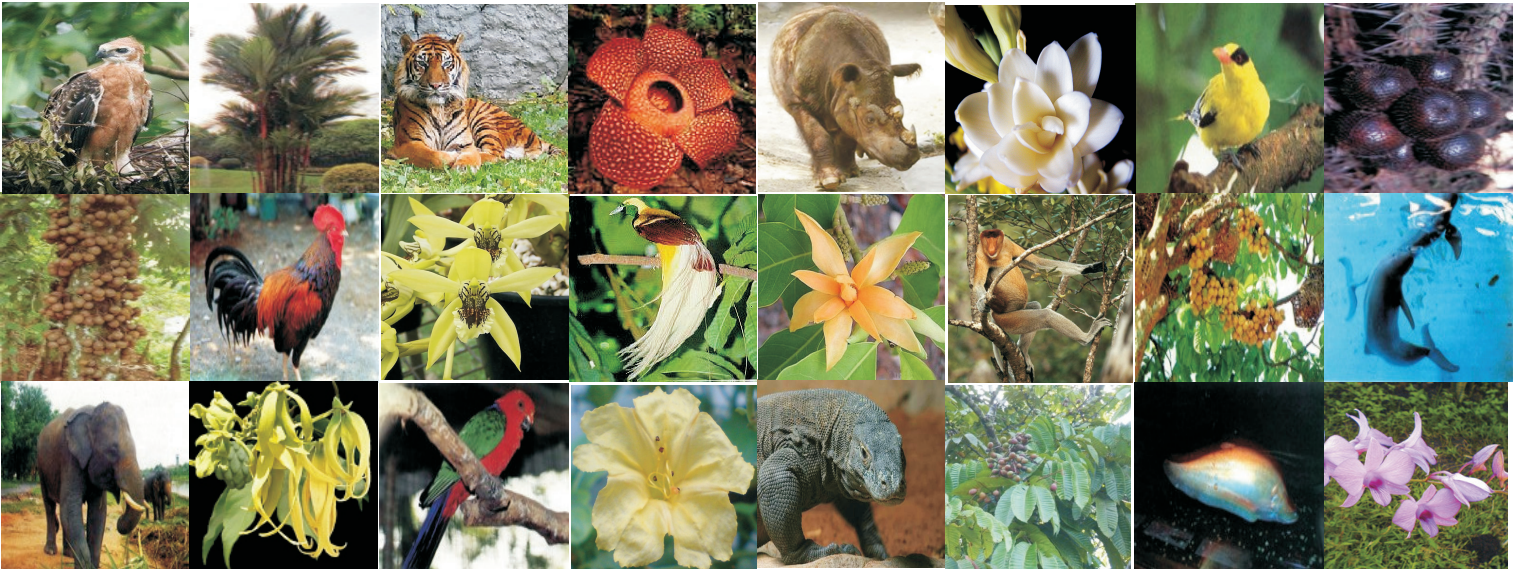GOVERNMENT OF INDONESIA

FOURTH NATIONAL REPORT
THE CONVENTION ON BIOLOGICAL BIODIVERSITY

MINISTRY OF ENVIRONMENT
2009

Cover Picture Description:
Flora Fauna Identity of Several Province in Indonesia: Elang Jawa, Pinang Merah, Harimau Sumatera, Rafflesia (Bungan Bangkai), Badak Jawa, Sedap Malam, Burung Kepodang, Salak Pondoh, Kepel, Ayam Jago, Anggrek, Cenderawasih, Bunga Ashar, Bekantan, Duku, Pesut Mahakam, Gajah Sumatera, Bunga Kenanga, Burung Nuri, Bunga Ashar, Komodo, Matoa, Ikan Belida, Anggrek Larat

FOURTH NATIONAL REPORT
THE CONVENTION ON BIOLOGICAL DIVERSITY

MINISTRY OF ENVIRONMENT INDONESIA
2009

NATIONAL REPORT CBD-4

Steering Committee :
Deputy Minister for Nature Conservation Enhancement
and Environmental Degradation Control - MoE/NFP CBD

Coordinator:
Assistant Deputy for Biodiversity Conservation - MoE

Team:
Teguh Triono (Indonesian Institute of Sciences); Bandung Sahari (PEKA INDONESIA); Sudhiani.P (National Planning and Development Agency); Meuthia Naim (MoE); Vidya Sari Nalang (MoE), Rasyidah (MoE), Setyawan Warsono Adi (MoE), Ghofar Ismail (MoE), with support of Lijie Cai (CBD) as a reader of the English version.

Technical Team:
Deddy Darnaedi (Indonesian Institute of Sciences); Yayuk R. Suhardjono (Indonesian Institute of Sciences); Irawati (Indonesian Institute of Sciences); Edi E.Tedjakusuma (National Planning and Development Agency); Ahmad Muniri (Ministry of Justice and Human Rights); Ir. Ahsanal Kasasiah (Ministry of Marine and Fisheries); Widiati H. Adil (Ministry of Agriculture); Indra Exploitasia (Ministry of Forestry); Agus Haryanta (Ministry of Forestry); Andi Russandy (Ministry of Marine and Fisheries); Christian P. Purba (FWI); Yoppy Hidayanto (Burung Indonesia); Anida Haryatmo (KEHATI Foundation); Enny Sudarmonowati (FFI); Irwansyah Reza Lubis (Wetlands International-IP); M. Imran Amin (TNC); Harry Alexander (WCS); M. Farid (CI); Retno Setyaningrum (WWF).

Table of Content

List of Table

List of Figure

ACRONYM

APBD	:	Regional Budget
APBN	:	National Budget
ASEAN	:	The Association of Southeast Asian Nations
BAPI	:	Biodiversity Action Plan for Indonesia
BAPPEDA	:	Regional Development Planning Agency
BAPPENAS	:	National Planning and Development Agency
BEHF	:	Biodiversity, Ecology, and Health Fund
BKPM	:	Indonesia Investment Coordinating Board
BPPT	:	The Agency For the Assessment and Application Technology
BPS	:	Indonesia Central Bureau of Statistics
BSSE	:	Bismarck Solomon Seas Ecoregion
CEPI	:	Collaborative Environmental Project in Indonesia
CI	:	Conservation International
CIDA	:	Canadian International Development Agency
COP	:	Conference of The Parties
CORDAID	:	Catholic Organisation for Relief and Development AID
COREMAP	:	Coral Reef Rehabilitation and Management Project
CTI	:	Coral Triangle Initiative
DANIDA	:	Danish International Development Agency
DEPDAGRI	:	Ministry of Home Affairs
DEPDIKNAS	:	Ministry of National Education
DEPHUT	:	Ministry of Forestry
DEPKEH	:	Ministry of Justice and Human Rights
DEPKEU	:	Ministry of Finance
DEPTAN	:	Ministry of Agriculture
DFID	:	Department for International Development
DGIS	:	The Directorate General for International Cooperation (DGIS) of the Netherlands Ministry of Foreign Affairs.
DIPA	:	Budget Project Implementation
DISHIDROS	:	Indonesian Navy Hydrological Division
DKP	:	Ministry of Marine and Fisheries
ENSO	:	El Nino-Southern Oscillation
ESDM	:	Ministry of Energy and Mineral Resources
EU	:	Europion Union
FSC	:	Forest Stewardship Council
GAP	:	Good Agricultural Practices
GEF-SGP	:	Global Environment Facility-Small Grant Programme
GERHAN	:	Forest and Land Rehabilitation Movement

HPH	:	Forest Management Right
HTI	:	Estate Forest
IAS	:	Invasive Aliens Spesies
IBA	:	Important Bird Area
IBSAP	:	Indonesian Biodiversity Strategy and Action Plan
ICZN	:	International Code for Zoological Nomenclature
IMCAM	:	Integrated Marine and Coastal Area Management
IPCC	:	International Panel on Climate Change
ITPGRFA	:	International Treaty on Plant Genetic Resources Food and Agricultural
IUCN	:	International Union for the Conservation of Nature
KBA	:	Key Biodiversity Area
KKLD	:	Local Marine Protected Area
KKMP	:	Maros Karst Regions Pangkep
KNLH	:	State Ministry of the Environment
KPA	:	Natural Preservation Area
KPHL	:	Kesatuan Pemangku Hutan Lindung
KSA	:	Conservation Area
KSDA	:	Natural Resources Conservation
LEISA	:	Low External Input Sustainable Agricultural
LIPI	:	Indonesian Institute of Sciences
LULUCF	:	Land Use, Land Use Change and Forest
MAB	:	Man and Biosfer
MCRMP	:	Marine And Coastal Resources Management Project
MDGs	:	Millennium Development Goals
MENRISTEK	:	State Ministry of Research and Technology
MSP	:	Medium Size Project
MTA	:	Mutually Terms Agreement
NFP	:	National Focal Point
NSAP	:	National Strategic Action Plan for Wet Land
NSDH	:	National Forest Resources Balance
Pemda	:	Local Goverment
PNPM	:	National Program on Community Empowerment
PP	:	Government Regulation
PU	:	Ministry of Public Works
PVT	:	Plant Variety Protection
RANPI	:	National Strategic Action Plan for Climate Change
REDD	:	Reduction Emission From Deforestation and Forest Degradation
RKP	:	Government Work Planning
RMI	:	Rimbawan Muda Indonesia (local NGOs name)
RPJPN	:	National Long Term Development Palnning

RPJMN	:	National Mid Term Development Planning
RLPS	:	Directorate General for Land Rehabilitation and Social Forestry
RTRW	:	Regional Spatial Planning
RTRWP	:	Provincial Regional Spatial Plan (*Rencana Tata Ruang Wilayah Provinsi*)
RUU	:	Drafting Act
SCBD	:	Secretariat Convention on Biological Diversity
SDA	:	Natural Resources
SDG	:	Genetic Resources
SEA	:	Strategic Environmental Assessment
SFM	:	Sustainable Forest Management
SGI-UC Berkeley	:	Small Grants Initiative University of California at Berkeley
SGP	:	Small Grant Project
SGP-PTF	:	Small Grants Programme for Operations to Protect Tropical Forests
SLHI	:	Environmental State of Indonesia
SLPHT	:	Field School of Integrated Pest Control
SLPTT	:	Field School of Integrated Crop Management
SM	:	Wildlife Sanctuary
SNPEM	:	National Strategy on Management of Mangrove Ecosystems
SSME	:	Sulu-Sulawesi Marine Ecoregion.
Tahura	:	Great forest park
TF	:	Task Force
TGHK	:	Forest Landuse Plan (Tata Guna Hutan Kesepakatan) (determine by concencus)
TFGTI	:	Task Force Global Taxanomi Initiative
TN	:	National Park
TNC	:	The Nature Conservancy
UN	:	United Nation
UNDP	:	United Nations Development Programme
UNEP	:	United Nations Environment Programme
UNESCO	:	United Nations Educational, Scientific, and Cultural Organization
UNCBD	:	United Nation Convention on Biological Diversity
UNFCC	:	United Nation Framework Convention on Climate Change
UPT	:	Technical Management Unit
USAID	:	United States Agency for International Development
WCS	:	Wildlife Conservation Society
WCU	:	Wildlife Crime Unit
WHC	:	World Heritage Convention
WI	:	Wetland International
WWF	:	World Wide Fund for Nature
YIF-WB	:	Youth Innocation Fund-World Bank
ZGAP	:	Zoological Society for the Conservation of Species and Populations

Executive Summary

The Fourth National Report to CBD is a report on the implementation of articles and programmes of work of the Convention on Biological Biodiversity (CBD) at the national level. The report was prepared following the guidelines provided by the Secretariat of the CBD (SCBD). This report consists of four chapters.

Chapter I is a review of status and trends of, and major threats to biodiversity. This chapter provides an analysis of the conditions of biodiversity in Indonesia at the levels of species, genetic and ecosystem diversity. In the case of species diversity, the number of floral species known in Indonesia is ranked among the big five of diversity-rich countries in the world. Of the entire concerned species, 55% of floras found in Indonesia are endemic. For the diversity of fauna, about 12% of mammals (515 species) in the world are found in Indonesia.

At the ecosystem level, conservation is carried out through the establishment of conservation areas which serve as places for protection and preservation of biodiversity, such as biosphere reserves, wildlife sanctuaries, national parks, ecotourism parks, forest parks and hunting parks. Coverage of these areas was increased to 27.968 million ha in 2007, compared to 7.628 million ha in 1981.

In the efforts of *ex-situ* conservation, there was an increase in the number of floras and faunas being bred in captivity from 171 species in 2006 to 416 species in 2008. Of those captive breeding activities in the year of 2008, 383 of them were for protected floras and faunas.

Some threats to biodiversity in Indonesia include: high population growth rate, deforestation, forest and land fires, habitat degradation and fragmentation, consumption/over-exploitation, pollution, and climate change.

Status of Indonesian Biodiversity Strategy and Action Plan (IBSAP) is described in **Chapter II**. Given that the targets, goals, and indicators included in IBSAP 2003-2020 had been prepared before the 2010 target framework was adopted at COP 7 (decision VII/30) in 2004, so the content in IBSAP did not entirely refer to the 2010 target framework. However, some indicators in the IBSAP are consistent with some global indicators such as those prepared by SCBD and the Strategic Plan of the Convention. Some IBSAP programs have been associated with the articles of the Convention on Biological Diversity (UNCBD) and contributed to the implementation of the thematic programs of work and cross-cutting issues of CBD.

Chapter III provides information on mainstreaming of biodiversity into sectoral and cross-sectoral plans, programs and policies. Indonesia has adopted the 2003-2020 Indonesian Biodiversity Strategy and Action Plan (IBSAP) which is a revised version of the 2003 Biodiversity Action Plan for Indonesia (BAPI). Mainstreaming of Biodiversity has been carried out through integration into the Indonesia

National Long-term Development Planning/RPJPN (2005-2025). The mission of RPJPN has taken into consideration the sustainable use of biodiversity.

Mainstreaming of biodiversity considerations has been started especially by those sectors that have direct relevance with management of natural resources and biodiversity, including through the 2005-2009 Sectoral Strategic Plans of the Ministry of Marine and Fisheries, the Ministry of Forestry, Agency for Agriculture Research and Development under the Ministry of Agriculture, and Research Center for Biology- Indonesian Institute of Sciences.

Biodiversity considerations have also been integrated into the administration of local governments, by establishing a conservation agency. To date, the Conservation Districts have been established including for District of Kapuas Hulu, District of Malinau, District of Kuningan, and District of Pasir. Biodiversity has also been integrated into some broader national strategies and programs, such as strategies for achieving the MDGs, PNPM Mandiri (National Program on Community Empowerment), Action Plan for implementing UNFCCC, and the 2004 Indonesian Strategy and Action Plan for Wetland Management. Biodiversity is also incorporated into environmental impact assessment, strategic environmental assessment, and relevant incentives.

Chapter IV reviews on progress towards the 2010 Target and implementation of the Strategic Plan of the Convention. Data availability is a key factor for determining indicators in achieving the 2010 target. In 2008, Indonesia just carried out data and information collection that can be used to assess the 2010 target achievement by using indicators that have been agreed. Data and information collected were those from the period 2003-2008 and it was considered as the preliminary data that need to be updated in the years to come.

For these reasons, results of the assessment of the achievement of the 2010 target described only efforts made to achieve these targets. Some targets were set at the national level for achieving the 2010 target, but no targets specifically referred to the 2010 target framework. An achievable national target is to increase marine conservation area from 4.7 million ha in 2003 to 10 million ha in 2010 and then be expanded to 20 million ha in 2020.

National targets for achieving the Strategic Plan of the Convention have not yet been determined, albeit there were fourteen national programs already implemented which can support the achievement of these targets.

The Fourth National Report also identifies some obstacles in the implementation of the Convention, including lack of stakeholders' support to implement the Convention of Biological Diversity; lack of communication and coordination among stakeholders (particularly at local levels), lack of mechanisms to ensure that sectoral programs and action plans can contribute to the implementation of the Convention; lack of stakeholders' awareness in the implementation of Convention on Biological Diversity; and

inadequate efforts to monitor and to integrate data and information that can be used for policy making in the implementation of the Convention.

Knowing of those constraints is a necessary step to improve capacities, among others by : establishing a mechanism to ensure that sectoral programs and action plans are in line with the implementation of the Convention; raising awareness and improving knowledge of stakeholders about the Convention and its programmes of work; mainstreaming the Convention and its programmes of work from national level to local levels (Provincial and Regencies/Cities); strengthening regional cooperation mechanisms as well as training and exchange of experience among the Parties of the Convention.

Chapter I

Status and Trends of, and Major Threats to Biodiversity

1.1. Introduction

In this Chapter I of the 4th National Report on the Convention of Biological Diversity, we provide a review on the status, trend, and threat of biodiversity in Indonesia. This chapter was prepared not only to give a brief overview of the state-of-the-art conditions of biodiversity, but also to provide important information concerning the status and trends of biodiversity in Indonesia.

The source of data used to review the status, trend, and threat of biodiversity was obtained from the stakeholders involved in the implementation of the Convention on Biological Diversity in Indonesia. Data collection from the stakeholders followed the Indonesian Biodiversity Strategy and Action Plan – IBSAP 2003-2020. The indicator of its condition presented in Chapter IV of this 4th National Report. In order to obtain the latest data of the status and trend of, and threats to biodiversity in Indonesia, the data provided in Chapter I were tabulated from available data and information between 2003-2008. The availability of main data and supportive data, especially serial data and quantitative data of biodiversity components as well as its fluctuation became the limiting factor for preparing this Chapter .

In order to easily comprehend the current condition, and to give detailed and logical view of the trend and the threats of biodiversity in Indonesia with the limited data, Chapter I is structured as follow:

- The first part of Chapter I (**Sub-chapter 1.2**) describes a general overview of the Indonesian mega biodiversity, which comprises diversity at genetic, species and ecosystem levels. This Chapter also contains information about the types of threats to biodiversity in Indonesia.
- The second part of Chapter I (**Sub-chapter 1.3**) describes the status, threat biodiversity based on the main types of ecosystems in Indonesia. Sub-chapter 1.3 is divided into two large groups, i.e. status, threat and conservation on terrestrial biodiversity (comprising forest, small islands and karts); and status, threat and conservation of aquatic biodiversity , which includes salty water (coast, ocean and mangrove) and freshwater (swamp, river and lake).
- The third part of Chapter I (**Sub-chapter 1.4**) describes the implications of biodiversity loss at ecosystem, species and genetic levels in terms of socio-economic potential impacts as well as brief view on its changes.

1.2. General Overview

Biological diversity refers to the entire form of life diversity on earth, which consists of three levels, i.e. ecosystem, species and genetic diversity (IBSAP 2003; National Planning and Development Agency - Bappenas 2007; Campbell & Reece 2007), including interactions amongst them, and interactions with their environments (IBSAP 2003). The distribution of biodiversity on the earth is not even. Tropical regions possess higher diversity than any other regions on earth (Campbell and Reece 2007).

The Indonesian Archipelago, which is located between two continents (Asia and Australia) and two oceans (Pacific and Indian), possesses a very rich and unique biodiversity with its complex interactions as a result of the upheaval of Asian and Australian plates (Metcalfe *et al.* 2001). Based on the distribution of the world biodiversity, Indonesia is often called *mega biodiversity* region, i.e. one with the highest biodiversity in the world. Therefore, efforts to conserve biodiversity in Indonesia are very important since many places are centres of origin, centres of diversity and centres of endemism (IBSAP 2003).

1.2.1.   Indonesian *Mega Biodiversity*

Biodiversity comprises all forms of life on the earth, from very simple organisms such as bacteria and fungi to human beings; from a tree in backyard to a thousand of trees that form a complex web of life in the forest (IBSAP 2003; Bappenas 2007; State of Environmental Report of Indonesia - SoER Indonesia 2007; Campbell & Reece 2007).

With 1,860,359.67 km^2 of terrestrial area (Ministry of Home Affairs, 2005 in Ministry of Marine Affair and Fisheries - MMAF 2006) and of 5.8 million water area km^2 (Indonesian Navy Hydrological Division - Dishidros TNI AL 1987 in DKP 2006) and of 81,000 km coastal line (Dishidros TNI AL 1987 in MMAF 2006), Indonesia is placed in the second rank after Brazil in terms of high biodiversity level (Ministry of Forestry - MoF 1994; Mittermeier*et al.* 1997 in SoER Indonesia 2007).

In terms of genetic diversity, Indonesia is one of the countries that are rich in genetic resources, including its endemism level. Those genetic resources have a vital role in national development, through producing new varieties with high quality, as well as supporting system of life, such as food resources, building materials, and industrial materials. The use of Indonesian genetic resources for human prosperity goes along with sustainable use of biodiversity and its uniqueness (SoER Indonesia 2007).

Table 1.1. Number of Accessions of Genetic Resource Collections at Agricultural Research and Development Institute

No	Commodity	Number of Collections	Studied
1	Crops	5529	3337
2	Fruits	592	95
3	Vegetables	4438	1846
4	Estate Plants	2168	338
5	Cultivated Plants	10404	1273
6	Chicken	309	-
7	Fish	1660	-
8	Microbes	2670	-
	T O T A L	**27770**	**6889**

Source: National Commission on Germplasm in SoER Indonesia 2007

In terms of species diversity, Indonesia is among the top five in the world. Of these species, 55% are endemic plants (Newman 1999 in SoER Indonesia 2007). Based on the results of a taxonomic assessment in 2007, which was carried out by Research Centre for Biology, the Indonesian Institute of

Sciences (LIPI), 31,746 species of vascular plants have been recorded and described. These figures were tabulated from data of herbarium specimens from various renowned flora databases worldwide such as GBIF, Species 2000 and ITIS, herbaria such as Royal Botanic Gardens Kew, National Herbarium of the Netherlands and Herbarium Bogoriense, Indonesia as well as data from non-governmental organizations such as Conservation International (CI) etc. The combined data were sorted out to prevent duplications of species name and then were validated based on monographs and taxonomic publications in accordance with the rules of the International Code for Botanical Nomenclature (ICBN). Data of specific diversity of vascular plants (Angiosperms, Gymnosperms and Pterydophytes) and their distributions in Indonesia are shown in Table 2.2.

Table 1.2. Numbers of species of vascular plants (Angiosperms, Gymnosperms and Pterydophytes) and their distributions

Islands	Number of Species
Sumatera	8538
Kalimantan	5524
Java	4364
Sulawesi	5076
Moluccas	4128
Papua	3311
Lesser Sunda Islands	805
Total species	**31746**

Source: adapted from "National Taxonomy Assessment Report for Indonesia" by Research Centre for Biology, LIPI 2008, in press)

For fauna diversity, about 12% of mammals (515 species) of the world occur in Indonesia. This placed Indonesia in the second rank after Brazil. About 16% of world reptiles (781 species) and 35 species of primate placed Indonesia in the fourth rank in the world. Furthermore, 17% of the total species of birds (1592 species) and 270 species of amphibians placed Indonesia in the fifth and sixth rank, respectively in the world (Mittermier *et al.* 1997 in SoER Indonesia 2007).

The latest data of the taxonomic assessment of Indonesia 2007 showed that bird diversity of Indonesia is 1595 species (see Figure 1.1). From this assessment, the highest bird diversity occurred in Papua with more than 650 species. The bird species richness in Sumatera was placed in the second rank after Papua, with about 600 species. The increase of the species number was also found in amphibians that reached 363 species (243 species are endemic) (Research Centre for Biology, LIPI 2008 in press). As for the flora diversity data, these numbers were also tabulated from museum specimen's data from various renowned fauna databases such as GBIF, Species 2000, Fishbase, P2 Biology (Research Centre for Biology, LIPI), non-government organizations such as Birdlife International, World Wildlife Fund, Conservation International, etc. Total data have been tabulated and the species names have been validated based on monographs and taxonomic revisions in accordance with the rules of the International Code for Zoological Nomenclature (ICZN). Similar to the number of floral species, this number of fauna species will change following the ongoing surveys and inventories, which are conducted by various organizations and institutions in Indonesia.
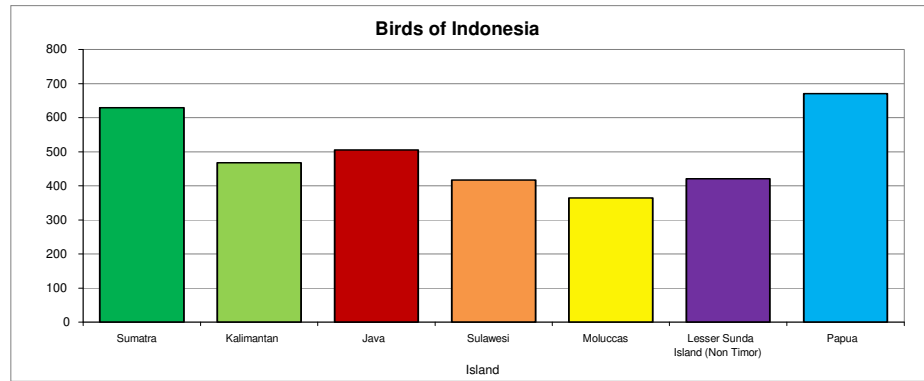
Figure 1.1. Number of bird species and its distribution in large islands and their surroundings in Indonesia
Source: (adapted from "the National Taxonomy Assessment Report for Indonesia" by Research Centre for Biology, LIPI 2008, in press)

Indonesia is not only rich in genetic and species diversity, but it is also rich in ecosystem diversity, which includes natural diversity of the terrestrial landscape as well as water, in which organisms (plants, animals and micro organisms) interact with their physical environment (IBSAP 2003; Campbell & Reece 2007). The definition of ecosystem diversity is highlighted in SoER Indonesia (2007), which stated that ecosystem diversity refers to habitat type diversity, which depicts the diversity of life forms, performed roles and ecological processes, and the genetic diversity.

As a country of archipelago between the distribution lines of Asia and Australia continents, and distribution area of transitional Wallacea, the terrestrial ecosystems of Indonesia have distinctive biodiversity of Asian, Australian region as well as transitional region (SoER Indonesia 2007). The geological history of the formation of each island in Indonesia caused variations that affect the formation of ecosystems and species of plants and animals that live in them, including the formation of endemic species in Indonesia.

In the IBSAP (2003), it was mentioned that based on the geological history, the diversity of terrestrial ecosystems in Indonesia encompasses snow and tundra in the mountain peaks of Papua, tropical rainforest in Sumatera and Kalimantan, and savanna and shrubs in Nusa Tenggara. These categories are based on the vegetation type, which is influenced by the rainfall and temperature (Whittaker 1970). The tropical climate that is relatively stable throughout the year creates the forests in Indonesia as the main terrestrial ecosystem, which has the richest biodiversity. This forest area mentioned here is a certain region of permanent forest of which has been designated and/or declared by the government through a ministerial decree from the Forestry Minister as Provincial Forest and Water Area based on the result of compatibility between Provincial Regional Spatial Plan (RTRWP) and Forest Landuse Plan (TGHK) (determine by concencus). The size of forests in Indonesia designated as Provincial Forest and Water Area and TGHK until 2005 is 120.35 million hectares which comprises: a) 20.50 million hectares of Conservation Forest, b) 33.52 million hectares of Preserved Forest, c) 23.06 million hectares of Limited Production Forest, d) 35.19 million hectares of Fixed Production Forest and e) 8.08 million hectares of Conversable Production Forest.

These large sizes of the forests provide habitats for plants, animals and micro organisms, which are the bases of most of terrestrial species. Riswan and Yamada (2006) classify forest ecosystems in Indonesia into two main groups, one group being tropical rain forest (which include dry land forest like lowland rain forest, mountain rain forest and conifer forest and wetland forest) and the other group being monsoonal tropical forest (savanna and grassland).

Besides forest ecosystem, karts area is also one of the terrestrial ecosystems found in Java, Kalimantan and Sulawesi Islands. In the Management Action Plan for Karts Ecosystem Gunung Sewu (2008), it is mentioned that karts ecosystem encompasses all abiotic, biotic, and cultural components that present in kart landscape. Karts landscape comprises limestone, dolomite, marble, salt stone and gypsum area, which were formed through the process of karstification. The process of karstification was characterized by underground drainage web and cave system as well as the formation of exo-karst on the soil surface (e.g. conical-shaped or tower-shaped hills, blind valley and holes where the surface stream goes into the underground river web).

Other terrestrial ecosystems that become a characteristic of the Indonesian Archipelago are small islands, which are insulated, connected land (separated from the main land or main-island (Bengen 2001; MMAF 2001). In the Government Regulation No. 27, 2007, a small island is defined as an island with the size of equal or less than 2,000 km^2 together with its ecosystem. The prominent physical and biological characteristics include limitedness of fresh water supply because the water catchment area is relatively small, vulnerable and fragile from external influence, which happen either naturally or as the result of human activities. In several cases, it has high endemism of flora and fauna.

Figure 1.2. One of Small Islands in Indonesia.
Source: www.lomboktravel.com

In terms of water ecosystem diversity in Indonesia, several types of ecosystem have been identified based on salinity level. According to Smith and Smith (2003), the clustering of water ecosystems is based on physical characteristics such as substrate, temperature, water depth, and dominant vegetation. There are three important ecosystems of coastal area and ocean, which are categorized as saline water, i.e. mangrove ecosystem (Kartawinata 2005), coral reef ecosystem such as beautiful coral reef view in Bunaken and Raja Ampat, and sea grass ecosystem such as in Sunda Strait (IBSAP 2003; Bappenas

2004). Whereas lakes, rivers, and swamps are part of fresh water ecosystem (IBSAP 2003; Marshall 2007, in Marshall and Beehler 2007). Based on the climate condition and composition of vegetation, swamp vegetation in Indonesia is classified into three types, i.e. fresh water swamp vegetation, peat swamp vegetation, and monsoonal swamp vegetation (Kartawinata 2005).

1.2.2. Threats to Indonesian Biodiversity

The loss of biodiversity is a natural process, but the extinction rate is often accelerated by human over exploitation. The main threats that cause the loss of biodiversity in Indonesia are mostly caused by rapid population growth, deforestation and forest fires, habitat fragmentation, over exploitation (including illegal poaching and illegal trade of fauna and flora), introduction of alien species, pollution and climate change (IBSAP 2003; SoER Indonesia 2007; Bappenas 2007; National Action Plan for Climate Change Indonesia - RANPI, 2007).

1.2.2.1. Rapid Population Growth

In 2005, the population of Indonesia is 218.9 million (Figure 1.3), which placed Indonesia in the fourth most populous country in the world (Bappenas 2007). In the report of Analysis of Natural Resources and Environment (2007) by Bappenas, it was mentioned that in 2025, the population of Indonesia is projected to be increased to 273.2 million (see Figure 1.3).
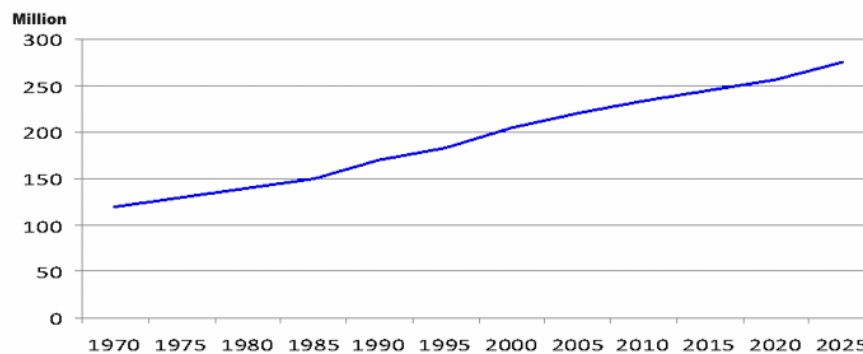
Figure 1.3. The population growth in Indonesia 1971-2025 (adapted from Bappenas 2007).
Source: Population Census in 1971, 1980, 1990, 2000 and SUPAS 1995, 2005 – BPS, BPS – Statistics indonesia, Bappenas, UNFPA Indonesia (2005) in Bappenas (2007).

The large number of population will increase use of biodiversity, and more forest and farm areas (including paddy field) will be converted into residential areas.

1.2.2.2. Deforestation

Deforestation is defined as a change in forest cover of a certain region from forest area into non-forest or into the area that is used for non-forest sectors (plantation, agriculture, residential/transmigration area) due to the forest mismanagement and forest fires. The latest data about deforestation rate from the Ministry of Forestry reported by Bappenas (2007) and SoER Indonesia (2007) stated that deforestation rate in Indonesia in 2000-2005 is 1.08 million hectares (Figure 1.4.).
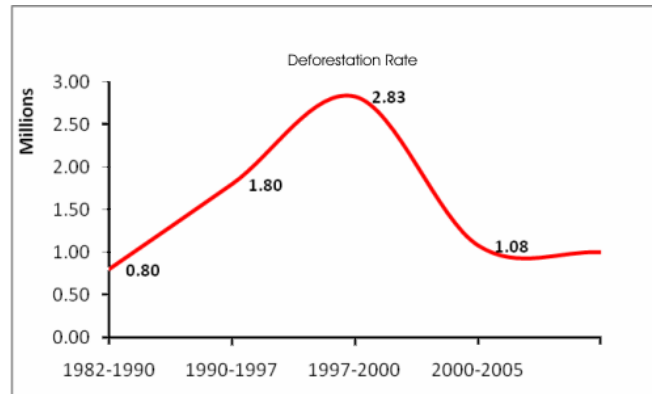
Figure 1.4. Deforestation rate of forest in Indonesia (adapted from Bappenas 2007).
Source: Bappenas 2007

1.2.2.3. Forest and Land Fires

The forest fires in Indonesia were caused by several linked factors related to human and nature, for example logging, land clearance, infrastructure development and nomad-farm practice, which gave a wide access to the forests. This, in fact, will increase human activities inside the forest (Schweithelm & Glover 2002 in Bappenas 2007). Natural phenomenon such as El Nino that caused extreme aridity also increased the intensity and extent of forest fires in Indonesia (Bappenas 2007).

According to the number of hot spots identified by satellite imagery during the period of 2004-2008, several areas, such as Riau, South Sumatera, East Kalimantan, West Kalimantan and Central Kalimantan, have a higher potential hazard and risk of fires compared to other areas in Indonesia (see Figure 1.5.).
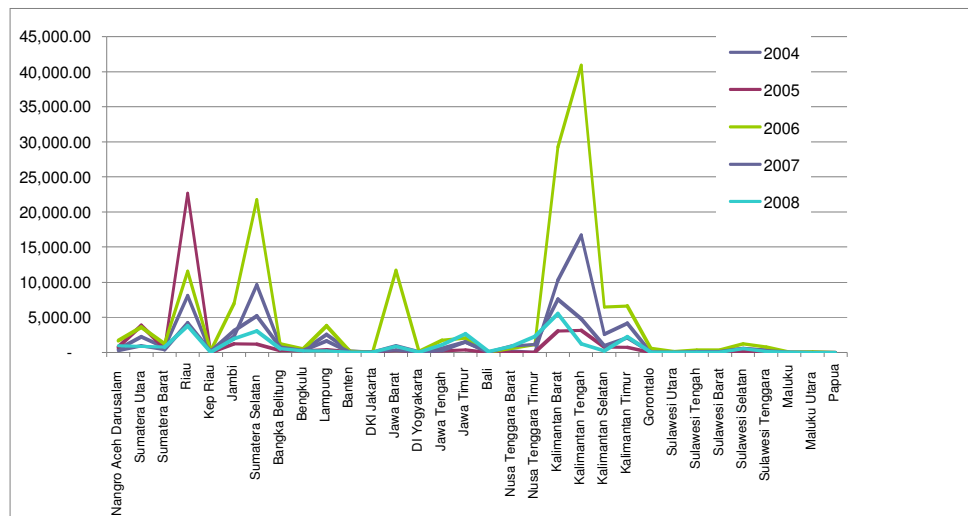
Figure 1.5. Numbers of hot spot in several areas in Indonesia during the period of 2004-2008 (adapted from MoF 2007).
Source: MoF 2007

Forest fires caused flames and heat effects which caused direct damage and the death of flora and fauna in the forest; and indirect damage such as loss of habitats and food of wildlife which at the end lead to the death of wildlife, the loss of human income and food sources from the forest, defector loss of

7

hydrological functions and nutrition cycles, smoke that disturb human activities, and change of species composition and change of ecological processes which at the end lead to the permanent loss and change of species composition and plant structures (Bappenas 2007).

1.2.2.4. Degradation and fragmentation of habitats

Lowland forest areas are the places where the highest biodiversity occur. These areas are also places to obtain and meet the human needs, such as developing cultivation areas for agriculture including plantations as well as the development of residential areas (Bappenas 2007; SoER Indonesia 2007). Therefore, functional changes of lowland areas happen very fast. The change of status and/or functions of land become one of the major causes of forest degradation in Indonesia as forest ability to regenerate is slower than the rate of forest damage caused due to over exploitation, which surpass its support capacity (Bappenas 2007; SoER Indonesia 2007). Forest fires also accelerate the forest damage.

Besides forest degradation, this conversion also leads to the decreasing of natural habitats for various rare plants and wild animals, or causing the fragmentation of the areas into much smaller areas, so the habitat isolation is finally formed. Campbell & Reece (2007) mentioned that habitat fragmentation will reduce the size of population and divide the widely distributed population into sub-population that are distributed in limited areas, so that they will be vulnerable to human pressure, genetic breeding, and lead to the loss of species especially of the small population due to the presence of barriers for distribution, colonization, and species exploration. Moreover, habitat fragmentation will push conflicts between human beings and wild life (SoER Indonesia 2007).

1.2.2.5. Consumption/Over Exploitation

Human activities and consumption will affect the condition of biodiversity especially on species that have important roles in the economy since they have strategic values for food resources, medicines, clothing and housing. Human activities, such as converting forest to agriculture, gathering food, industrial activities, over logging and poaching that surpass the limit of species supporting capacity, and illegal trade on various plants and wild animal species, and over use of wild plants for medicinal purposes without rehabilitation, will reduce the level of biodiversity in a particular area.

In addition, mono-cultural cultivation practices, i.e. to plant only a single or two species or varieties (e.g. teak plantation or rice field that were cultivated by only one variety of rice), will threaten the existence of biodiversity itself. Besides mono-culture cultivation practices, the excessive catch of any potential fish and sea biota will threaten the conservation of the species as well as the marine ecosystem in small as well as global scale (SoER Indonesia 2007).

1.2.2.6. Invasive Alien Species

One of the real global threats to biodiversity is invasive species. The introduction, distribution and uses of alien species, intentional or unintentional, have caused ecological losses and considerable economical losses (Frazier 2007 in Marshall & Beehler 2007). The environment damage caused by invasive alien

species is very difficult to recover because this is related to organisms that perform adaptation, growth and reproduction. The invasive alien species can cause the losses of endemic species. Its negative impact is usually difficult to control (SoER Indonesia 2007).

Based on the result of the SEAMEO BIOTROP and the State Ministry of the Environment (KLH) inventories (http://www.biotrop.org/database.php?act=dbias), there are about 339 plant invasive alien species found in Indonesia. These invasive alien species do not include commodities that are regulated under Government Regulation – PP No. 16/1992, on animals, fish and plants quarantines, PP No.82/2000 on animal quarantines and PP No.14/2002 on plant quarantines (SoER Indonesia 2007).

1.2.2.7. Pollution

Pollution is one of the main threats to biodiversity, especially to water biodiversity (river, lake, coastal and ocean) that cause the death of flora and fauna and also destruction to ecosystems. The main source of pollution is caused by human activities (industry, agriculture, home activities and transportation). Therefore, pollution is related to the population growth.

The population growth in coastal regions and the increase of tourism activities will also increase the amount of waste and its bacterial contents that can cause destruction of the coastal areas. In addition, the use of fertilizers in rice fields which occur along the river flow (DAS/ Daerah Aliran Sungai) and industrial activities on the land which deposit their waste into the river body and then washed away to the sea through coastal areas, will also increase the ecological pressure of the coastal region.

The pollution from industrial waste and ships along the coastal areas generally contain heavy metal. These heavy metal content is predicted to increase because of erosion and soil wash, the infiltration of industrial waste and the burning of fossil fuel into coastal areas and the atmosphere, as well as the direct release of metal sedimentation from active mud (Dahuri 2003).

1.2.2.8. Climate Change

Another factor that can cause biodiversity loss is climate change. In the National Strategic Action Plan for Climate Change - NAPCC (2007), it was mentioned that the real impact of the climate change on the species as a component of biodiversity is the change in its distribution range, the increase of species rarity and the alteration of reproduction period.

The Report of the Intergovernmental Panel on Climate Change (IPCC) issued in April 2007 about the impact, susceptibility, and adaptation to the climate change, reveals that about 20-30% of plants and animals are predicted to have a higher risk of loss if the rise of the global temperature is above 1.5-2.5°C. If there is no prevention effort done to mitigate this impact, two thirds of the whole species on the earth will disappear in 2100 (NAPCC 2007; SoER Indonesia 2007).

Besides the rise of global temperature, the rise of sea level is also a threat to biodiversity. IPCC recorded

the increase of sea level of 1-2 meter in the last 100 years, and it is predicted that in 2030, the sea level will increase of about 8-29 cm from now. The negative impact from the increase of the sea level for the coastal areas in Indonesia is e.g. the damage of coastal ecosystem including mangrove ecosystem (NAPCC 2007).

1.3. Status and Trends of, and Threats to Biodiversity

1.3.1. Status and Trends of, Threats to Terrestrial Biodiversity

In the report on status, threat, and conservation of main terrestrial ecosystem, three categories of main Indonesian biomes have been identified, i.e. 1) forests, 2) karst area and 3) small islands. This sub-chapter elucidates the recent biodiversity status, threat, and conservation effort for these three main terrestrial biomes of Indonesia.

(a) Forest

Indonesia has a great number of forest areas with fantastic biodiversity. However, since the implementation of investment regulation at the end of 1960s, the forest in Indonesia has been drastically changed. Deforestation rate that include degradation, deforestation and fragmentation is estimated to reach 1.6 million hectare per year (MoF 2007). Lowland forest, which is the most diverse area for biodiversity, is the most threatened forest due to conversion of land use, moving farm, irreversible forest management, development of infrastructure, mining, fires and various illegal activities that threaten the whole forest.
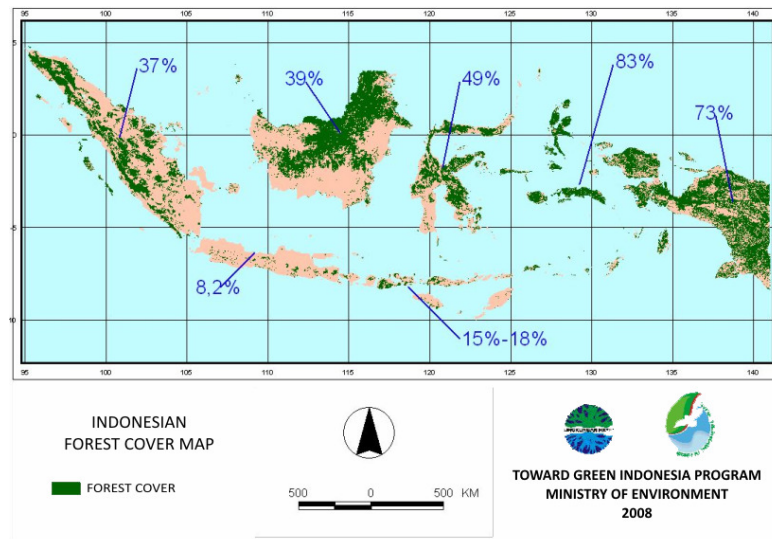
Figure 1.6. Map of forest vegetation cover in Indonesia in 2006/2007.
Source: State Ministry for Environment - KLH, 2008

Data produced by the Ministry of Forestry (MoF) at the end of 2008 showed that the size of forest in Indonesia has reached 120.35 million hectare (Secretary General of MoF, Center for Information 2008). Map of forest vegetation cover is shown in figure 1.6.

Various human activities are still often found in the conservation areas. This activities increase rate of damage to the conservation area, such as nature reserve, animal sanctuary, national park, nature tourist-

park and great forest park, besides the damage to production forest area.

The damage rates to the production forest also tend to increase. The plantations in production forest areas such as HTI (Estate Forest) are categorically small compared to the size of forest areas that had been given by the government to develop this estate forest. The realization of plantation in 1996 is only 50%, but this decreased to 43% in 1997, and in 1998 this was further lowered down to 32%. The cumulative size of plant forest area that has been planted until 2006 is 2.88 million hectare from the targeted size of 10.2 million hectare.

The land clearance through the conversion of natural forest to oil palm plantation gives a contribution to the damage of forest area. In 2003, the size for oil palm plantation was 5.25 million hectares, until 2005 the size of this plantation reached 5.59 million hectares. It is predicted that the expansion of oil palm plantation will still increase to 13.8 million hectares in 2020. The conservation of natural forest into oil palm plantation is a serious threat to the conservation of biodiversity, because the conversion is often conducted in tropical lowland rainforest which is categorized as the type of ecosystem with the highest biodiversity (SoER Indonesia 2007).

Forest in relation to climate change can play a role as carbon sink, carbon storage, as well as carbon source. Deforestation and degradation can increase the carbon source, while a-forestation, reforestation and other planting activities can increase the carbon sink and storage. The emission of the Green House gas, which happened in Land Use, Land Use Change and Forest (LULUCF) sectors in Indonesia come from deforestation (forest conversion for other uses such as agriculture, plantation, residential, mining, regional infrastructure) and degradation (the decrease of forest quality due to illegal logging, fire, over cutting, land clearance by slash and burn and forest clearance (NAPCC 2007).
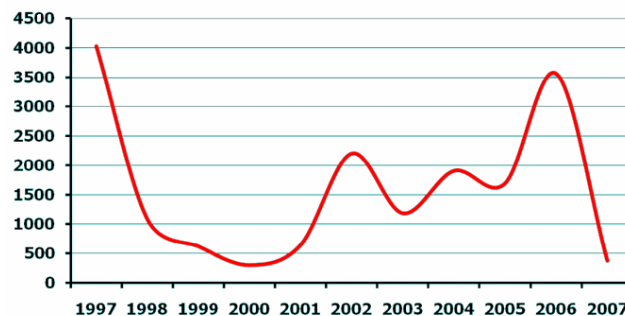
Figure 1.7. The emission of CO2 (ton million) due to forest fire in Indonesia (compiled from Heil *et al.* 2007).
Source: NAPCC 2007

Furthermore in NAPCC (2007), it was stated that the El Nino, which caused the natural condition of dryness, is a factor that triggers forest and land fires in Indonesia. Besides El Nino factor, human factor has also a role in triggering forest fires. Figure 1.5 on page 7 showed the number of hotspots and El Nino during 2002-2007. In general, a relationship described from the figure that linked between El Nino-Southern Oscillation (ENSO) and the number of hotspots in Indonesia. Therefore, a mechanism to forecast the probability of extreme weather through accurate and informative early warning system for the

whole level of community is needed and must be established. The number of forest fires and burnt areas in several regions in Indonesia are shown in Table 1.3.

Table 1.3. The size of burnt areas (in hectares) of reported forest fires in several provinces between 2004-2008

NO	PROVINCE	FOREST FIRE AREA (Ha)				
		2004	2005	2006	2007	2008
1	2	3	4	5	6	7
1	Nangro Aceh Darusalam	-	-	-	24.00	2.00
2	North Sumatera	-	586.00	4,000.12	366.50	70.00
3	West Sumatera	-	-	10.50	16.50	-
4	Riau	-	-	1,106.70	89.75	53.00
5	Riau Island	-	-	-	-	-
6	Jambi	138.40	67.00	1,726.80	81.00	32.50
7	South Sumatera	953.00		1,726.00	41.00	74.00
8	Bangka Belitung	-	-	-	-	-
9	Bengkulu	-	-	-	-	-
10	Lampung	-	-	-	2,532.25	-
11	Banten	-	-	-	-	-
12	DKI Jakarta	-	-	-	-	-
13	West Java	90.00	1.05	5,785.10	372.00	601.82
14	DI Yogyakarta	-	-	-		26.60
15	Central Java	-	-	851.80	-	10.00
16	East Java	1,176.67	588.80	2,018.69	1,821.80	436.50
17	Bali	-	-	4.00	-	-
18	West Nusa Tenggara	-	-	72.00	-	-
19	East Nusa Tenggara	13.62	657.50	797.75	1,415.82	-
20	West Kalimantan	-	4.00	85.00	-	200.00
21	Central Kalimantan	-	-	15,366.44	-	-
22	South Kalimantan	-	-	946.50	25.00	-
23	East Kalimantan	302.00	102.00	594.10	11.70	-
24	Gorontalo	-	-	-	-	-
25	North Sulawesi	-	-	-	-	20.00
26	Central Sulawesi	-	-	33.00	-	-
27	West Sulawesi	-	-	-	-	-
28	South Sulawesi	84.30	82.00	470.70	-	16.75
29	South East Sulawesi	-	-	185.00	-	13.00
30	Moluccas	-	-	52.00	-	-
31	North Moluccas	-	-	-	-	-
32	Papua	-	-	-	-	-
	Ket: (-) tidak ada data					

Source: Directorate General Forest Fire Control, MoF 2008

At the species level, the impacts of human activities such as poaching, illegal trade of fauna, habitat destruction, over exploitation, illegal logging and forest clearance as well as the introduction of alien species, placed Indonesia as a country with long list of species that are threatened with extinction. The list includes 140 species of birds, 63 species of mammals (IUCN 2008), and 21 species of reptiles. About 382 species have been listed in the conserved species in Indonesia, and it is predicted that this number

will increase as a consequence of an increasing number of threats to the conservation of various species in Indonesia (SoER Indonesia 2007).

The level of threatened species was studied by the International Union for Conservation of Nature and Natural Resources. In the case of bird taxa, the data used are based on the study of BirdLife International. The result of the study on a particular species was prioritized based on the level of threat from low to high categories: vulnerable-VU, endangered-EN, and critically endangered (CR).

Table 1.4. Change of Status of bird species in Indonesia

IUCN Threaten Criteria	Year		
	2004	**2007**	**2008**
(Vulnerable – VU)	73	71	69
(Endangered – EN)	31	32	33
(Critically Endangered – CR)	17	16	16
Total	121	119	118

Source: Burung Indonesia, 2009 processed from BirdLife International data 2008

The data on Table 1.4 shows the changes on the level of threat of bird taxa in Indonesia. In total, there is a decline in the total number of species in the list of threatened species, i.e. from 121 bird species in 2004 to 118 bird species in 2008. However, this decline did not always *mean* the decrease of the number of the threatened species, but would happen due to the change on the taxonomical and nomenclatural status of the species. The changes on the number of the threatened species caused by: (a) taxon/taxa merger; (b) decreasing status; (c) increasing status; and (d) taxon/taxa split. On the other hand, the threatened status of species due to the increasing of threat status (not due to the change of its nomenclature) was increased to *Aepypodiusbruijnii* (from Vulnerable-VU in 2007 to Endangered (EN) in 2008) and Kareo Talaud (*Amaurornismagnirostris*) start to be in the list as Vulnerable-VU in 2007.

In 2004, there were 121 threatened species, but in 2007 there was a decline where in total became 119 species (Table 1.4). The differences were caused by; (a) Lumping of taxa, which made the loss of bird species listed in 2007, i.e. Remetuk Biak (*Gerygone hypoxantha*) EN. It was previously assigned as a species, but in 2007, this taxon was merged to sub species of *Gerygone magnirostris* with Least concern (LC) status; (b) The reduction of status which also excludes taxa listed in 2007, i.e. Tiong-lampu ungu (*Eurystomus azureus*) VU, Sikatan damar (*Ficedula henrici*) VU, Gelatik Timor (*Padda fuscata*) VU, Undan paruh-totol (*Pelecanus philippensis*) VU and Merpati-hitam Timor (*Turacoena modesta*) VU. According to the result of BirdLife International work in 2007, the status of those species became NT and was excluded from the list of threatened bird species in Indonesia, (c) The increase of the status made a "new" species listed in the threatened species in 2007, i.e. Kareo Talaud (*Amaurornis magnirostris*) (listed with VU status); and (d) The split of the taxa to several species also affects and adds "new" list of the threatened species in 2007 list, such as Poksai Sumatera (*Garrulax bicolor*) VU. The result of the BirdLife International in 2007 evaluation that followed Collar (2006), split *Garrulax leucolophus* to *G. leucolophus* with LC status and *G. bicolor* with VU status, Elang Flores (*Spizaetus floris*) with EN status. The result of the BirdLife International team evaluation in 2005 followed Gjershaug *et al.* (2004) split

Spizaetus cirrhatus to *S. cirrhatus* with LC status and *S. floris* with EN status and *Pterodroma sandwichensis* with LC status and *S. floris* with EN status and *Pterodroma sandwichensis* was recorded as new vagrant species to Indonesia with VU status.

The threat to species was also caused by poaching, trading and illegal distribution (SoER Indonesia 2007). As recorded in SoER Indonesia (2007), the result of the investigation conducted by Wildlife Crime Unit/WCU (one unit with Wildlife Conservation Society/WCS, international NGO, counterpart of Directorate General of Forest Protection and Nature Conservation - PHKA) Lampung on poaching, trading and illegal distribution of Sumatran Tiger in Lampung, Bengkulu and southern part of Sumatera (Sumbagsel) had recorded 47 died Tiger since 2003-2006.

Moreover, it was also reported in the SoER Indonesia (2007) that during the period of 2006-2007, 11 Sumatran tigers were killed and their skin/parts had been found traded in Sumbagsel (in detail: 2 tigers in Lampung, 1 in Bengkulu and 8 in South Sumatera). This finding was obtained from direct communication with hunters, collectors, consumers and from the finding reports of the caught tiger hunters. Despite all threats mentioned above, the effort of rehabilitation has been introduced to enhance the target of managing sustainable forest as well as to help mitigating the global climate and to improve the environmental support. In 2006, the size of marginal land in Indonesia (excluding DKI province) was 19,506,487 hectares,while the size outside forest area was 10,690,311 hectares (MoF 2007). Until 2007, 2,077,326 hectares had been planted through Forest and Land Rehabilitation Movement (GERHAN). Indonesia Planting Movement followed by global planting movement and plant care action of 79 million trees (the realization was 73,649,837 trees) and "Woman Action on Planting" with the target of 10 million trees had also taken place. "Planting Movements" has reached 103 million trees and received the award from United Nation Environmental Program (UNEP) in 2008. These efforts continued with "Indonesia Planting 100 Million Trees" that was initiated on 28 November 2008.

At the ecosystem level, conservation efforts are made through the assignment of conservation areas as a place to protect and to conserve biodiversity, i.e. nature reserve, wildlife sanctuary, national park, tourist nature-park, great forest park (Tahura) and hunting park. These efforts were intended to conserve the diversity of ecosystem types in Indonesia under a conservation network. These conservation areas reach 27.968 million hectares that are distributed under 532 conservation units (SoER Indonesia 2007). Figure 1.8 shows the increase in the coverage of conservation areas from 1981 to 2007.

With regard to the effort of managing the conservation areas effectively until 2008, of the whole conservation areas (terrestrial) presented in Figure 1.8, the management plan of 105 conservation units have been approved, 87 unit plans are being approved, and 338 units have not developed their management plans yet.
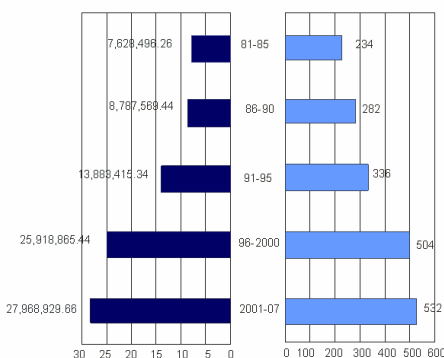
Figure 1.8 Relationship between Coverage of Conservation Area and The Number of Conservation Management Units Established.
Source: Environmental State of Indonesia - SoER Indonesia 2007

At species and genetic level, conservation effort had been carried out through in-situ conservation. The in-situ conservation has played very important roles in managing and protecting wild plants and animals in their natural habitats. Up to 2007, Indonesia (through the Ministry of Forestry) has been placed under protection through Government Regulation (PP) No. 7/1999 fauna namely mammals (70 species), bird (93 taxa), reptiles (31 species), fish (9 species), insects (20 species), Anthozoa (1 species) and Bivalvia (14 species) and conserved flora namely *Araceae* (14 species), *Arecaceae* (1 genus, 11 species), *Raflessiaceae* (1 genus), *Orchidaceae* (27 species), *Nephentaceae* (1 genus), *Dipterocarpaceae* (12 species) . Furthermore, Indonesia has ratified CITES and registered 1053 species of flora and 1384 species of fauna into Appendix I and II of CITES as another effort to control the trade of wild flora and fauna which are nearly extinct.

Table 1.5. Species of Wild Plants and Animals Breed in Captivity in Indonesia (up to 2008)

No	Wild Plant and Animal	Status	Number of Breeder	Number of breeder with permit in process in Ditjen PHKA	Breeding Commodity
1	Reptil	Protected	26	-	*Phyton morulus bivittatus, Chlamydosaurus kinggi, Phyton curtus, Phyton reticulatus*
2	Chrocodile	Protected	22	1	*Crocodylus porosus, Crocodylus novaguineae*
3	Arwana	Protected	124	1	*Scleropagus formosus, Scleropagus jardini*
4	Butterfly	Protected	6	2	*Troides spp.*
5	Rusa	Protected	77	2	*Cervus spp.*
6	Orchid	Protected	12	1	*Orchideae (hybrid)*
7	Bird	Protected	16	5	*Cacatua spp., Sturnus melanopterus, Leucopsar rochschildi*
8	Coral Ornament	Unprotected	33	-	*Acropora spp., Hydnophora rigida, Pociiopora spp., Merulina scabricula,* etc.
9	Molusc	Protected	3	-	*Tridacna spp., Trochus niloticus*
10	Mammals	Protected	97	-	*Macaca*
	Total		416	12	

Source: Directorate Forest Protection and Nature Conservation, MoF, 2008

At the same level, the effort of conservation has also been carried out through ex-situ conservation, a management of biodiversity outside natural habitats to support the in-situ conservation. For the species,

which are threatened to extinct, ex-situ conservation is designed for population recovery through the reintroduction of animals resulted from breeding program into their natural habitats. Meanwhile, for the species that are not threatened to extinct, ex-situ conservation intends to reduce the pressure on the population in the wild due to permanent impact of trading.

In accordance with the Government Regulation (PP) No 7/1999 on Conservation of Plant and Animal Species and Government Regulation (PP) No. 8/1999 on the Use of Wild Plant and Animal Species, efforts of ex-situ conservation include breeding activities, cultivation of medicinal plants and development of conservation institutions such as botanic garden, arboretum, etc. Under these new botanic gardens, the rare and threatened to extinct species of plants, especially those local plants in where the botanic garden occurred could be saved.

Table 1.6. Trend of breeding activities until 2008

Year	Breeding		
	Protected Flora and Fauna	Unprotected Flora and Fauna	Total
2006	127	44	171
2007	269	38	307
2008	383	33	416

Source: Directorate Forest Protection and Nature Conservation, MoF, 2008

On plant ex-situ conservation, there are four designated Botanic Gardens (Bogor, Cibodas, Purwodadi and Bali) that are institutionally under the Center for Plant Conservation, Indonesian Institute of Sciences (LIPI) (Sukendar 2007 in Sujiprihati *et al.* 2006). Several local governments allocated some land for ex-situ conservation in form of botanical garden (Table 1.7).

Table 1.7. Existing and planned Botanic gardens in several provinces in Indonesia until 2010

No.	Name of Botanic Garden	District/City	Province
1.	Bukit Sari Botanic Garden	Batanghari & Tebo District	Jambi
2.	Baturraden Botanic Garden	Banyumas District	Central Java
3.	Kuningan Botanic Garden	Kuningan District	Jawa Barat
4.	Balikpapan Botanic Garden	Balikpapan City	East Kalimantan
5.	Katingan Botanic Garden	Katingan District	Central Kalimantan
6.	Sambas Botanic Garden	Sambas District	West Kalimantan
7.	Sungai Lait Botanic Garden	Sanggau District	West Kalimantan
8.	Samosir Botanic Garden	Samosir District	North Sumatera
9.	Liwa Botanic Garden	West Lampung District	Lampung
10.	Batam Botanic Garden	Batam City	Riau Island
11.	Enrekang Botanic Garden	Enrekang District	South Sulawesi
12.	Puca Botanic Garden	Maros District	South Sulawesi
13.	Lombok Botanic Garden	East Lombok District	West Nusa Tenggara
2009			
14.	Solok Botanic Garden	Solok District	West Sumatera
15.	Minahasa Botanic Garden	Minahasa District	North Sulawesi
16.	Kendari Botanic Garden	Kendari City	South East Sulawesi
2010			
17.	Mamuju Botanic Garden	Mamuju Utara District	West Sulawesi
18.	Aceh Botanic Garden	Banda Aceh City	Nangroe Aceh Darussalam

Source: Strategic Plan of the Centre for Plant Conservation – Bogor Botanical Garden, LIPI 2006,

The State Ministry of Environment (KLH) initiated another effort of ex-situ conservation through the development of Biodiversity Park. This Park is developed for protecting genetic resources and will become a place where the collections of local biodiversity are deposited. In 2008, 15 hectares Biodiversity Park for local plants has been built in Central Java in the city of Semarang. In 2009, Biodiversity Park will also be developed in the province of West Sumatra, Lampung, and D.I. Yogyakarta.

(b) Karst Region

Figure 1.9. Photograph of Karst Area in Gunung Kidul, Yogyakarta
Source : MoE, 2008

According to reports of the State Ministry of Environment (KLH) and the Collaborative Environmental Project in Indonesia (CEPI) 2002 in SoER Indonesia (2004), Indonesia has Karst area of about 15.4 million hectares that spread in several regions such as Central Java, East Java, South Sulawesi and Papua. One of the unique Karst regions in Indonesia is Maros Karst area of 30,000 hectares that is located in the Regency of Maros and Regency of Pangkep, South Sulawesi. This karst area is known as the Classic Tropical Zone in which 284 species of plants and more than 103 species of butterfly in Bantimurung (of 103, seven species are endemic) are found in this region. Several species of mammals such as Tarsius, Cuscus and 2 species of bat which play role as the main pollinating agent for approximately 100 plant species have also been reported to occur in this area.

The results of the joint research between scientists from the Research Center for Biology, LIPI and scientists from France between 2001-2003 have added several new species of fauna from Maros. Those new species namely the Cave beetle (*Eustra saripaensis* Deuve, 2002) and Cave *Collembola*, *Pseudosinella maros* (Deharveng and Suhardjono, 2004) were found in one of the caves in the area of Samanggi. Aquatic Isopod, the new species *Cirolana marosina* (Botosaneanu, 2003) has also been found in a small cave in the same area.

Meanwhile, the existence of the new species previously found in Maros such as Crabs cave (*Cancrocaeca*

xenomorpha Ng, 1991), Scorpion cave (*Chaerilus sabinae* Lourenco, 1995), and the Cave beetle (*Mateuius troglobioticus* Deuve, 1990) is no longer known. This critical condition is caused by a small population size that happens in almost all cave fauna. Therefore, a significant effort is required to maintain the integrity of Maros Karst ecosystem and its caves.

 Based on the research result of the Regional Planning and Development Agency (BAPPEDA) and the Natural Resources Conservation (KSDA) of South Sulawesi Province, about 30 caves have been found from estimated 268 caves in these two districts. The caves possess beautiful stalagmite stalactite and part of the cave become bats habitat. In addition, the caves are also the prehistoric sites (source: Ecology Sulawesi)

Karst Regions with their unique biodiversity and landscape are highly vulnerable to damage. Main threat to this ecosystem is the mining activities. Activities from the marble mining and from the mining of raw materials for cement threaten the rich biodiversity, water resources and the karst function as ecosystem stabilizer. Damage in this area will be difficult to be rehabilitated considering this area has low environmental support.

Karst conservation efforts have been conducted through the establishment of a working group called Karst. This working group aims to help the Government in the matters such as formulating management policy for Karst area, coordinating problem solving, inventorying, classification and identification of potential sites of Karst and mapping the Karst region. Government through the Ministry of Energy and Mineral Resources (ESDM) has also issued several guidelines and a list of the management areas for Karst, for example, in the Karst region of Gombong, Central Java (The Minister of ESDM decree No. 1456K/20/MEM/2000) and in the Karst region of Gunung Sewu, Yogyakarta (The Minister of ESDM decree No. 961K/40/MEM/2003). Department of Forestry has also designated some Karst areas as protected areas and national parks such as Maros Karst region in South Sulawesi (SoER Indonesia 2004).

(c) Biodiversity of Small Islands

The island is a landmass that is entirely surrounded by water and not submerged in the highest tide. In the legal definition as stated in the Act No. 27 in 2007, an island is considered as small island (isle) if the area is less than or equal to 2000 km^2. In terms of ecosystems, small islands are considered as an independent ecosystem when the natural boundaries of the sub-ecosystem or habitat characteristics found in the island cannot be clearly separated. Of the estimated 18,507 islands in Indonesia (Samudra, 2006), there are 92 small outer islands (table 1.8), located in the border between Indonesia and other countries (NAPCC 2007).

Small island is an important refuge area for fisherman in the storm. Wetland ecosystems in small islands such as mangrove, coral reef, and sea grass plain are important for local communities especially for traditional fishermen. Small island and its variety of habitats support life of many species such as sea birds, marine mammals, and turtles. However, in the recent time, small islands are the most threatened areas due to climate change. This circumstance worsened with the high activity of natural resources

exploitation in small islands such as mining (sand) and fishing in a destructive manner. On one hand, climate change potentially increases sea level and on the other hand, sand mining can cause small islands sinking (National Strategic Action Plan for Wet Land, KLH 2004).

Table 1.8. List of Small Islands in the Sea of Indonesian Border Regions

No	Province	Sea Border Zone	*Small Island*	*Oriented City*
1	Riau	Riau Island Zone (with Singapore dan Malaysia)	Nipah, Karimun, Nongsa, Sentut , Pelampong	Batam, Tg. Balai Karimun, Kuala Enok
2	Riau	Natuna Island Zone (with Malaysia and China)	Tongkong Malang Biru, Tongkong Berlayar, Damar, Mangklai , Sekatung dan Subiu Kecil	Natuna, Singkawang
3	East Kalimantan	Nunukan Island Zone (with Malaysia)	Sebatik and Nunukan island	Nunukan, Tarakan
4	North Sulawesi	Sangihe – Talaud Island Zone (with Philipina)	Miangas,Kawio, Batubawaikang, Kakarutan, Intata , Marote and Marampit	Tahuna, Manado, Bitung, Beo
5	Papua	Upper Kepala Burung Island Zone (with Palau Country)	Brass, Liki , Bepondi , Fanildo , Fani, Jiew , Budd and Mioussu	Sorong, Manokwari, Biak
6	Mollucas	Leti and Babar Island Zone (with Timor L'este)	Meatimiarang, Maselai, Batarkusui, West Selaru and Asutubun	Atambua, Kupang
7	East Nusa Tenggara	Alor Island Zone (with Timor L'este and Australia)	Dana and Mangudu island	Kupang

Source: Adapted from the MMAF (2002) in NAPCC 2007

According to the Department of Marine and Fisheries, between 2005-2007, Indonesia has lost 24 small islands in the archipelago. Of these 24 islands that sink, three islands located in Nanggroe Aceh Darussalam (NAD), three islands in North Sumatra, three in Papua, five in Riau, two in West Sumatra, one in South Sulawesi, and seven in the Thousand Islands, Jakarta. The majority of submerged small islands caused by seawater erosion that worsened by commercial mining activities. In addition, the tsunami disaster in Aceh in 2004 had also sunk three small local islands (NAPCC 2007).

1.3.2. Status, Trends, Threats and Conservation of Wetland Biodiversity

According to the Ramsar Convention, wetland is "swampy area, brackish, peat moss or the natural or artificial watery area, which is covered by stagnant or regularly or temporarily flows fresh, brackish or salt water, including areas of marine with depth no more than six meters at low tide". Wetland also includes "river side, or coastal zones adjacent to the wetland, and with islands or parts of the sea with depth no more than six meters at low tide and in the wetland" (Presidential Decree no. 48/1991). In this 4th National Report, the description on status, threats and conservation of wetland ecosystems is divided into two categories based on its salinity level: (1) Salt water that includes biodiversity of Marine and Coastal (including mangrove, coral reef, that yet to be a good indicator of biodiversity quality of coastal and sea) and (2) Freshwater that includes biodiversity of natural swamp, lake and river.

1.3.2.1. The Salt Water Biodiversity (Coastal and Marine)

a. Mangrove

Mangrove is a main type of vegetation that protects the tidal region along the subtropical and tropical beaches. With a long coastline that reaches 81,000 km, Indonesia has recorded a very wide mangrove forest that is spread in coastal region in the archipelago, from Sumatra to Papua Island. Directorate General for Land Rehabilitation and Social Forestry (RLPS), in 2000 (in SoER Indonesia 2007) reported that the potential area of mangrove forests is 9,204,840.32 ha. Based on the survey, 2,548,209.42 ha (27%) are in good condition, 4,510,456.61 ha (48%) are in slightly damaged conditions and 2,146,174.29 ha (23%) in damaged condition. Mangrove forest conditions in some provinces in Indonesia in 2006 are summarized in table 1.9 below.

Table 1.9. Area and Conditions of Particular Mangrove Regions in Several Provinces in 2006

No.	Province	BPDAS	Mangrove Zone Condition			Total
			Good (Ha) K& NK	Moderate(Ha) K& NK	Damage (Ha) K& NK	
1	South Sumatera	Musi	208,387.69	350,184.42	1,134,540.00	1,693,112.11
2	Bangka Belitung	Musi	69,224.84	87,238.69	117,229.29	273,692.82
3	West Sumatera	Agam Kuantan				61,534.00
4	North Sumatera	Asahan Barumun	30,826.60	25,368.40	248,854.50	305,049.50
5	Central Java	Pemali Jratun	544	4,034.00	45,611.00	50,189.00
6	Bali	Unda Anyar	1,553.00	161	253.4	1,967.40
7	NTT	Benain Noelmina	10,839.10	21,971.89	7,829.86	40,640.85
8	NTB	Dodokan moyosari	8,471.95	8,128.07	1,756.86	18,356.88
9	West Papua	Memberamo	319,557.00	104,189.00	6,858.00	430,604.00
10	Papua	Memberamo	832,855.00	169,741.00	5,221.00	1,007,817.00
11	Central Sulawesi	Palu - Poso	9,338.86	6,633.21	13,649.49	29,621.56
12	Central Kalimantan	Kahayan	2,258.56	0	28,239.15	30,497.71
13	West Kalimantan	Kapuas	162,222.33	10,949.00	169,428.79	342,600.12
14	North Sumatera	Wampu Sei Ular	37.38	13,951.63	24,618.20	38,607.21
15	East Java	Solo	6,986.27	32,692.41	26,787.62	66,466.30
	T O T A L		1,663,102.58	835,242.72	1,830,877.16	4,390,756.46

Source: River Basin Management Board - BPDAS, Director General RLPS, MoF in 2006 in SoER Indonesia 2007

Major disruption to the mangrove forest is the conversion into settlements, roads, ports, and other infrastructure development. Illegal logging is also a factor that threatens preservation of the mangrove forest, as was happened in Baluran National Park in East Java (SoER Indonesia 2007). In SoER Indonesia (2007), it is also mentioned that the loss of or damage of mangrove forest leads to disappearance of crab, shrimp and fish that live under the mangrove-roots. Population of approximately 200 Bekantan (*Nasalis larvatus*) in the Tabunangen District protected area, Kabupaten Barito Kuala, Central Kalimantan, also threatened by the mangrove area conversion into shrimp and fishpond. The number of mangrove plants that are major food for Bekantan decreases due to the increasing needs of industry and also the use of these plants as source of firewood.

To prevent and reduce damage to the mangrove forest, Director General RLPS, Department of Forestry has undertaken planting effort for rehabilitation of mangrove forest areas in 23 provinces in Indonesia

since 2001 with the total area reached 26,215 hectares. Data of total area of mangrove forest that has been rehabilitated in the period 2002-2006 was presented in Figure 1.10.
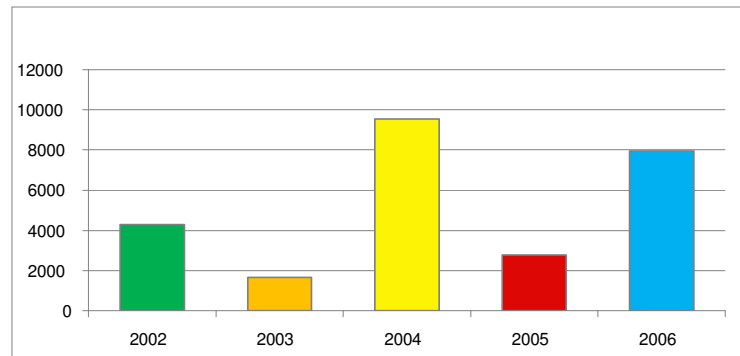
Figure 1.10. Planting Area for Mangrove Forest Rehabilitation Year 2002-2006 (adapted from SoER Indonesia 2007),
Source: Directorate General RLPS, MoF 2006 in SoER Indonesia 2007

Government of Indonesia through the Ministry of Forestry has also made efforts in conservation and management of mangrove through policies and programs, such as preparation of National Strategy on Management of Mangrove Ecosystems (NSMME), National Strategy and Action Plan Management of Wetland – NSAPM Wet Land (2004), Forest and Land Rehabilitation Movement (GERHAN), ratification of the Ramsar Convention on wetland and development of guidelines, criteria, standard procedure in Mangrove Forest Rehabilitation.

Figure 1.11. Mangrove in East Lombok, West Nusa Tenggara
(*Source*: MoE)

(b) Coral Reefs

Coral reefs are complex ecosystems with high biodiversity that are found in shallow waters throughout the tropical regions. Coral reefs support productive fishery as the main source of protein (Bappenas 2004). Based on data collected in SoER Indonesia 2007, it is reported that coral reefs in Indonesia are abundant in the area of the eastern islands of Indonesia, including Bali, Flores, Banda and Sulawesi. In addition, these coral reefs also occur in Sumatra and Java. Indonesia has various types of coral reefs: coral reefs fringe type found along the coast of Sulawesi, Maluku, west and north of Papua, Madura, Bali, and

21

a number of small islands off the west coast and east Sumatra and Thousand Islands (coral reefs fringe the grouped), coral reef barrier, located at the edge of Sunda shelf, the eastern part of Kalimantan and around Togean Islands (Central Sulawesi) and atol as found in Taka Bone Rate in Flores Sea, which is the third largest atol in the world (LIPI 2007, in SoER Indonesia 2007).
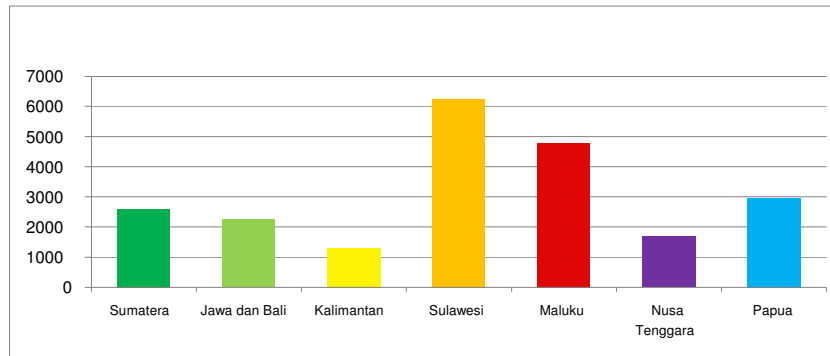
Figure 1.12. Coral Reefs Area in Indonesia Based on Remote Sensing Data (adapted from SoER Indonesia **2006),**
Source: National Space and Aviation Institute (LAPAN), 2006 in SoER Indonesia 2006

Monitoring of coral reefs has been conducted for a long period under the Coral Reef Rehabilitation and Management Program (COREMAP) or Program for Rehabilitation and Management of Coral Reefs. COREMAP is a long-term program initiated by the Government of Indonesia with the goal to protect, rehabilitate, and manage sustainable utilization of coral reefs and its associated ecosystems in Indonesia. COREMAP phase II activities conducted monitoring the condition of coral reefs from 2004 to 2007 which are provided in Figure 1.13.
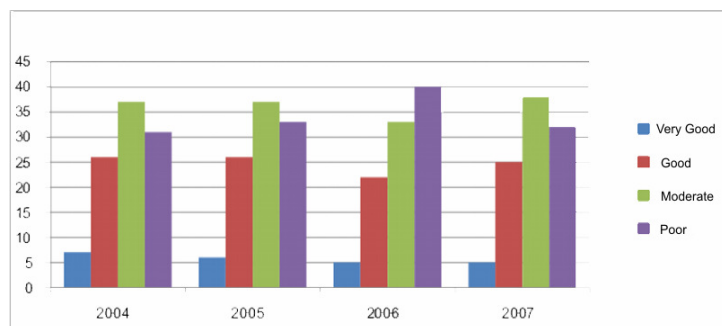
Figure 1.13. Indonesia Coral Reefs Condition in the period 2004-2007
Source: Research Centre for Oceanography, Indonesian Institute of Sciences (LIPI), COREMAP 2005, 2006 (www//kompas.com/compasscetak/0612/18/humaniora/3175322.htm) in SoER Indonesia 2007

The damage rate of coral reefs Indonesia has reached 40% in 2006 (see figure 1.13). The main cause of damage and of the decreased quality of coral reefs is suspected to come mostly from fish catching in inappropriate manner, coral reefs mining and sedimentation. In detail, fishing in a destructive way such as the use of dynamite, the use of toxic cyanide, muro-ami fishing nets technique and destructive fishing net (e.g. Bubu) caused damage to coral reefs. Fishing boats, water sports and tourism activities also contribute to coral reefs damage, through the catch net used for fishing, boat, anchors and disposal activities and walking on the reef as forms of marine tourism activities (SoER Indonesia 2007).

22

To prevent and reduce damage to coral reefs, Government has designated Regional Sea Conservation Area (KKLD) and prospective KKLD (CKKLD) through Department of Marine and Fisheries (MMAF) and the Local Government and the Sea Conservation Regions of the Ministry of Forestry. Detail of marine conservation areas is shown in table 1.10.

Table 1.10. Marine Conservation Area

No	Type of Region	Zone		Area (ha)	
		2006	2007	2006	2007
A. MMAF and Local Governtment Initiation					
1.	Local Marine Conservation Zone (KKLD)	16	28	1,495,969.53	3,281,922.63
2.	Propose Local Marine Conservation Zone (CKKLD)	15	23	1,854,321.94	13,611,823.48
3.	Marine Protected Area (DPL), Mangrove Protected Area (DPM)	27	27	2,085.90	2,085.90
4	Marine Reserve	10	10	453.23	453.23
B. MoF Initiation					
5.	Marine National Park (TNL)	7	7	4,045,049.00	4,045,049.00
6.	Marine Nature Tourism Park (TWAL)	18	18	767,610.15	767.610,.15
7.	Marine Nature Conservation (CAL)	9	9	274,215.45	274,215.45
8.	Marine Wildlife Sanctuary (SML)	7	7	339,218.25	339,218.25
		109	129	8,778,923.45	22,322,378.08

Source: Department of Marine and Fisheries in 2007 in SoER Indonesia 2007

In addition, the government also proposed the program called Coral Triangle Initiative (CTI) on Coral Reefs, Fisheries and Food Security as alternative efforts to prevent and reduce damage to coral reefs in the Indo-Pacific region (including India) which is the center of diversity and abundant in marine ecosystems.

(c) Seagrass

Sea grass is flowering water plant that lives and grows in submerged to merged marine environment. Sea grass plain occurs in the shallow waters of the coastal region that distinguish them from the grassland (Bappenas 2004). Humoto and Moosa (2005) reported that there are 8 genera, and 13 species of sea grass that live in waters along the coast of Indonesia.

The broader sea grass plain in Indonesia is estimated to reach 30,000 km^2 (Kuriandewa, 2003, private communication in the National Strategy and Plan of Action for the Management of Wet Land Indonesia, (NSPAM Wet Land) 2004). Yet of these 30,000 km^2 areas, it is estimated that 10% is already damaged (Kompas, 21 October 2003 in NSPAM Wet Land 2004). Some groups of researchers who had conducted inventory and identification of coral, mangrove and sea grass in Papua reported that sea grass plains also found in Raja Ampat Islands, Cendrawasih Bay, east coast Sorong, and west side Bintuni Bay (McKenzie et al. 2007 in Marshall and Beehler 2007).

Table 1.11. Coverage of Coral Reef, Mangrove and Seagrass in Indonesia, 2008

INDONESIA			
CT Eco-region	Coverage of Coral Reff (HA)	Coverage of Mangrove (HA)	Coverage of Seagrass (HA)
Palawan/North Borneo Ecoregion-Indonesian Area Only	130443,04	476834,06	0
Sulawesi Sea/Makasar Strait	299457,91	418918,86	147301,99
Northeast Sulawesi	65005,83	27161,19	0
Halmahera	134346,02	12243,79	79292,29
Banda Sea	897032,64	228023,04	436534,04
Papua	384592,93	798920,18	286567,01
Lesser Sunda	263317,6	30742,94	229422,74
Western Indonesia (outside Coral Trianggle region)	1392223,59	2636682,08	689772,01
Total Coverage in Indonesia	3566419,56	4629526,14	1868890,08

Source: Carter and Darmawan 2008

Sea grass plain provides shelter and food and important nutrition for marine animal species, including rare mammal Dugong (Tomascik *et al.* 1997). Sea grass plain also plays a role as a connector and buffer between the mangrove and coral reef (Bappenas 2004). In addition to the function previously mentioned, it is also reported in Tomascik *et al.* (1997) and Bappenas (2004) that sea grass plain could help to reduce the strength of waves and sea currents, to separate water and silt sediments, and neutralize sediment in the bottom. The complexity of the habitat increases diversity and number of sea animals. Sea grass on the reef carpet near estuarine precipitate nutrient, filter or hold chemical matrix brought by water to the marine environment. Physically, sea grass plain also functions as a stabilizer of the coastal water and binding offshore free sediments.

Main threat to the sustainability of sea grass ecosystems is sand dredging activities, use of bag nets (trawl), and pollution (NSPAM Wetland 2004). Lack of public awareness caused by insufficient data on sea grass as it is mentioned in SoER Indonesia 2007. Therefore, various government departments and research institutions for example Bakosurtanal had conducted identification, inventory and mapping of sea grass plain and distribution in the coastal areas of Banten and North Sulawesi in 2007.

1.3.2.2. Freshwater Biodiversity

(a) Swamp

Swamp is a source of surface water that is very important to Indonesia. Directorate Management of Water Resources, Ministry of Public Works (MoPW) (2007) mentioned that swamp area in Indonesia reached 33.4 million ha or 20.56% of the total area of land. Data of swamp in several islands in Indonesia are shown in table 1.12. From the available data in the table, the island of Papua has the largest swamp in Indonesia that reach almost 5 million ha with the number of only 84 swamps. Most of the swamps in Papua classified into lebak swamp and most of these swamps have not yet been rehabilitated. Meanwhile, in the islands of Sumatra, Java, Kalimantan and Sulawesi, most of the swamp areas have been rehabilitated.

Table 1.12. Data of Swamp in several Islands in Indonesia in 2007

No	Island	Kind of Swamp	Number of Swamp	Area Potension (Ha)	Area of Reclamation (Ha)	Area of Unreclamation (Ha)
1	Sumatera	Tidal lowland	458	1.997.465	1.423.393	478.799
		Lebak Swamp	454	970.584	464.561	551.538
		Total	**912**	**2.968.049**	**1.878.604**	**1.030.337**
2	Java	Tidal lowland	5	166.490	150.977	15.513
		Lebak Swamp	13	18.461	18.461	0
		Total	**18**	**184.951**	**169.438**	**15.513**
3	Kalimantan	Tidal lowland	390	1.539.615	1.090.708	448.907
		Lebak Swamp	213	424.407	400.379	24.028
		Total	**603**	**1.964.022**	**1.491.087**	**472.935**
4	Sulawesi	Tidal lowland	172	524.374	279.437	244.937
		Lebak Swamp	72	227.815	78.403	149.412
		Total	**244**	**752.189**	**357.840**	**394.349**
5	Papua	Tidal lowland	1	4.216.950	8.655	4.208.295
		Lebak Swamp	83	715.971	44.402	671.569
		Total	**84**	**4.932.921**	**53.057**	**4.879.864**

Source: data recapitulated from the Swamp and Coastal Directorate, Ministry of Public Works (MoPW), 2007, in SoER Indonesia 2007

In addition, Indonesia also has peat swamp. These swamps formed from the accumulation of peat moss material derived from organic remains of plants or natural vegetations from the past. Peat land usually form in the basin or in the depression in the back of the river levee (backswamps), which is always saturated with water because of its obstructed drainage, so that decomposition process occurs very slowly. Recent data estimate that peat swamp and peat land areas are about 13 million ha, depending on the peat definition used (Subagyo *et al.*, 2000, in NSPAM Wetland 2004). It is estimated that Indonesia has the broadest tropical peat swamp peat in the world.

Peat swamp has a very important function in maintaining water management in the area, contains high biodiversity, and functions as carbon storage. Carbon storage function is considered to be very important at this time because of the climate change threat to human life.

Peat swamp provides shelter to many rare species such as Sumatran tiger, Orang Utan, Arowana fish, and Sinyulong crocodile, also as sources of life for the community. In the swamp, there are different types of timber species such as Ramin (*Gonystylus* spp.), Cajuputi (*Melaleuca* spp.), Jelutung (*Dyera costulata*), and Swamp Meranti (*Shorea* spp.) that have high economic values and can be used by communities to support their income.

In NSPAM Wet Land (2004), it is mentioned that the main issues of peat swamp damage is illegal logging, land conversion for residential (resettlement), agriculture and industry (HTI, plantations); and trench/channel construction for both the drainage channels or for transportation of illegal timber logging. Those activities caused degradation of peat environment due to excessive drying (over dry), and a

decrease in peat land (Land subsidence); causing peat swamp become vulnerable to fires, especially in the dry season.

Table 1.13. Total Wetland Area in Indonesia

No	Type	Area (ha)	
		Before 2000[i]	latest
1.	Peat swamp[ii]	20,000,000[iii]	20,600,000[ivv]
2.	Freshwater swamp	11,544,000	4,932,921[vi]
3.	Mangrove forest	4,098.500[vii]	4,390,756[viii]
4.	Coral reef	5,120,000[ix]	5.120,000 (LNA)
5.	Sea grass	3,000,000[x]	3,000,000 (LNA)
6.	Mud/sand land	NA	NA
7.	Lake	774,894 (INA)	2,018.500[xi]
8.	Estuary	NA	NA
9.	River	10,382,400 (INA)	10,382,400[xii]
10.	Freshwater pond	68,531[xiii]	113,131[xiv]
11.	Reservoir/dam	66,596 (INA)	66,596[xv]
12.	Rice field	7,786,755[xvi]	12,343,617[xvii]
13.	Fish/shrimp brackish water ponds	344,733[xviii]	612,430[xix]
14.	Salt ponds	25,383 (INA)	25,383[xx]
	Total	60,360,997	63,605,734

Source: summarized from various sources by Wetland International – Indonesia Program 2000-2007

Notes:
LNA: Latest data not available (using initial data)
NA: No available data
INA: No initial data available or partly available (using latest data)

Reduction of area is not the only indicator to measure damage to peat swamp. Another important indicator is the thickness (volume) of the peat. Results from the CCFPI WI-IP research (Wahyunto *et.al*, 2003 Wet Land NSPAM in 2004) on peat land area in Sumatra within 12 years period (1990 - 2002) shows that although there is no reduction in the area of the wideness, the reduction occurred in the volume of peat that is equivalent to 3.47 billion tons of carbon. This process becomes one of the factors that caused the reduction of carbon reserves in the peat land. Another factor that releases greenhouse gas (carbon) to the atmosphere is forest fire.

Government efforts to manage peatland are made through Presidential Instruction No. 2 of 2007 on Revitalization and Rehabilitation of Sustainable Peat Land, preparation of Sustainable Peat Land Management (2006), and inventorying and characteristics mapping of peat. Peat environment recovery is also done through the canal blocking to improve and maintain the waterfront in peat land area. (NAPCC 2007)

(b) Lake

The lake is a large natural body of water, surrounded by dry land and not related to the sea, except through a river. The lake basin can naturally form from a land engulfment that then water from rain, springs, leakage, and/or rivers deposited. Indonesia has approximately 840 lakes and 735 *situ* (small lakes) around 5000 km^2 (Department of Regional Settlement and Infrastructure - Depkimpraswil, 2003, in NSPAM Wetland 2004). According to Data of the Water Resources Unit, Department of Public Works (MoPW) in 2003, total area of lake was about 2,018,500 ha. The widest lake in Indonesia is Lake Toba (110,260 ha) while the deepest lake is Lake Matano (600 m). Several lakes, especially in the Sumatra, Sulawesi, and Papua have unique flora and fauna. Indonesia has also approximately 162 man-made reservoirs built for agriculture irrigation, water supply, and power plant (Depkimpraswil, 2003, in NSPAM Wetland 2004).

Lake is a very important area to the economy by means of potential tourist destination, transport, and source of drinking water, irrigation, agriculture, fishery, and power plant. The pressure of pollution from industrial activities, agriculture, fisheries, tourism, households, and alien species introduction become the main problems to the lake ecosystem. Many lakes and reservoirs suffer from eutrophication, sedimentation due to erosion, and loss of endemic species due to infestation of invasive species.

In the lake conservation efforts, local governments also play an active role in developing various policies to manage water resources in the region. For example, the Government of Gorontalo Province in 2007 has developed a draft Regulation for the Management of Lake Limboto Region.

(c) River

River is a form of ecosystem that consists of water elements, aquatic life, and land affected by the fluctuation of water level. The existence of rivers affects ecosystem balance in its surrounding area. Rivers play an important role in the hydrological system, through balancing and ensuring the availability of surface water and ground water and maintaining air humidity for comfortable life.

Table 1.14a. Classification and Number of River Region in Indonesia

No	Island/Archipelago	WS across country	WS across Province	WS National Strategic	WS across District/City	WS within District/City	Number of Watershed
1	Sumatera		10	14	18	6	**48**
2	Java-Madura		6	4	10	2	**22**
3	Bali-Nusa Tenggara	2		3	5		**10**
4	Kalimantan	1	2	5	7	3	**18**
5	Sulawesi		8	7	7	1	**25**
6	Moluccas			4	2	1	**7**
7	Papua	2	1		2		**3**
	INDONESIA	**5**	**27**	**37**	**51**	**13**	**133**

Source: processed from the of Minister of Public Works (MoPW) Regulation No. 11 A/PRT/M/2006, in SoER Indonesia 2007

Main River and Small River is a 'vein' of a river catchment area (DAS) ecosystem. DAS is a landlocked region that becomes a unit with rivers and small rivers, which naturally gather, store and stream water derived from rainfall to the lake or sea (Bappenas 2007). Indonesia has around 5590 main rivers and around 65,017 small rivers (Depkimpraswil, 2003, in NSPAM Wetland 2004). Details of the classification and the number of rivers in Indonesia provided in the table 1.15a and 1. 15b below.

Table 1.14b. Number of Watershed in River Region Indonesia

No	Island/Archipelago	WS across country	WS across Province	WS National Strategic	WS across District/City	WS within District/City	**Number of Watershed**
1	Sumatera		85	112	121	17	**335**
2	Java-Madura		45	43	45	12	**145**
3	Bali-Nusa Tenggara	5		24	31		**62**
4	Kalimantan	13	13	23	30	13	**92**
5	Sulawesi		62	49	46	1	**158**
6	Moluccas			5	3	1	**9**
7	Papua	26	5		31		**62**
	INDONESIA	**46**	**210**	**256**	**307**	**44**	**863**

Source: processed from the of Minister of Public Works Regulation No. 11 A/PRT/M/2006, in SoER Indonesia 2007

Hydrological conditions reflect the river ecosystem health. The graph listed in Figure 1.15a and 1.15b below describes some hydrological conditions of some rivers in Indonesia. This hydrological condition is reflected in the value of coefficient of river regimes (KRS), which is a comparison between the maximum debit (Qmax) and minimum debit (Qmin). In both graphs, the hydrological conditions of several rivers such as River Gambus (Tagor Island, Gelang, Deli Serdang, North Sumatera), River Batang Hari (Sarko, Jambi), River Progo (Duwet, Yogyakarta), Bengawan Solo River (Napel, Ngawi, East Java) and the River Cenranae (Ujung Lamuru, Bone, South Sulawesi) are in the bad category. *KRS* Value of these rivers is more than 120. Meanwhile, the hydrological condition for other rivers are still relatively good, with KRS value being less than 50.
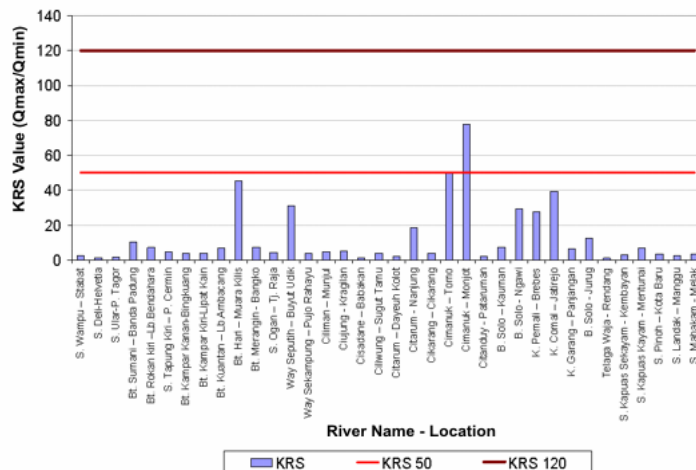
Figure 1.14a. *KRS* **Value of several rivers in Indonesia in 2005.**
Source: Calculated from Annual Data of River Debit, 2005, Research and Development Center for Water Resources, MoPW, 2007.
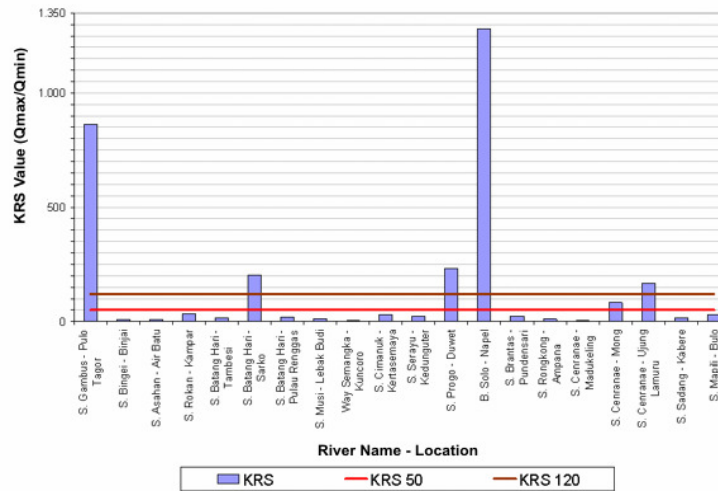
Figure 1.14b. *KRS* **Value of several rivers in Indonesia in 2005.**
Source: Calculated from the Environmental Statistics of Indonesia, BPS Statistics indonesia, 2007.

The bad KRS values in some rivers (in the picture 1.14a and 1.14b) are caused by land or ecosystem damage to the river catchment area (DAS) that naturally functions to gather, store and stream rain water and caused by the excessive extraction of ground water that also affects the volume of river water. Figure 1.15. (Adapted from Bappenas 2007) shows the data of water volume in several rivers in 2005. From the figure, most of the listed has water volume of less than 10 billion m^3.
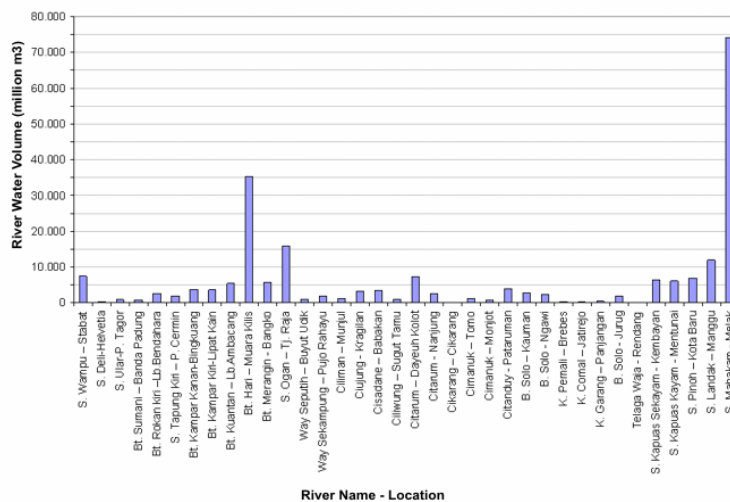
Figure 1.15. Volume of water (in million m^3) some rivers in Indonesia in 2005.
Source: Calculated from Annual Data Debit River, 2005, Center for Research and Development Water Resources, MoPW, 2007, in Bappenas 2007, page 37.

Another causes of damage to river ecosystems that result in death of various species plants and animals is pollution that affects water quality in major rivers in Indonesia (see Bappenas 2007; 37). In the "National Analysis on Natural Resources and Environment ", it is reported that main rivers in the center of population and industry such as in North Sumatra, Lampung, West Java, Yogyakarta and East Java are

29

seriously polluted .

Local governments such as in Province of DKI Jakarta, North Sulawesi and East Java have undertaken responses to rehabilitate river ecosystem. Industrial relocation of almost all processing industries outside of Jakarta is one of the efforts to protect the highly polluted Ciliwung River, Provincial Government in North Sulawesi has set up an academic institution and draft on "local government regulation (Perda) for Tondano watershed management", meanwhile the Government of East Java Province also prepared draft on local government regulation (Ranperda) on Water Quality Management and Air pollution Control in East Java as replacement for Regulation No. 5/2000 on Air Pollution Control in the East Java Province.

At national level, efforts to improve watershed conservation and water quality have been conducted by the Ministry of Forestry through Re-planting Movement (Gerhan) along the watershed, the State Ministry of Environment through Clean River Program (Program Kali Bersih) and Letters of Statement of Clean River or *Kali Bersih* (Superkasih) and by the Department of Public Works through program management of household waste and waste management of small businesses (SoER Indonesia 2004).

1.4. Implications of Biodiversity Loss

More than 6000 species of flowering plants (wild or cultivated) used for food, clothing, shelter and medicine as well as marine biological resources, animals and microbes. The community has long recognized and exploited biological resources for the purpose of their life day-to-day treatment and in the process of making food (SoER Indonesia 2007). Damage or the loss of biodiversity includes genetic diversity, species and ecosystem impacts on economic and social conditions of the community. Various studies on economic and social impact due to the loss or destruction of biodiversity in Indonesia have been conducted. In this sub-section 1.4., several examples of cases of direct and indirect implications of biodiversity loss to economic and social disasters in Indonesia are reported.

1.4.1. Economic Implications

An estimated number of 40 million Indonesians living in rural areas depend their subsistence needs to the biodiversity around them. Studies that have been conducted in Riau Islands in 1997 (in SoER Indonesia 2007) indicated that economic value of fishery-related ecosystem is about U.S. $ 3858.91 per hectare per year (Kompas, 21 October 2003 in NSPAM Wetland 2004).

On the other hand, forest biodiversity also provides a variety of both "goods" and "services", from the results of timber and non-timber that generate significant income to the State (Table 1.15), to play an important role in the mitigation of climate change as carbon storage. At the same time, forest provides source of life and employment for millions of people, thus forest biological diversity plays an important role in economic, social and cultural life in many local communities.

Table 1.15. Export of Forest Product Period January - March 2008

Commodity	Country Destination	Jan		Feb		March		Jumlah	
		Vol (kg)	Value(USD)	Vol (kg)	Value(USD)	Vol (kg)	Value(USD)	Vol (kg)	Value(USD)
Natural Honey	Singapore	161	1260	22762	64149	242	125	23165	65534
Gum, wood or sulphate turpentine oils	India	326400	254592	244630	189796	339997	270459	911027	714847
Rosin & resin acids	Japan	76800	53760	111600	81780	75600	57150	264000	192690
Rosin & resin acids	India	671999	475256	883199	620124	383999	287604	1939197	1382984
Gaharu wood chips, in cut, crushed or powdered form	Singapore	128460	218590	340700	216232	155949	179072	625109	613894
Bamboo used primarily for plaiting	Singapore	5237	14928	1035	8187	481	552	6753	23667

Source: Data Export Results First Quarter Forestry in 2008, MoF 2008

Another important economic potential of the ecosystems is the value of environmental services. Kurniawan *et al*. (2008) conducted economic valuation as part of the environmental services (water as a resource, biodiversity, unique natural landscape, nature tourism, archaeological sites and cultural area) in-Maros Karst Regions Pangkep (KKMP) each year using the approach for direct calculation of the direct use value, indirect use value and non-use value. His study indicated the direct value of IDR 1,199,918,615,100, indirect use value of IDR 808,117,741,600, and non-use value of IDR 64,464,730,000. Therefore, total annual economic value of some environmental services in KKMP about IDR 2,072,501,086,700.

Damage to forest ecosystems due to various human activities, such as fire, deforestation and land degradation, destruction of Karst ecosystem by mining activities, and damage to aquatic ecosystems due to the pollution of coastal and river areas and mangrove and coastal areas conversion into fishponds, port and settlement will reduce productivity level of ecosystems that affect local and national income generated from forest and sea products. It could also reduce the economic value of environmental services derived from Karts ecosystems.

1.4.2. Social Implications

Damages that occur directly or indirectly on the biodiversity affect the economy as well as the socio-economic life of local communities such as increasing poverty and decreasing level of education and quality of life, and disturbance to human activities (such as trade and transport). On the one hand, depletion of biological resources accompanied by the increasing demand because of economic growth has resulted in increased production cost of biological resources. Consumption by processing industry and population that still increase, directly generate pollutants released to the environment and lead to environmental degradation (Bappenas 2007). Furthermore, the industrial growth also increases pace of urbanization.

In the same report, Bappenas (2007) mentioned that the decreasing productivity in agricultural sectors,

livestock, fisheries and forest industries compared to the manufacturing industry, encourages migration of labour from those four sectors (which is generally lower educated groups) to the city to improve their life. As a result, the population growth in poor urban areas is higher than in rural areas (World Bank 2003). This high level of poverty impacts on environmental degradation (Bappenas 2007).

On the other hand, damage to the mangrove ecosystem which provides a protective green belt to coastal areas, causes the tidal flooding phenomenon or *rob* in the north coast of Java. From the oceanography point of view, the increasing phenomenon influenced meteorological factor and sea characters from both the Indian Ocean and the Pacific Ocean. Case of tidal flood or *Rob* occurred early 2009. Floodwater pool reached 1 m high in Muara Baru and the number of affected areas in North Jakarta was increased compared to the previous year. Tidal flood was not only blocking houses but also delayed a significant number of business activities and transportation. (Detikcom, Sunday (23/12/2007)).

Other social implications arise due to the loss of several outer small islands in the border between Indonesia and other countries due to increasing sea level, sea-water erosion and mining activities. Loss of small islands that are mainly located in the border with other countries would be harmful to Indonesian integrity. The loss of the islands (which determines the national border line with neighbouring countries) will reduce Indonesian sea and land integrity. The occurring problem is utterly necessary to be anticipated due to the possibilities of deposited mineral resources (NAPCC 2007).

However, overall efforts are required as soon as possible to reduce economic and social implications of biodiversity destruction (particularly on the ecosystem level) can only be possible through the increasing communication and coordination among Indonesian biodiversity stakeholders.

Chapter II

Status of National Biodiversity Strategies and Action Plans

2.1. National Biodiversity Strategies and Action Plans

In 1993 the Government of Indonesia, through the National Development Planning Agency (BAPPENAS), produced the Biodiversity Action Plan for Indonesia (BAPI). The document was published prior to the ratification of the UN Convention on Biodiversity (CBD) on August 1st, 1994. BAPI 1993 prioritized in-situ conservation measures, both inside and outside protected areas, and ex-situ conservation, with four main activities as follow :

1) In-situ conservation in national parks and terrestrial areas.
2) In-situ conservation outside protected areas, including forest, wetland and cultivated areas.
3) Conservation of coastal and marine resources.
4) Ex-situ conservation through gene and seed banks, protection of plant varieties and breeding programs.

In 2003, the Government of Indonesia updated the BAPI by developing a new national biodiversity strategy and action plan named " *Indonesian Biodiversity Strategy and Action Plan* (IBSAP)". In this document, the action plan is focused to achieve five goals as follow:

1) To encourage changes in attitude and behavior of the Indonesian individuals and society, as well as, the existing institutions and legal instruments, to be more concerned with conservation and utilization of biodiversity for the welfare of the community, in harmony with national laws and international conventions.
2) To apply scientific and technological inputs, and local wisdom
3) To implement a balanced conservation and sustainable use of biodiversity
4) To strengthen institutions and law enforcement.
5) To resolve conflicts over natural resources.

Learning from the experience of BAPI 1993, IBSAP was built up through participative process and addressed the current environment issues. Such an approach was aimed at building a greater sense of ownership of all involved stakeholders towards the documents produced, so that the resulting IBSAP document will be morally binding.

The document of IBSAP can be accessed online from the website of Bappenas (www.bappenas.go.id), Biodiversity Clearing House, Ministry of Environment (http://bk.menlh.go.id) and the secretariat of CBD (www.cbd.int/doc/world/id/id-nbsap-v2-p02-en.pdf or
https://www.cbd.int/doc/meetings/nbsap/nbsapcbw-seasi-01/other/nbsapcbw-seasi-01-id-en.pdf).

During the process of IBSAP development, strategies and action plans were not only discussed at national level, but programs were also formulated at regional level. There were six bioregions: Sumatera, Java-Bali, Kalimantan, Sulawesi, Nusa Tenggara, Maluku, and Papua. In the process, regional programs were

then translated into local frameworks that would be the guidelines for the local government to develop their own programs and action plans. An example of this is the action plan of the province of West Java. (www.bplhdjabar.go.id).

2.2. Indication of Targets and Indicators Under the Convention Adopted into IBSAP

Objectives, goals, and indicators under the IBSAP were established prior to the 2010 targets launched through COP 7 (decision VII/30) in 2004, therefore substantial content under the IBSAP does not reflect the 2010 targets, however, the new strategy addresses biodiversity challenges in Indonesia. However, several indicators under the IBSAP apply the indicators under the UNCBD and national indicators for measuring the 2010 target achievement (see Appendix Table 2.1.)

2.3. Contribution of Activities under the IBSAP to the Implementation of the Convention of CBD

1) Implementation of the Articles of the Convention

   Activities under the IBSAP have contributed to the implementation of the articles of the Convention. This can be seen from the implementation of action plans under the IBSAP as shown in the survey result of the implementation of IBSAP (http://bk.menlh.go.id) . Action plans and programs under the IBSAP that are linked to the articles of the convention can be accessed in Appendix Table 2.2.

2) Contribution of programs under the IBSAP to the implementation of *Thematic Programmes and Cross-cutting Issues.*

   Several programs under the IBSAP are identified to apply *thematic programmes and cross-cutting issues* under the convention as shown in Table 2.1. Contribution of action plans under the IBSAP toward the implementation of *thematic programmes* and *cross-cutting issues,* can be seen from the implementation of related action plans. Dry and sub-humid lands biodiversity and Inland waters biodiversity is a thematic programme that is not clearly stated in IBSAP, and climate change is a *cross-cutting issue* that is not incorporated into IBSAP yet. Even though, those programmes are not clearly stated as an independent activity under the IBSAP, they are substantially embedded into the program of biodiversity inventory and management covering various ecosystem types.

IBSAP identified several important *thematic programmes* and *cross-cutting issues*, but not yet identified as a main issue under UNCBD . One of which is conservation of Karts area. Conflict between sustainable use of natural resources and biodiversity management is an example of cross-cutting issue that is not yet clearly stated in the cross-cutting issue under the UNCBD.

Table 2.1. Relationship among activities under the IBSAP and *Thematic Programmes and Cross-cutting Issues* **under UNCBD**

Objectives of IBSAP	UNCBD	
	THEMATIC PROGRAMMES	**CROSS CUTTING ISSUES**
To encourage changes in attitude and behavior of the Indonesian individuals and society, as well as, the existing institutions and legal instruments, to be more concerned with conservation and utilization of biodiversity for the welfare of the community, in harmony with national laws and international conventionst		1. Public education and awareness 2. Ecosystem approach 3. Traditional knowledge, innovations, and practices 4. Impact assessment 5. 2010 biodiversity target 6. Global Taxonomy
To strengthen resources for supporting the development of science, technology and the application of local wisdom for the conservation and sustainable use of biodiversity.	1. Agricultural Biodiversity 2. Marine and Coastal Biodiversity	1. Biological diversity and tourism 2. Sustainable use of biodiversity 3. Economics, trade, and incentive measures 4. Traditional knowledge, innovations, and practices 5. 2010 biodiversity targets.
To reduce and stop the rate of biodiversity degradation and extinction at the national, regional and local levels within the 2003-2020 period, along with rehabilitation and sustainable use efforts.	1. Forest Biodiversity 2. Island Biodiversity 3. Marine and Coastal Biodiversity	1. Ecosystem approach 2. Global strategy for Plant Conservation *3.* 2010 Biodiversity Target *Liability and Redress* 4. Protected Areas.
To empower institutional, policy and law enforcement arrangements at the national, regional, local, as well as at customary level so as to be effective and conducive for the engagement of biodiversity in a synergic, responsible, accountable, fair, balanced and sustainable manner.	1. Agricultural Biodiversity 2. Forest Biodiversity 3. Island Biodiversity	1. Access to genetic resources and benefit-sharing 2. Invasive Alien Species 3. Economics, trade, and incentive measures 4. Ecosystem approach 5. 2010 Biodiversity Target 6. Impact assessment 7. Protected Area 8. Public education and awareness 9. Sustainable use of biodiversity 10. Traditional knowledge, innovation, and practices.
To achieve fair and balance of roles and interests of Indonesian society, as well as to reduce conflict potentials among all relevant sectors in a conducive, synergic, responsible, accountable manner in the sustainable use and conservation of biodiversity		2010 biodiversity target

2.4. An overview of progress made in the implementation of IBSAP

This was the first monitoring and evaluation of the implementation of action plans under the IBSAP that have ever been conducted since the publication of the IBSAP in 2003. The aim of this overview was (1) to evaluate the fulfilment of preconditions for the effective implementation of IBSAP, (2) to identify progress made in the implementation of action plans under the IBSAP and obstacles encountered.

2.4.1. Evaluation of the fulfilment of preconditions for the effective implementation of IBSAP

Under the document, there are several ideal preconditions (see national document of IBSAP 2003-2020, (page 107-111) that should be completed for the effective implementation of IBSAP, some of which are (1) legally binding, (2) open and dynamic, (3) financial and technological resources, (4) institutional arrangement and capacity building, (5) sustainable development and good governance, (6) mechanisms for monitoring and evaluation. To fulfil those ideal preconditions, *ad hoc* team should be established to fulfil minimum precondition. Unfortunately, *ad hoc* team was not established yet, and this resulted in the failure of fulfilling all required preconditions for the effective implementation of IBSAP.

This failure brought some consequences on the implementation of IBSAP as follow:

(1) IBSAP was not legally binding, therefore the implementation of the IBSAP is voluntary. However, this document is still legally used as the main guidance for the Government to develop national programs related to the utilization and conservation of biodiversity under National Development Planning (RPJMN) 2004-2009 that is officially stated in President Instruction (Perpres) No. 7/ 2005.

(2) There is no mechanism available to be used as a tool for monitoring and organizing the implementation of IBSAP, as a result the implementation of IBSAP is not well monitored.

(3) There is no agency or independent institution responsible to organize, monitor, and evaluate the implementation of IBSAP. However, responsibility is expected to be more sector-specific. Related sectors are expected to be responsible for the implementation of related programs under the IBSAP.

Those findings are considered as main obstacles in evaluating the implementation of IBSAP. Obstacles also came from other factors including (1) not all members of stakeholder network listed in the IBSAP document are committed to join the process of evaluation, (2) communication and coordination among network member are not well maintained.

2.4.2. Progress made in the implementation of IBSAP and obstacles encountered.

Survey by using a questionnaire was conducted to record the implementation of IBSAP. Questionnaires were sent to stakeholders that are listed as members of the network under the IBSAP. Information compiled from the returned questionnaires was used to identify the progress of the implementation of IBSAP. Direct data collection was also obtained from consultative meetings with related stakeholders. Compiled information was verified through workshops with contributing stakeholders.

While the report is written, approximately 25 (18.1%) out of 138 surveyed institutions have responded to the questionnaires. Hence, compiled information does not represent the actual progress of the

implementation of IBSAP. This information is still very preliminary, and further work is still needed to obtain more complete information for the IBSAP evaluation.

Below are general pictures of the implementation of IBSAP based on the returned questionnaires. Originally, action plans under the IBSAP 2003-2020 are focused to achieve five objectives as mentioned in sub chapter 2.1. According to phase strategy, IBSAP was planned to be implemented in a sequence (three phases). Phase I (2003) initial and dissemination, Phase II (2004-2008) transitional phase, and Phase III (2009-2020) consolidation of action phase. We are now at Phase II.

Phase I was started by disseminating and increasing capacity of the targeted community about IBSAP. These activities were actually initiated since the development of the document through national and regional workshops involving multi stakeholders from government and non government organizations. This process was followed up with dissemination of printed document of IBSAP to various stakeholders both national and local level. Workshops were also organized to ensure widely owned IBSAP.

In transitional phase, (phase II), the implementation progress of IBSAP is reviewed as follows:
(1). Objective-1: To develop the quality of Indonesian individuals and society who are concerned with the conservation and sustainable use of biodiversity.
There are 12 programs established to achieve the objective-1. These activities can be grouped into several aspects including increasing common understanding and community participation in biodiversity management, protection of indigenous knowledge, education, extension and law enforcement, and guidelines for best business practices. Based on the result of the survey, several programs have been completed and some are still running. These programs are implemented by the Government at various level and non government organizations. However several programs are found to be in the very preliminary stage.

Completed Programs include dissemination of the IBSAP document, development of common perception and understanding about biodiversity; partnership-based conservation area management; development of curriculum and education; and extension. Developing policies and regulations to protect indigenous knowledge is found to be in the process. Several programs are still found in the preliminary stage or still running, one of which is partnership program in biodiversity management.

(2). Objective-2: To strengthen resources for supporting the development of science, technology and the application of local knowledge for the conservation and sustainable use of biodiversity.
There are sixteen (16) programs to achieve objective-2, focused on several issues including scientific research development in biodiversity management, mapping the status and biodiversity problems in various types of ecosystem such as agriculture, germplasm, development funding strategy for IBSAP, facilitating local IBSAP, and sustainable use of biodiversity. From 16 programs, mapping and revising boundaries of Biosphere reserves is the only program still far from complete.

(3). Objective-3: To reduce and stop the rate of biodiversity degradation and extinction at the national, regional and local levels within the 2003-2020 period, along with rehabilitation and sustainable use efforts

Fifteen (15) action programs are designed to achieve objective-3. These programs cover various aspects including prevention, control, and rehabilitation of nature destruction, and improvement in the effectiveness of biodiversity management and protection. From 15 programs, program on designing a compensation system for restructuring the forest industry, and banning of natural forest conversion and mining activities, particularly in the case of existing permits is yet to start.

(4). Objective-4 : To empower institutional, policy and law enforcement arrangements at the national, regional, local, as well as at customary level so as to be effective and conducive for the management of biodiversity in a synergic, responsible, accountable way

Approximately 23 action programs are designed to achieve objective-4. Those programs are grouped into several aspects: environmentally friendly and sustainable economic development, invasive alien species, utilization and protection of germplasm, improving national agricultural productivity, disseminating traditional indigenous knowledge, improving law enforcement, communication of IBSAP document, developing capacity in biodiversity valuation for local government apparatus, enhancement of negotiating capacity, traditional system for biodiversity protection. From 23 action programs, several programs are found to be incomplete, some of them are restructuring forest-based industry and controlling illegal logging and harvesting flora-fauna ; timber harvesting methods from natural forest based on carrying capacity; development of food crops agricultural system based on local agro ecosystem and germplasm diversity of the bioregion, improving law enforcement to protect biosphere reserves.

(5). Objective-5 : To achieve fair and balance of roles and interests of Indonesian society, as well as to reduce conflict potentials among all relevant sectors in a conducive, synergic, responsible, accountable manner in the sustainable use and conservation of biodiversity.

To achieve this objective, six programs (6) were developed by emphasizing on conflict resolution related to biodiversity management. Several activities under this objective were mostly completed including compilation of laws, case studies of conflicts over natural resources, identification of sources of conflicts and development of the guidelines to resolving the problem. Incomplete program was found in establishment of independent arbitrary institution in conflict resolution over natural resources.
Complete information on identification of the progress of IBSAP implementation can be accessed through http://bk.menlh.go.id .

Progress made in the implementation of IBSAP can not be separated from contributing stakeholders both from government and non government organization in implementing IBSAP. This can be seen from various activities recorded from the survey. Several outputs were successfully identified, such as established model of partnership based biodiversity management, published guidelines, database, books,

and regulations both at national and local level about various aspects related to biodiversity protection. Considering all limitations well explained at the previous subchapters, all this is incredible results in achieving the mission of IBSAP.

<div style="border: 1px solid green; background: #d6f0c0;">

IMPLEMENTATION OF IBSAP IN WEST JAVA PROVINCE

West Java Province had developed the Master Plan for Biodiversity Conservation 2003-2020 as guidance for biodiversity management at West Java, which referred to IBSAP 2003-2020. This Master Plan was disseminated to 23 districts at West Java Province, aimed at increasing awareness and involvement of local communities in its implementation.

The followings are several activities had been carried out in accordance to the objectives stated in the IBSAP:

Objective-1: to develop the quality of Indonesian individuals and society who are concerned with the conservation and sustainable use of biodiversity

1. Establishment of the Raptor (Java Hawk-eagle) Center in Panaruban, Subang District and Sea Turtle Management Network in Cipatujah, Tasikmalaya District;
2. Establishment of Pilot project on medicinal plants and nursery of potential native plants managed by local community of Jabranti and Jalaksana in Kuningan District, and pilot project on medicinal plants in Ciwidey, Bandung District;
3. Pilot Project on collaborative/partnership management between the government of West Java Province and local communities in environmentally sound crab farming in Cirebon District, environmentally sound fishpond in Legon Kulon- Subang District; *Tukik* (sea turtle hatchling) conservation site in Cipatujah-Tasikmalaya District;
4. Stipulation of local regulation and governor regulation regarding Protected Area Management;
5. Development of six modules on Insight in understanding the development of Environmental Management
6. Development of the practical guideline for biological-based evaluation of river quality and technical guideline for bio-monitoring of biodiversity;
7. Training on bio-monitoring of biodiversity for tutors of environmental management and biodiversity managements in 23 districts;
8. Master Plan for green sea turtle ecotourism in Pangumbahan beach, Sukabumi District; strategic plan on integrated coastal management in Sukabumi District; Action Plan for Conservation of West Java Fauna Identity -"*Macan Tutul* (Javan Leopard)"; Layout design for Arboretum in Karangkitri camping ground, Bekasi District

Objective-2: To strengthen resources for supporting the development of science, technology and the application of local wisdom for the conservation and sustainable use of biodiversity

1. Monitoring of river quality by using macro-invertebrates as biological indicators in Citarum, Ciliwung, and Cimanuk rivers;
2. Monitoring of benthic and sediment quality in northern coastal area of West Java;
3. Assessment of coral reef management in southern coastal area of Ciamis District;
4. Biodiversity inventory program e.g. biodiversity ATLAS; biodiversity profile; flora and fauna; biodiversity inside Cirompang forest area in Bandung and Garut Districts; wild orchid in Panaruban-Subang District; updating status, distribution, and potential of biodiversity in karst ecosystem
5. Germ plasm conservation and collection program

Objective-4: to empower institutional, policy and law enforcement arrangement at the national, regional, local, as well as at customary level so as to be effective and conducive for the management of biodiversity in a synergic, responsible, accountable, fair, balanced, and sustainable manner
1. Wildlife rescue program in vicinities of a protected area;
2. Traditional wisdoms documentation program in Kampung Naga and Kampung Kuta

</div>

2.4.3. Obstacles Encountered in the Implementation of IBSAP:

Based on the result of the survey, there are several obstacles encountered in the implementation of IBSAP. Obstacles identified to be limited factors in the implementation of IBSAP are as follow:

1) Lack of political will and supports from related contributing institutions

2) Lack of supporting human resources to facilitate the implementation process

3) Lack of communication and coordination among contributing agencies both at local and national level.

4) Lack of supporting data and information to be used as a basis for planning and implementation.

5) Limited available funding source to support the program implementation in the field.

6) Limited supporting facilities to reach "the removed areas", as a result the programs failed to complete the targeted group.

7) Lack of public participation in the program implementation.

2.5. An indication of domestic and/or international funding dedicated to program implementation

Fundraising was conducted by contributing institutions for the implementation of IBSAP, this means that implementation of IBSAP is not only funded from the Government budget (through APBN and APBD), but it is also funded from various funding sources raised by contributing NGOs. Those funding came from private sectors and funding agencies both from domestic and international agencies. (see Table 2.2). Summary of funding sources is as follows:

1) Domestic funding sources: APBN, APBD, NGOs, Private Sectors

2) International Funding Sources: GEF (through implementing agency), UNESCO, bilateral, multilateral, and other international funding agencies.

Source of supporting funding for the implementation of IBSAP shown in Table 2.2.

Table 2. 2. Funding Sources for the implementation of IBSAP

OBJECTIVES OF IBSAP	SOURCES OF FUNDING		
	DOMESTIC		INTERNATIONAL
	GOVERNMENT	NON GOVERNMENT	
Pembangunan kapasitas manusia dan masyarakat	APBN, APBD	Chevron Geothermal Salak	GEF-SGP/MSP, MFP-DFID, UNESCO, Chevron Corporate-NY, Whitley Laing Award, DANIDA, DGIS, Canada Fund, YIF-WB, ZGAP, BodyShop Foundation, 21st Tiger Century, Ford Foundation, EU, CIDA-Canada, World Bank, BLN-Norwegia, TdH Germany SGI-UC Berkeley, Oxfam-Novib, YIF-WB, Rufford Small Grant, Wildlife Trust, Tiger Forever, USAID, CI TNC, WCS BGCI, HSBC
Pengembangan sumber daya, teknologi, dan kearifan lokal	APBN, APBD	SPARK	Wildlife Trust, BEHF, Chevron Corporate, DANIDA, GEF-MSP, EU, CORDAID, IUCN, UNESCO, 21st Tiger Century, USAID, Bodyshop Foundation, Oxfam-Novib MacArthur Foundation, TNC, BGCI, HSBC
Peningkatan konservasi dan rehabilitasi	APBN, APBD	Chevron Geothermal Salak	USAID, Rufford Small Grant. TNC, WWF
Peningkatan kapasitas kelembagaan dan pranata kebijakan pengelolaan	APBN, APBD		BEHF, ZGAP, GEF-MSP, DANIDA, UNESCO, EU, MacArthur Foundation, Pemerintah Belanda, 21st Tiger Century, TNC, WWF, BGCI, HSBC
Peningkatan kapasitas penyelesaian konflik	APBN, APBD		DANIDA, SGP-PTF, UNESCO, USAID, HUMA, Tiger Forever

Source : data extracted from the result of survey the implementation of IBSAP

2.6. Analysis of the Effectiveness of National Biodiversity Strategies and Action Plans.

1) Further work is needed to acquire a deep assessment of the possible impacts of the measures taken to implement IBSAP on the observed changes in the status and trends in biodiversity as discussed in Chapter I.

2) Based on the threats to biodiversity identified in Chapter I, there are eight threats expected to harm biodiversity: increasing rate of population growth; deforestation; forest and land fires; degradation and habitat fragmentation; exploitative consumption/harvest; invasive alien species; climate change; and pollution. Several of those threats have been addressed by IBSAP. However, forest and land fires are not taken into account in IBSAP programs. Climate change was considered as an important threat to biodiversity, however it was not clearly mentioned in action plans under the IBSAP.

2.7. Lesson learned and recomendations

1) Since the mechanism to monitor and organize the implementation of IBSAP was not well established, this brings some consequences on the implementation of IBSAP. Hence, we need to establish an institution that has an authority to develop an appropriate mechanism for monitoring and evaluation, strengthening the stakeholder network, and database development. This database will be set up for open access and contains all information related to the implementation of IBSAP conducted by the contributing network members.

2) Lack of communication and coordination among stakeholders should be tackled and improved for better implementation of IBSAP for more optimal outputs.

3) Limited funds which caused uncertain implementation of IBSAP. Further work is needed to raise new funds, open access for possible funds, and to increase capacity in fundraising.

4) IBSAP may not address the current environmental challenges, therefore deep analysis of the IBSAP is needed including programs and performance indicators.

2.8. The Specific information related to COP 8 Decisions
2.8.1. VIII/5 (Article 8(j) .
Progress in achieving national participation of indigenous and local communities, and associated capacity-building:

1). Report on the implementation of IBSAP (http://bk.menlh.go.id):

- Objective 1: Program 3, 4, 6,
- Objective 4: Program 9

2). Draft of Government Regulation (PP) of forest management

3). Bill (RUU) of protection of traditional indigenous knowledge (initiated by Department of Law and Human Right, Directorate General of Intellectual Property Right

2.8.2. VIII/21 (Marine and coastal – deep seabed)
Several activities are identified to harm species and marine ecosystem:

Direct Causes:

1) Dynamite Fishing

2) Over exploitation

3) Sedimentation

4) Coral bleaching

5) Pollution

6) Coastal Development

Indirect Causes:

1) Increasing human population

2) Inappropriate marine management

3) Poverty

4) Lack of political will

5) Lack of knowledge in understanding the long term value of sustainable use of natural resource.

6) Lack of coordination and collaboration among stakeholders.

2.8.3. VIII/22 (Marine and coastal – IMCAM)

IMCAM implementation :

1. Act No 27/ 2007, regulating the management of coastal area and small islands.
The objectives of the Law are :

a. Sustainable protection, conservation, rehabilitation, utilization, and enrichment of coastal resources and small islands.

b. Establishing the harmony and better collaboration among government agencies both at local and national level in the management of coastal and small island resources.

c. Strengthening the participation of local community and government in establishing fair, balanced, and sustainable management for marine and small island resources

d. To enhance social values, economic, and local culture through local involvement in utilizing marine and small islands resources.

2. Draft of National Strategies for Marine Biodiversity Management

Main strategies for marine biodiversity management are :

a. To conserve marine biodiversity through protected marine area marine, law enforcement, and local participation.

b. To assess and document marine resources, values, utilization, anthropogenic destruction, and how to decrease and overcome the damage.

c. To develop sustainable utilization of marine biodiversity..

3. Sulu-Sulawesi Marine Ecoregion (SSME)

The program focuses on network development for protected marine area, sea turtle conservation, and sustainable fisheries especially for coral fish trading.

4. Bismarck Solomon Seas Eco region (BSSE), MoU Bali, 28 August 2006
The aim of the project is to promote west pacific star turtle conservation, conservation activities, dialogue, stakeholder partnership, and regional and international agreement.

5. **COREMAP (Coral Reef Rehabilitation and Management Program)**.

The project was initiated in 2006 on COP 6 CBD in Bali.

The aim of the project is to protect, rehabilitate, and develop sustainable management of coral reef and related ecosystem in Indonesia. The ultimate goal of the project is to enhance local community welfare living in and around the coastal area.

COREMAP is set up to be implemented in 15 years through three phases with specific objective for each phase:

a. Phase I, Initiation phase (1998 – 2001): to develop a strong foundation for coral reef national frame work;
b. Phase II, acceleration phase (2001 – 2007): to establish appropriate management system for coral reef in selected regions.
c. Phase III, Institutionalized phase (2007 – 2013): Institutionalized and decentralized appropriate coral reef management.

6. **Coral Triangle Initiative on corral reef, fisheries, and food security**

(1) seascapes priority, (2) ecosystem approach, (3) marine protected areas, (4) climate change adaptation, dan (5) threatened species

7. **Marine And Coastal Resources Management Project (MCRMP)**

MCRMP project was started 2002 and completed in 2006. This project was conducted in 15 provinces and 43 districts/cities in Indonesia, including province of North Sumatera (Langkat district, Deli Serdang District , and Asahan district). The aim of the project is to promote sustainable management of marine and coastal ecosystems under local development framework.
Scale of project.
a. Strengthening local capacity to develop sustainable planning and management of marine and coastal ecosystem.
b. To enhance local access on qualified biodiversity database and management
c. To improve work and law enforcement in natural resources management
d. To identify possible appropriate business options for coastal areas.
e. To improve economic level of a certain coastal resident

2.8.4. VIII/28 (Impact assessment)
Regulation and guidance addressing *biodiversity-inclusive environmental impact assessment*, are available as follows:
a. Government Regulation (PP). No 27/ 1999, regulating environmental impact assessment.
b. Strategic environment assessment (KLHS) was established by the Ministry of Environment.
c. Guideline for valuation and environment assessment (covering various aspects: Oceanography, limnology, and biology) was established by The Indonesian Institute of Science.

Chapter III

Sectoral and Cross-Sectoral Integration or Mainstreaming of Biodiversity Considerations

3.1. Players in biodiversity management in Indonesia

In order to protect and preserve the richness of Indonesia's biodiversity, Indonesia had ratified the UNCBD in 1994. As the Party to the Convention, Indonesia has the obligation to achieve the objectives set in the UNCBD. In implementing the UNCBD, The Ministry of the Environment (MoE) is appointed as National Focal Point (NFP). However, in 2006 eight task forces were formed to assist MoE in managing the broad issues of biodiversity. Among the tasks to the Task Force were to monitor the implementation of the UNCBD, to support and to give inputs to MoE as the National Focal Point in formulating policies and to integrate programs related to the implementation of UNCBD, including preparing the National Report, and setting Indonesian position for COP and SBSTTA. Thus far the activities that have been carried out related to the Task Forces are UNCBD program dissemination from MoE to the task forces (Ministry of Marine and Fisheries, Ministry of Agriculture), taxonomy need assessment which was done by Task Force Global Taxonomy Initiative (GTI) and dissemination of COP decisions.

Sectors that are examined in this chapter are the sectors that identified in the IBSAP. In managing biodiversity, especially in implementing UNCBD, the roles of institutions have been identified in IBSAP. Thus, to simplify the study, the sectors/institutions' role were divided into: 1) institutions that have direct relations with the management of natural resources/biodiversity, or that have the role to achieve more than 4 objectives identified in IBSAP, and (2) institutions that do not have direct relations with the management of natural resource/biodiversity, or that have the role to achieve less than 4 objectives identified in IBSAP.

The first group was identified as Ministry of the Environment, Ministry of Agriculture, Ministry of Forestry, Ministry of Marine and Fisheries, local governments, and The Indonesian Institute of Sciences (LIPI). The second group are Ministry of Energy and Mineral Resources, The National Development Planning Agency, State Ministry of Research and Technology/ The Agency For the Assessment and Application Technology-BPPT, Ministry of Finance, Ministry of Home Affairs, Indonesia Central Bureau of Statistics, Ministry of Public Works, Ministry of Justice and Human Rights, Ministry of National Education and Indonesia Investment Coordinating Board**.** This chapter only focuses on institutions that already integrate the biodiversity aspects into their strategic plans.

3.2. The process of integrating biodiversity considerations into sectors.

3.2.1. National Development System in Indonesia

National Development System in Indonesia is designed in the Long Term National Development Plan (RPJPN). RPJPN aimed at the integrated development directions and priorities that will be implemented step by step through National Mid Term Development Planning (RPJM). The implementation of RPJM is translated into strategic plans of each sectors /departments which include vision, missions, objectives, goals, and work plans. Current RPJPN is RPJPN 2005 – 2025, which is referred in drawing up the local RPJP, 5-year RPJM, Sectoral Strategic Planning, and Government Work Planning (RKP).

3.2.2. Integration of biodiversity considerations into the national development plan.

As a country with abundant biodiversity, Indonesia needs to plan the management of biodiversity holistically through comprehensive, effective, and participative strategies and action plans. The strategies and action plans are described in IBSAP which was issued in 2003. IBSAP aims to direct and nationally synergize the formulation of policies and activities related to biodiversity. IBSAP document is expected to be used as foundation for activities related to biodiversity in every sector sustainably, among others through the integration of IBSAP into RPJPN.

Figure 3.1. Integration IBSAP into Indonesian Development Plan.
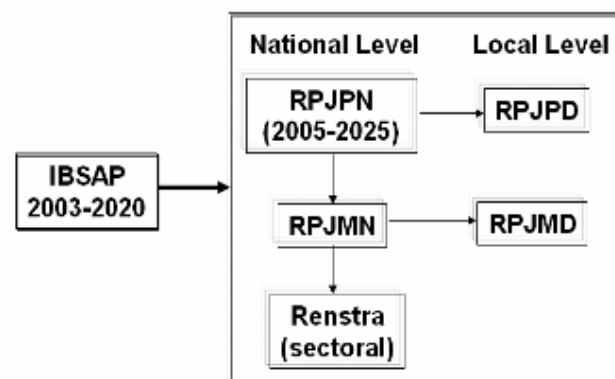
RPJPN : Rencana Pembangunan Jangka Panjang Nasional
(National Long-Term Development Planning)
RPJPD : Rencana Pembangunan Jangka Panjang Daerah
(Local Long-Term Development Planning)
RPJMN : Rencana Pembangunan Jangka Menengah Nasional
(National Mid-Term Development Planning)
RPJMD : Rencana Pembangunan Jangka Menengah Daerah
(Local Mid-Term Development Planning)]
Renstra : Rencana Strategis (Strategic Planning)

Considerations on sustainable use of biodiversity are integrated in one of RPJPN's missions. The mission is reflected in the first, second, third, and the fourth of RPJM, where biodiversity will continuously be preserved and used in order to maintain nation's value added and competitiveness, thus it could increase future national development capital.

Biodiversity as one of Indonesia resources has given significant contribution to development capital and to national gross domestic product and labor creation. However, natural resources including biodiversity are not yet managed in a sustainable way. The increasing threats toward biodiversity has been the focus in RPJM I (2004-2009), which is described in the goals of environmental development, that is preservation and sustainable use of biodiversity as directed in IBSAP 2003-2020. The goals were then detailed into protective and conservative natural resources programs and other related programs. Eight MDGs objectives are also the foundation in designing RPJMN 2004-2009.

3.2.3. Mainstreaming of biodiversity considerations into sectoral strategic planning

In implementing national development plan, each ministry need to design a five-year strategic plan which covers vision, mission, objectives, goals, and sectoral programs. In the context of sectoral and cross-sectoral integration of biodiversity considerations, the grouping of departments/institutions, as previously mentioned, is applied. The first group of institutions have included biodiversity consideration into their strategic plan. In some of institutions, they have integrated biodiversity consideration consistently, reflected from their organizational vision and missions, and even to their programs. However, there is currently no mechanism exclusively designed to ensure whether the implementation of strategic planning contributes in avoiding and reducing adverse impacts on biodiversity. Existing mechanism is generally aimed at monitoring, evaluating and reporting on the performance of the strategic planning.

The Ministry of Marine Affairs and Fisheries has consistently integrated biodiversity consideration. The Ministry has included biodiversity consideration into the Strategic Plans of Marine Affairs and Fisheries 2005 – 2009. The considerations are included in the objectives, goals, programs, and organizational policies. In their vision and missions, the ministry has defined that there should be a sustainable balance between the use and the preservation of biodiversity. The vision and missions are then translated into the ministry's objectives and goals that also included sustainable use and conservation of biodiversity. The objectives and goals were then translated into programs.

One of the programs directly related to the above objective is the conservation and the supervision of marine and fish resources. The program aims to ensure a good quality of maritime and fishery resources by decreasing the use of them. From the above objectives, goals, programs, and policies, it is obvious that the ecosystem approach has been used. As an example, the strategic plan includes fishermen empowerment in order to increase their income and to increase marine contribution to national economy while still conserving the marine and fishery resources.

Another example of complete integration of biodiversity consideration into sectors is from The Ministry of Forestry. Until the end of 2004, the policies, and program activities in the ministry were not only referring to Act No. 41/1999 on Forestry, but also referring to Act No. 5 1990 on Conservation on Biodiversity Resources and The Ecosystem.

In carrying out their role in directing forestry development, The Ministry of Forestry has designed Strategic Plan 2005 – 2009. Among priority policies, there is one policy related with the rehabilitation and conservation of forest resources. Other policy related to the ecosystem approach is empowerment of people's economy within and surrounding the forest areas. The objective of the Strategic Plan is to achieve harmony between forestry development plan with those of other sectors. Thus, vision for forestry development is to achieve forestry management to ensure forest sustainability and to increase community wellbeing equally and sustainably. Mid term priority targets are then defined which include implementation of sustainable forest management as well as development of several self-managed National Parks. The Ministry of Forestry has also defined the mission of forestry development which is to optimize various functions of forests and water ecosystem which cover the function of conservation, protection, timber and non-timber production, and environmental services, in order to achieve a balanced and sustainable social, environmental, cultural, and economic benefits, and to ensure equal distribution of benefit sharing . These goals are in line with the objectives of the Convention and apply the ecosystem approach.

According to its vision, mission, objectives, goals, and policies, The Ministry of Forestry defined 6 (six) forestry development programs 2005-2009 which was integrated into National Mid Term Development Plan (RPJMN) 2004-2009. The main programs with biodiversity considerations are the Use of Forestry Resources Program and Natural Resources Protection and Conservation Program. These programs were then further elaborated into several main activities.

Institutionally, in order to implement sustainable forestry development, a unit under the Ministry of Forestry was created, which is called Directorate General of Forest Protection and Natural Conservation, and several Conservation Bodies of Natural Resources and National Park Offices at the local level. One of the examples of the integration of biodiversity considerations into The Ministry of Forestry's activities are shown in Table 3.1.

Table 3.1. Integration of biodiversity considerations into The Ministry of Forestry's activities.

Objective	Strategy	Target (Strategic)	Indicator (Strategic)	Policy	Programme	Main Activity	Executor
Biological resources and its ecosystem are used based on conservation principle.	Develop and strengthen management of conservation area.	Optimize the management and utilization of conservation area in 200 units of Conservation Area (KSA)/Natural Preservation Area (KPA)	- Decreasing number of illegal logging in 200 KSA/KPA to 90% - Increasing number of private investment in natural tourism to 20% - Population and habitat of rare species are effectively conserved in 200 KSA/KPA. - Management in 200 KSA/KPA is optimized with increasing number of workforce and sectoral income at the minimum of 10% - Up scaling the status of National Park (technical management unit)	Forest resources rehabilitation and conservation.	Natural resources protection and conservation.	- Strengthening management of conservation area in 200 KSA/KPA. - Setting up management planning in 200 KSA/KPA. - Development of regulations to support management of conservation area - Reforming investment regulation of natural tourism.	Directorate General of PHKA, Secretary General, Research and Development Agency

In Strategic Plan 2005-2009, Agricultural Research and Development Agency under The Ministry of Agriculture has defined research and development's vision and missions, objectives and goals. The Strategic Plan focuses at several aspects among others conservation of agricultural genetic resources. The balanced use of biodiversity and sustainability of resources have been considered by the R & D Board of Agriculture by defining sub-programme on research and development on biotechnology and agricultural genetic resources. The main activities under this sub-programme include enrichment, management, the use, and preservation of agricultural genetic resources that include crops, horticulture, spices and medicines, state and agricultural microbe. The conservation consideration is reflected in the strategy of Agricultural Research and Development Agency under the National Commission on Agricultural Genetic Resources in collaboration with Regional Commissions. There are 19 Regional Commissions, including those in North Sumatera, West Sumatera, Riau, Jambi, South Sumatera, Lampung, Banten, Central Java, DI Yogyakarta, East Java, South Kalimantan, Central Kalimantan, West Kalimantan, South Sulawesi, South East Sulawesi and Bali at provincial level, and in Tasikmalaya at city and district level.

Several other agencies under The Ministry of Agricultural, such as R & D Board of Agriculture, Agricultural Quarantine Agency, The Office of Medical and Aromatic Plantation Research have the role in the conservation of genetic resources conservation.

Some work units under the Indonesian Institute of Sciences (LIPI) have core competency related to soil biodiversity (i.e. Biological Research Centre, Centre for Plant Conservation of Bogor Botanical Garden, and Limnologi Research Centre, Technical Development Unit of Plant Conservation Agency-Cibodas Botanical Garden, Purwodadi and Eka-Karya, Bali), and marine biodiversity (i.e. Oceanography Research Centre and Technical Management Unit Balai Konservasi Biota Laut Ambon, Technical Management Unit Loka Konservasi Biota Laut Bitung, Biak, Tual).

Research programmes under LIPI were focused on National Research Agenda and four additional areas as LIPI's priorities including Natural Resources and Environment. Under its main tasks and functions, LIPI has four main activities including Basic Research and Applied Research in biodiversity. LIPI acts as scientific authority in biodiversity and CITES as it has reference collections including living plantations and herbarium, international scale animal specimen as well as microbe. Exploration activities to enrich these collections have been undergoing both funded by the government and in cooperation with other local and international institutions.

LIPI organizes several programmes related to biodiversity i.e. Indonesian Biodiversity Network (NBIN), PROSEA (Plant Resources of South East Asia), and MAB (Man and the Biosphere) Programme Indonesia. NBIN is an integrated agency under the Clearing House Mechanism established by the Ministry of the Environment as the National Focal Point to the biodiversity implementation in Indonesia. PROSEA is an international cooperation programme aimed to document information on plant resources in South East Asia and make available for education, research, industry and end user.

2003-2007 Programme of the Indonesian National Committee for MAB Programme under the Division of Bioscience-LIPI was focused to respond to the challenge of harmonizing biodiversity interest with economic development in local autonomy and reform era.

The second group that have one to three objectives in IBSAP such as The Ministry of Energy and Mineral Resources, National Development Planning Agency, The Ministry of Research and Technology, The Ministry of Finance, The Ministry of Home Affairs, Indonesia Central Bureau Statistics, The Ministry of Public Works, The Ministry of Justice and Human Rights, The Ministry of National Education, and Investment Coordinating Board, have included the environmental considerations into their strategic plans. Some of the integrations are indirectly aimed at biodiversity conservation, and the others directly aimed at natural resources conservation activities. As an example, Ministry of Finance in achieving target on national economy programme has defined attempts to develop foundation for sustainable economic growth by giving priority to education and health sectors as well as to environmental rehabilitation. In the same manner, The Ministry of Energy and Mineral Resources, as stated in its mission, objectives, and strategic goals, urges the actualization of the optimum, effective, efficient, environmentally-sound, and sustainable conservation principles in managing geological resources.

Even though not directly related to biodiversity conservation, other institutions that have indirect relation with the use of natural resources, have also integrated environmental preservation into their strategic plans. The Department has an authority to define a guideline on management and protection of natural resources related to trade sector. However, this authority has not further translated into objectives, targets or programmes of the Department's strategic planning.

Department of Cultural and Tourism in its Strategic Planning on National Cultural and Tourism Development 2005-2009 defined national tourism development targets, including increasing environmental conservation and community empowerment. Nevertheless, The Ministry of Trade and The Ministry of Culture and Tourism are not included as sectors that have the role in achieving IBSAP's objectives.

3.2.4. Mainstreaming of biodiversity considerations into local government coordination

Although not specifically referring to biodiversity conservation, Act No.32/2004 regarding Local Government stipulates that environmental control is under the authority of provincial government for provincial level, and county/city government for county/city level. In relation to local autonomy, each region is responsible for conserving the environment. The tasks for this environmental conservation are under the responsibility of regional vice-governor. Further, environmental conservation should be taken into account in rural development carried out by county/city level and or the third party by involving rural government and rural assembly. Further based on Government Regulation No. 38/2007

regarding Division of Governance among the Government, Provincial Government and Regency/City Government, biodiversity is under the responsibility of all levels of government.

With regard to the form of care from the government towards biodiversity, regencies that have most of the areas as conservation areas, and have a vital role in regional development are designated as conservation regencies. There are several regencies that are designated as conservation district. They are among others conservation districts in Kapuas Hulu, Malinau, Kuningan, and Pasir.

Regional development through the Conservation County is expected to create foundation on sustainable balance use, protection and conservation of natural resources in district area, and to clearly define the local development direction related to natural resources conservation. The development program should be followed by real activities. As Conservation district, every single activity within those regencies should always refer to the principle of the rational and optimum use of natural resources, as well as to environmental conservation. In addition to this, conservation efforts should be carried out to protect ecosystem balance in the county areas, and to avoid activities carried out by other parties, whether they directly or indirectly affect the ecosystem and environmental degradation.

Another form of government care towards rescuing the ecosystem, especially in Sumatra, is the commitment to conduct ecosystem-based spatial planning, restoration of critical areas to protect the life system, protection to the areas that have vital role in the life system, biodiversity, and climate change. This commitment is expected to commence in 2009.

3.2.5. The integration of biodiversity consideration into national strategies and programs.

3.2.5.1. Millennium Development Goals (MDGs)

Eight of MDGs objectives are used as the basis in designing 2004-2009 Mid Term National Development Plan (RPJMN) and RKP. Among the problems and challenges identified in RPJMN in the environmental issue is the vested interest between natural resources economy (mining and forestry) with the environmental conservation. Biodiversity conservation considerations are included in the goals, targets, and indicators of Indonesia MDGs (goal no. 7, target no. 9) which is as follows:

Ensuring environmental conservation with the target to integrate sustainable development principles with national policy and programmes and to restore degraded environmental resources. Indicators used in achieving such targets are:

1. The ratio between tree-covered areas based on Landsat satellite images to total land areas (%);
2. The ratio between tree-covered areas based on total forest area, preservation areas, and conservation areas, including agricultural areas and community forest to total land area (%);
3. The ratio between preservation areas to total land area (%);
4. The ratio between marine protected areas to total land area (%).

3.2.5.2. PNPM Mandiri (National Program on Community Empowerment)

Indonesia has been implementing a policy towards eradicating poverty. The policy is implemented through a program that aims to increase the effectiveness of poverty eradication and workforce creation. The program which is called National Program on Community Empowerment was launched in 2007 by The President of Republic of Indonesia. The main objective of the program is to increase community involvement in the development, to increase community independency, especially to the poor community. The implementation of PNPM Mandiri also aims to help achieve MDGs' targets.

One of the local programs under PNPM Maritime and Fishery is the program of coastal community empowerment, which is integrated with The Ministry of Marine and Fishery' program. Under this program, biodiversity considerations have been included which is the monitoring of marine and fishery resources.

3.2.5.3. United Nations Framework Convention on Climate Change (UNFCCC)

Indonesia had ratified the Climate Change Convention on 1994 and Kyoto Protocol in 2004. Thereby, Indonesia has committed to undertake various activities related with climate mitigations and adaptations. In 2007, a National Climate Change Action Plan was issued.
In the activity of forestry mitigation (included in Land Use Land Use Change and Forestry) during 2005-2009, forestry mitigations were focused on five priority policies. Even though the considerations of conservation and the sustainable use of biodiversity are not directly included, however, among the priority policies, there is conservation related policy, which is land and forest rehabilitation, and forest conservation. This conservation activity aims to increase carbon sequestration and to maintain carbon stock. Forest conservation is also contributing in resilience and adaptability towards extreme climate events.

One of the incentive mechanisms which has been put into trial related to climate change mitigation was to grant a reward to regencies that could protect the vegetation in the conservation area and increase the land coverage. Besides, other positive incentives that support the prevention of forest destruction are also covered in the National Action Plan on Climate Change (RAN PI).

One activity in in climate change adaptation related with biodiversity in 2007-2009 was biodiversity inventory in Indonesia, and preservation efforts towards forest ecosystem. Climate change adaptation agenda included in National Action Plan of Climate Change which is expected to be able to decrease ecosystem pressures, i.e. pollution and excessive utilization of natural resources, so that it could lower system devastation and species extinction.

3.2.5.4. Indonesia National Strategies and Action Plan on Wetland Management 2004

Management of wetlands in Indonesia is heavily intertwined with biodiversity considerations as they are rich with biological content. Thus, the management should be supported by various biodiversity-related laws, among others the Law on Biodiversity Convention, the Law on Bio natural resources and ecosystem, and other related regulations. In order to protect the biological richness and other uses contained in the wetland, the government has identified important wetland areas protected by the nation as conservation areas. This is also reflected in national policy on wetland management as the basis on National Strategies and Wetland Management Action Plan. These policies are also reflecting the use of the ecosystem approach in wetland management in Indonesia.

3.2.5.5. Environmental Impact Assessment (AMDAL)

Biodiversity has been considered in AMDAL. Act No. 5/1990 on Conservation of Biological Resources and its Ecosystem is used in considering types of activities that are requiring AMDAL. These considerations are legally binding through Environmental Ministerial Decree. Sectors that are requiring AMDAL such as mining and energy, health, public works, agriculture, tourism, transmigration and forest-cleared settlement, industries, transportation, trade, defence, nuclear development, forestry, and hazardous control**.** In addition, based on Government Regulation No. 27/1999 on Environmental Impact Assessment and Ministerial Decree No. 08/2006, one of the environmental components that should be evaluated in determining the importance of impact is biodiversity.

3.2.5.6. Strategic Environmental Assessment (SEA)

Biodiversity is considered in SEA implementation, among others in the part of analysis, and in the time when SEA is integrated with the process of spatial regional planning. In the analysis phase in SEA, several analytical frameworks of spatial planning process have been adopted. One of the frameworks is on sustainability and potentials of biodiversity. The analytical framework approach is based on ecosystem with the emphasis that there should be room for protection to maintain the availability of biodiversity as future life reservation.

In the process of integration, in order to ensure that biodiversity considerations are included in the SEA, sustainability principles fulfilment list is used, where the ecosystem borders (small islands, river area, etc.), and wetlands have been identified in the spatial planning. In addition, in the list model of sustainability indicator fulfilment, the position of planning area in the ecosystem should also be identified so that through SEA the region could be harmonized with the regional spatial planning.

3.2.5.7. Incentive Program

There are several incentive programs related with biodiversity preservation, including Kalpataru Program, Kehati Awards, and Towards Green Indonesia Program. Kalpataru is awarded to individuals or group of community that play active roles in environmental conservation efforts. Kehati Awards, which is the initiative of Kehati Foundation (an NGO), is awarded for activities in biodiversity conservation. Towards Green Indonesia Program which is still in the stage of development, is an incentive program to local government with good performance in natural resources conservation, and the government in doing some recovery efforts towards the environmental damages (including the damage of biodiversity).

3.2.5.8. Contribution of biodiversity integration into the implementation of IBSAP

In the IBSAP 2003, many related parties in implementing biodiversity management action plan have been identified in accordance with their tasks and functions (table 3.2).

Table 3.2. Coordination matrix of biodiversity

Objective of Biodiversity Management Action Plan \ Related Parties	KLH	Deptan	Dephut	DESDM	DKP	BAPPENAS	DepKeu	BPPT/Menristek	Depdagri	Depkeh	Depdiknas	BPS	Dep. PU	Pemda	UPI	BKPM	DPR/DPR/D	Universitas	LSM	Polri	KADIN/Swasta	Masyarakat
Objective 1	✓	✓	✓	✓	✓	✓		✓		✓	✓			✓	✓		✓	✓	✓	✓	✓	✓
Objective 2	✓	✓	✓		✓	✓	✓	✓			✓			✓	✓	✓	✓	✓	✓			✓
Objective 3	✓	✓	✓	✓	✓								✓	✓	✓	✓		✓	✓		✓	✓
Objective 4	✓	✓	✓		✓	✓		✓	✓					✓	✓		✓	✓	✓	✓		✓
Objective 5	✓	✓	✓	✓	✓					✓				✓				✓	✓		✓	✓

The Objectives of Biodiversity Management Action Plans

1. To develop the quality of Indonesia individuals and society who are concerned with the conservation and sustainable use of biodiversity;
2. To strengthen resources for supporting the development of science, technology, and the application of local knowledge for the conservation and sustainable use of biodiversity;
3. To reduce and stop the rate of biodiversity degradation and extinction at the national, regional, and local levels within the 2003-2020 period, along with rehabilitation and sustainable use efforts;
4. To empower institutional, policy and law enforcement arrangements at the national, regional, local, as well as at customary level so as to be effective and conducive for the management of biodiversity in a synergic, responsible, accountable, fair, balanced, and sustainable manner;

5. To achieve fair and balance of roles and interests of Indonesian society, as well as to reduce conflict potentials among all relevant sectors in a conducive, synergic, responsible, accountable manner in the sustainable use and conservation of biodiversity.

Based on the coordination matrix concluded from the IBSAP 2003-2020, several ministries have the role in achieving objectives in biodiversity action plan. Based on literature study on several strategic plans identified in IBSAP, the Ministry of Marine and Fisheries, the Ministry of Forestry, and the Ministry of Agriculture have included biodiversity considerations into their strategic plans. The Ministry of Marine and the Ministry of Forestry have also been consistently including biodiversity considerations into their vision, mission, objectives, goals, and programs in their strategic planning. Studies related with the integration of IBSAP objectives into sectoral strategic planning as explained in Chapter II.

From the analysis of sectoral strategic planning, whether it from the first or the second group of institutions, it is observed that not all sectors have integrated biodiversity considerations into their strategic planning yet. However, in the sectors that directly related with natural resources/biodiversity management, the integration of biodiversity into their strategic planning and sectoral program is assumed to give contribution to the status and trend of biodiversity, especially in the marine sector. For example, until 2008 the Ministry of Marine and Fisheries had defined 32 Local Marine Conservation Areas with the total of 3.9 million hectares through Head of Regency Decision. In addition to that, there have been some efforts to manage the conservation areas through the Technical Implementation Units /UPT that already have put in place management plans. Until 2008 there have been 105 conservation areas with approved management plans, while 87 conservation area management plans are not approved.

Chapter IV

Progress Towards the 2010 Target
and Implementation of the Strategic Plan

4.1 Progress towards the 2010 Target

The approach used to evaluate the achievement of the Target 2010 was by figuring out relationship between goals and targets of the 2010 target framework and objectives and programs in line with Indonesian Biodiversity Strategy and Action Plan (IBSAP) and sectoral strategic plan as well. Afterward, the national indicators which were actually just developed in the year 2008, are used to evaluate status of progress.

Considering IBSAP (2003-2020) and the sectoral strategic plans (2005-2009) which already have some targets in line with the 2010 target, then the 2010 target being agreed as the national targets (appendix table 2.1, in Chapter II). For example, the national marine conservation area will be expanded from 4.7 million ha in 2003 to 10 million ha in 2010, and will be increased to 20 million ha in the year 2020.

The availability of data is a key factor for the selection of indicators. In the year 2008 collection of data and information that can be used to assess achievement of the 2010 target using agreed indicators had been started. Data and information collected were data in a range of years 2003-2008 and it was an initial data that need to be up graded in years to come, therefore the current results of the study have not yet reflected the progress of achievement of the 2010 targets. The study has been conducted to figure out the status and trend of biodiversity in terms of achieving the 2010 target, as shown in the table 4.1.

Table 4.1. 2010 BIODIVERSITY TARGET

Legends:

☺ = Increase/better; ☺ = little progress/no change; ☹ = decrease/worsened;

∅ = no available data/insufficient data

Target 2010	National Indicators	Achievement of the Target 2010	REMARKS
Protection of biodiversity components			
Goal 1. Promote the conservation of the biological diversity of ecosystems, habitats and biomes			
Target 1.1: At least 10% of each of the world's ecological regions	a. Increase of conservation areas	☺	See Chapter I, page 15

Target 2010	National Indicators	Achievement of the Target 2010	REMARKS
Protection of biodiversity components			
effectively conserved.	b. Effective management of conservation areas	☺	See Chapter I, page 14
	c. Increase of forest coverage	∅	
	d. Increase of watershed coverage	∅	Trends data not available
	e. Decrease in deforestation rates	☺	See Chapter I, page 7
	f. Decline in the rate of wetland's converting	∅	
	g. Availability of population and distribution trend of flagships species: rhinoceros, elephant, tiger, orangutans, bred eagle, turtle, dugong	∅	Trends data not available
Target 1.2: Areas of particular importance to Biodiversity protected	a. Zoning in conservation areas has been determined	☺	
	b. The most important biodiversity areas in Indonesia have been identified	☺	
	c. Laws to protect important biodiversity areas	☺	
Goal 2. Promote the conservation of species diversity			
Target 2.1: Restore, maintain, or reduce the decline of populations of species of selected taxonomic groups.	a. Trends of population and distribution of flagship species	∅	Data trends not available
	b. Changes in the status of threatened species flagships	∅	
	c. Increase in number of breeding activities	∅	
	d. Enactment of law to terminate unsustainable fishing practices, and coral mining	☺	
	e. number of permits issued for wildlife hunting (pouching)	∅	
Target 2.2: Status of threatened species improved.	a. Trends of population and distribution of threatened species	∅	
	b. Changes in the status of species from threatened to be not threatened	☺	See Chapter I, page 13
	c. Increased number of breeding activities	☺	See Chapter I, page 16
Goal 3. Promote the conservation of genetic diversity			

Target 2010	National Indicators	Achievement of the Target 2010	REMARKS
Protection of biodiversity components			
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.	a. Regulations to protect genetic resources and Traditional Knowledge	☺	
	b. Effective conservation of genetic resources through gene bank, collection of microbes cultures	☺	
	c. Data and information availability on genetic resources	☺	
	d. Documentation of traditional wisdoms related to genetic resources	☺	
Promote sustainable use			
Goal 4. Promote sustainable use and consumption.			
Target 4.1: Biodiversity-based products derived from sources that are sustainable managed, and production areas managed consistent with the conservation of biodiversity.	a. Number of areas that already have certificates	∅	
	b. Non timber forest products certified through FSC or Eco label	∅	
	c. Availability and implementation of methods/approaches for sustainable of products development	☺	
Target 4.2. Unsustainable consumption, of biological resources, or that impacts upon biodiversity, reduced.	a. Number of products that received SFM certificates for Forest Management Right/Concession	☺	
	b. Certification for Organic Farming (for agricultural products) available	∅	
	c. Pesticides residue limits (for agricultural products)	☺	
Target 4.3: No species of wild flora or fauna endangered by international trade.	a. Efforts to see the potential for growth and species (flora / fauna) are threatened by international trade	☺	See Chapter I, page 14
	b. Increased number of breeding activities	☺	See Chapter I, page 16
	c. Number of species/wildlife being traded	∅	
	d. Number of illegal cases on animals and plants trade	☺	
Address threats to biodiversity			
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.	a. Decrease of deforestation rates over natural forest	☺	See Chapter I, page 7

Target 2010	National Indicators	Achievement of the Target 2010	REMARKS
Protection of biodiversity components			
	b. Availability of information on early fire detection (hotspots)	☺	See Chapter I, page 7
	c. Decrease in frequency of forest fire	☺	
	d. Availability of regulation to control pollution in water bodies	☺	
	e. Increase of compliance with regulations on maritime spatial and small islands	∅	No data on increase in compliance
	f. Put into operation of regulation on termination of destructive fishing and coral mining	☺	
Goal 6. Control threats from invasive alien species			
Target 6.1. Pathways for major potential alien invasive species controlled.	There are quarantines and inspection for aliens species in each airport and seaport of entry in accordance with the IPPC pest list	☺	
Target 6. 2. Management plans in place for major alien species that threaten ecosystems, habitats or species.	a. Management plan available for major alien species that threaten ecosystems, habitats or other species	☻	
	b. List of animals and plants of IAS	☺	
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	Inclusion of biodiversity considerations into the RAN PI (the National Action Plan on Climate Change)	☺	
Target 7.2. Reduce pollution and its impacts on biodiversity.	a. Availability of regulations controlling pollution in water bodies	☺	
	b. Regulation on prohibition and permit to the use of pesticides	☺	
	c. Increasing the number of organic agricultural product	∅	
	d. Regulations on controlling land pollution	☺	No organic products certification
Maintain goods and services frombiodiversity to support human well-being			
Goal 8. Maintain capacity of ecosystems to deliver goods and services and support livelihoods			

Target 2010	National Indicators	Achievement of the Target 2010	REMARKS
Protection of biodiversity components			
Target 8.1. Capacity of ecosystems to deliver goods and services maintained.	a. Establishing conservation areas	☺	
	b. Increasing implementation of SFM	∅	
	c. Improve implementation of codes of conduct for responsible fisheries	∅	
	d. Implementing good agricultural practices (GAP) through the use of superior seeds, good planting pattern, IPMI (Integrated Pest Management), the use of irrigation water,	☹	
	e. Availability of regulations on environmental services	☺	
	f. Availability of regulations on management of small islands	☺	
	g. Availability of national Forest resources balance	∅	
	h. Establishment of stakeholders union for protected forest)	∅	
Target 8.2. Biological resources that support sustainable livelihoods, local food security and health care, especially of poor people maintained.	a. Increasing the social forestry program (location, activity, number of farmers' groups)	∅	Achievement not measureable
	b. Availability of ecotourism program	☺	
	c. Improved management of coastal areas and sea-based society	☺	
	d. Increase application of LEISA (Low External Input Sustainable Agricultural)	∅	
	e. Food Diversification Program, Traditional Medicine (Location and Regulations)	∅	
Protect traditional knowledge, innovations and practices			
Goal 9 Maintain socio-cultural diversity of indigenous and local communities			
Target 9.1. Protect traditional knowledge, innovations and practices.	a. There are regulations about the protection of traditional/local knowledge in management of biodiversity	☹	
	b. Availability of database of traditional knowledge	☺	

Target 2010	National Indicators	Achievement of the Target 2010	REMARKS
Protection of biodiversity components			
Target 9.2. Protect the rights of indigenous and local communities over their traditional knowledge, innovations and practices, including their rights to benefit-sharing.	There are regulations on protection of and access to traditional /local knowledge in managing of biodiversity	😐	
Ensure the fair and equitable sharing of benefits arising out of the use of genetic resources			
Goal 10. Ensure the fair and equitable sharing of benefits arising out of the use of genetic resources			
Target 10.1. All access to genetic resources is in line with the Convention on Biological Diversity and its relevant provisions.	a. There are regulations about access and distribution of benefits from the use of genetic resources	😐	
	b. Documentation of genetic resources	🙂	
Target 10.2. Benefits arising from the commercial and other utilization of genetic resources shared in a fair and equitable way with the countries providing such resources in line with the Convention on Biological Diversity and its relevant provisions	a. Number of MTAs in the list of ITPGRFA	😐	
	b. Number of research permits granted for foreigners in the field of genetic resources , specific to the agricultural	😐	
Ensure provision of adequate resources			
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 country Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with Article 20.			
Target 11.2. Technology is transferred to developing country Parties,			

Target 2010	National Indicators	Achievement of the Target 2010	REMARKS
Protection of biodiversity components			
to allow for the effective implementation of their commitments under the convention, in accordance with its Article 20, paragraph 4.			

4.1.1. Initial Study on achievement of each target in the 2010 Target

Based on the table 4.1 (of the 2010 target) more details are provided in the following:

Target 1.1:

From 1981 to 2007, there were increased in area of conservation (picture 1.8 in Chapter I, p. 19). However, from the point of representation of the eco-regions, the distribution of conservation areas have been inadequate, and in terms of the effectiveness, management of conservation area still needs to be improved, considering until the year 2008, of all conservation areas (terrestrial), which is described in the picture 1.8, only 105 units that have approved management plans while other 87 units' management plans are still in approval process. In addition, 338 units do not have management plans at all.

Target 1.2:

Areas of important biodiversity to be protected are to include conservation areas that have been set through regulations. In addition, there was an initiative from non-governmental organizations in identifying areas, such as KBA (Key Biodiversity Area) and IBA (Important Bird Area).

Target 2.1:

It was only available flagships data population, but no data is available on their trends . However, there have been efforts to maintain or to reduce the decline in fish populations and coral reefs through implementation of several regulations related to fisheries and management of coastal regions and small islands. Changes of threatening status of species were supported by the availability of some government regulations to halt the practice of destructive fishing and coral mining.

Target 2.2:

Threatening status is only available for bird species, with trends to decrease from year 2004 to 2008. However, this situation does not yet confirm as a declining trend, because this may be also due to change in nomenclature. Breeding activities, especially for protected species of flora and fauna were tended to increase from year 2006 to 2008. Threatening status is available for birds, with trends declining in the number of threatened species respectively for the years 2004, 2007 and 2008. Decrease of these threatened trends does not always mean decreasing in level of threat because it also may be caused by the change in nomenclature of birds in Indonesia.

Target 3.1:

Conservation of genetic resources has been started through developing regulations on protection of genetic resources, although it is still in draft form, and some government regulations relating to the conservation of genetic resources. Some of the genetic resources were a collection of Centre of

Research and Development of Biotechnology and Genetic Resources of Agriculture. In genetic resources conservation in Indonesia, traditional knowledge and practices are preserved, among others, by developing data base of traditional knowledge on genetic resources of agriculture, forestry and medicines.

Target 4.1:

There have been efforts to manage in sustainable way of biodiversity resources through the application of organic agriculture.

Target 4.2:

Efforts have been made to reduce the consumption of biological resources that are not sustainable, among others, in the provision of a certificate including the SFM for forest products, establishment of SLPHT (Field School of Integrated Pest Control) and SLPTT (Field School of Integrated Crop Management) as well as the determination of the maximum residue limit for pesticides on agricultural products.

Target 4.3:

Efforts have been made to reduce the number of species of flora or fauna threatened by trade through the determination of quota animals and plants that are allowed for trade, and increasing number of breeding activities as well. This is also supported by efforts of the settlement of cases on illegal trade of animals and plants.

Target 5.1:

Indonesia has undertaken efforts to reduce the removal rate and degradation of natural habitats through providing information for forest hotspot, stipulation regulations on pollution control in water bodies and the regulations on the termination of the destructive practice of catching fish and coral mining. Data areas of burned forest were only based on occasions and cases being reported.

Target 6.1:

Indonesia has some Technical Management Units for agricultural and fish quarantine in the seaports and airports in order to control invasive alien species.

Target 6.2:

Management plans at national level against alien species are still under development.

Target 7.1:

There have been efforts to improve the resilience of the biodiversity components to adapt to climate change. The threat of climate change to the biodiversity components especially for agriculture and fisheries has been considered in the National Action Plan for Climate Change.

Target 7.2:

Pollution which affects and threatens biodiversity has been mitigated through enforcement of several laws, such as pollution control regulations in water bodies, land, and the prohibition and permits for the use of pesticides.

Target 8.1:

Efforts to maintain the capacity of ecosystems to provide goods and services have been conducted fairly well through determination of conservation areas, the implementation of good agricultural practices (GAP) through establishment the Field School of Integrated Pest Management (SLPHT) and

the Field School of Integrated Crop Management (SLPTT) in several places, and stipulation of some related laws and regulations. Implementation of Integrated Pest Control in the field is also one of the efforts to support the GAP.

Target 8.2:

There have been efforts to maintain the biological resources that support livelihood (including food security and health) through some programs such as social forestry, ecotourism and management of coastal areas and sea-based society. Social forestry programs were implemented in some regions such as Riau, Jambi, Lampung, Central Java, Yogyakarta, West Kalimantan, and South Kalimantan. Some agro-tourism activities for horticulture, farms and plantations have been conducted in several locations.

Target 9.1:

Regulations to protect traditional knowledge and practices are still a draft. But already there are some rules at local levels. Also there is a database of traditional knowledge.

Target 9.2:

Regulations to protect the rights of indigenous people for their traditional knowledge are still in draft form. However, the implementation of benefit sharing with local communities who own traditional knowledge has carried out through the Plant Variety Protection Office (PVT), Department of Agriculture.

Target 10.1:

Regulations on access to the genetic resources is still a draft, but special genetic resources regulations in the field of agriculture have been stipulated in the form of Decree of Ministry of Agriculture No. 67/2006 on Conservation and the Use of Genetic Resources.

Target 10.2:

Benefit sharing which is achieved through the material transfer agreement (MTA) was performed by Department of Agriculture through Ministerial Decree No. 15/2009 by implementing the Material Transfer Agreement Guidelines.

4.1.2. Obstacles in achieving the 2010 target

Some of the obstacles in achieving the target 2010, including:

1) Lack of dissemination

2) The 2010 target has not yet been mainstreamed into national planning and action

3) The 2010 target has not yet been integrated into the sectoral programs

4.2. Implementation of Strategic Plan

National targets for achieving the Convention Strategic Plan has not been determined yet, however, many national programs have been implemented and might support the achievement of these targets. Some national programs related to the Strategic Plan of the Convention can be seen in Table 4.2.

Table 4.2 Relationship of the Strategic Plan of the Biodiversity Convention and IBSAP, RENSTRA

Strategic Plan of the Convention	IBSAP	National Strategic Plan (RENSTRA)
Target 1.1.	☑	☑
Target 1.2.	☑	☑
Target 1.3.	☑	☑
Target 1.4.		☑
Target 1.5.	☑	☑
Target 1.6.	☑	☑
Target 2.1.	☑	☑
Target 2.2.	☑	☑
Target 2.3.		
Target 2.4.		
Target 2.5.	☑	☑
Target 3.1.	☑	
Target 3.2.		☑
Target 3.3.	☑	☑
Target 3.4.	☑	
Target 4.1.		☑
Target 4.2.		☑
Target 4.3.	☑	
Target 4.4.	☑	☑

Some programs for implementation of the Strategic Plan of the Convention had been carried out (see appendix table 4.1).

By implementing the strategic plan of the Convention, some issues that need to be addressed are:

1) Dissemination

2) Mainstreaming of Strategic Plan of the Convention into national planning and action

3) Integration of the Strategic Plan of the Convention into sectoral programs.

4.3. Conclusion

Based on the results of initial studies on the status, trends, threats and biodiversity conservation, review on the IBSAP, mainstreaming of biodiversity considerations into sectoral programs, and achievement of the target 2010 conducted for the 4th National Biodiversity Report, it shown that the implementation of the Convention began to increase efforts in conservation and sustainable use of biodiversity.

Due to data constraint, especially on biodiversity trends, information gathered in general was only about the status of biodiversity, implementation of IBSAP, and effort in achieving the 2010 target. Trends observed only illustrate the increasing of conservation areas, increasing in number of kind of

flora and fauna being bred as ex-situ conservation efforts, and efforts on ecosystem rehabilitation (mangrove and coral reef). In the IBSAP implementation, gathered information only produces an illustration whether IBSAP programs are being implemented. However, the implementation of IBSAP shows that there has been community involvement in the management of biodiversity, the development of sustainable use of biodiversity, institutional capacity building, and rehabilitation efforts over biodiversity's damage. Meanwhile, study on achievement of the 2010 target indicates that some efforts are being made to achieve these targets. Some of the targets adopted at the national level are similar to the 2010 targets. However, there is no specific target referring to the target 2010. One national target adopted is to increase marine conservation area from 4.7 million ha in 2003 into 10 million ha in 2010, and then will be increased to 20 million ha in the year 2020.

Mainstreaming of biodiversity consideration has been started especially by sectors that have more direct relevance to the management of biodiversity. But it still requires establishing an agreeable mechanisms or arrangement to ensure that sectoral programs and action plans directly contribute to the implementation of the Convention. As the initial effort, establishment of a Task **Secretary,**Force for Biodiversity was expected to bridge the process for establishment of the expected mechanisms.

In order to push sustainable utilization of genetic resources, a bill has been developed on the use of genetic resources and a database has been developed for genetic resources of forest, medicinal plants, horticultural and food crops. In the bill, one of issues addressed is an equal and evenly sharing of benefits from the use of genetic resources.

Constraints in implementing the Convention, among others:
a. Lack of support for the implementation of the Biodiversity Convention.
b. Lack of communication and coordination among stakeholders, especially at local levels.
c. There is no mechanism or setting to ensure that programs and action plans in the sectors should contribute to the implementation of the Convention.
d. Lack of awareness of stakeholders in the implementation of Convention on Biological Diversity
e. Limited effort in monitoring and integrating of data and information that can be used for preparing the policy in the implementation of the Convention.

To be able to implement the Convention Biological Diversity optimally, it is necessary to strengthen capacities:
1. Developing mechanisms to ensure that the programs and plans of action in relevant sectors are in line with implementation of the Convention.
2. Increasing stakeholders' awareness and knowledge on the Convention and their working programs.
3. Mainstreaming the Convention and its programme of work from national to local levels (provincial and district/city)
4. Increasing regional cooperation mechanisms
5. Training and exchange of experience among the Parties to the Conventions

REFERENCES

PP 38/2007 tentang Pembagian Urusan Pemerintahan Antara Pemerintah, Pemerintahan Daerah Provinsi, dan Pemerintahan Daerah Kabupaten/Kota

___, Undang-Undang No.17/2007 tentang Rencana Pembangunan Jangka Panjang Nasional Tahun 2005-2025

___, Undang-Undang No.32/2004 tentang Pemerintahan Daerah

Bappenas (2003), Strategi dan Rencana Aksi Keanekaragaman Hayati Indonesia 2003-2020

Bappenas (2007), Laporan Perkembangan Pencapaian Millenium Developmen Goals Indonesia 2007

Depdag (2004), Rencana Strategis 2004-2009

Dephut (2005), Rencana Strategis (Renstra KL) 2005 – 2009

Depkeu (2006), Buku Rencana Strategis Departemen Keunganan tahun 2005-2009

DepKP (2005), Rencana Strategis Pembangunan Kelautan dan Perikanan 2005 – 2009

KLH (1994), Keputusan Menteri Negara Lingkungan Hidup Republik Indonesia Nomor : Kep-11/ 1994 tentang Jenis Usaha atau Kegiatan yang Wajib Dilengkapi dengan Analisis Mengenai Dampak Lingkungan

PP 27/1999 tentang Analisis Mengenai Dampak Lingkungan

KLH (2006), Permen LH 08/2006 tentang Pedoman Penyusunan AMDAL

KLH (2007), KLHS

KLH (2007). Rencana Aksi Nasional dalam Menghadapi Perubahan Iklim. KLH, Jakarta.

Komite Nasional Pengelolaan Ekosistem Lahan Basah (2004), Strategi Nasional dan Rencana Aksi Pengelolaan Lahan Basah Indonesia

Depbudpar (2005), Rencana Strategis Pembangunan Kebudayaan dan Kepariwisataan Nasional 2005-2009

Deptan (2005), Rencana Strategis 2005-2009, Pusat Sumber Daya Geologi

KLH, Status Lingkungan Hidup Indonesia 2005

KLH, Status Lingkungan Hidup Indonesia 2006

KLH, Status Lingkungan Hidup Indonesia 2007

Sekjen Dephut, Pusat Informasi Kehutanan, Refleksi Pembangunan Kehutanan Indonesia Tahun 2008 dan Rencana Tahun 2009

Dephut, Statistik Kehutanan 2007

Burung Indonesia, Rencana Pemulihan Spesies Elang Jawa, 1998

Burung Indonesia, Rencana Pemulihan Spesies Jalak Bali, 1997

Pedoman Pengelolaan dan Konservasi Biota Laut Duyung dan Habitatnya, Departemen Kelautan dan Perikanan, 2003.

Badan Penelitian dan Pengembangan Pertanian, Departemen Pertanian, 2004, Rencana Strategis Badan Penelitian dan Pengembangan Pertanian, 2005-2009.

Badan Penelitian dan Pengembangan Pertanian, Pusat Penelitian dan Pengembangan Perkebunan, Balai Penelitian Tanaman Obat dan Aromatik , Departemen Pertanian, 2006, Balai Penelitian Tanaman Obat dan Aromatik, 2006-2009.

BAPPENAS, Deputi Bidang Sumberdaya Alam dan Lingkungan Hidup, Direktorat Pengendalian Sumberdaya Alam dan Lingkungan Hidup, 2004. Wilayah Kritis Keanekaragman Hayati di Indonesia: Instrumen Penilaian dan Pemindaian Indikatif/Cepat bagi Pengambil Kebijakan.

BAPPENAS, 2006, Rencana Strategi Kementerian Negara Perencanaan Pembangunan Nasional/Badan Perencanaan Pembangunan Nasional 2005-2009

BAPPENAS, 2007, Analisis Sumber Daya Alam dan Lingkungan Hidup Nasional, Jakarta

Baroto Waluyo, E, Prof. Dr, 2009, Kajian Pengelolaan Keanekaragaman Hayati Bioregion Kalimantan, Pusat Penelitian Biologi, Lembaga Ilmu Pengetahuan Indonesia.

Dahuri, R. 2003. Keanekaragaman Hayati Laut Aset Pembangunan Berkelanjutan Indonesia. Gramedia (akan terbit), Jakarta.

Departemen Dalam Negeri,2004, Rencana Strategis Departemen Dalam Negeri dan Otonomi Daerah Tahun 2001-2004

Departemen Kehutanan, 2008, Rencana Kerja Kementerian/Lembaga (RENJA-KL) Departemen Kehutanan Tahun 2009

Departemen Kehutanan, 2007, Perkembangan Kawasan Konservasi Indonesia, Departemen Kehutanan, Jakarta

Departemen Kehutanan, 2007, Strategi Nasional dan Rencana Aksi Orangutan, Direktorat Jendral PHKA, Departemen Kehutanan Jakarta

Departemen Kehutanan, 2007, Strategi Nasional dan Rencana Aksi Gajah Sumatera & Gajah Kalimantan, Direktorat Jendral PHKA, Departemen Kehutanan Jakarta

Departemen Kehutanan, 2007, Strategi Nasional dan Rencana Aksi Harimau Sumatera, Direktorat Jendral PHKA, Departemen Kehutanan Jakarta

Departemen Kehutanan, 2008. Statistik Ekspor-Impor Hasil Hutan, Ekspor Tumbuhan dan Satwa Liar serta Kontribusi Sektor Kehutanan terhadap PDB Triwulan I, II, III.

Departemen Kelautan dan Perikanan, 2007. Kawasan Konservasi Laut Daerah. DKP. Jakarta

Departemen Kelautan dan Perikanan, 2005, Rencana Strategi Pembangunan Kelautan dan Perikanan Tahun 2005-2009

Direktorat Kerjasama Multilateral, Departemen Perdagangan, 2007. Prosiding Lokakarya Nasional Pengelolaan dan Perlindungan Sumber Daya Genetik di Indonesia

Departemen Pertanian, 2008, Rencana Pembangunan Hortikultura Tahun 2005 – 2009, Direktorat Jenderal Hortikultura

Fauna Flora Indonesia Programme, 2008, Rencana Strategis 5 Tahun Fauna & Flora International – Indonesia Programme (FFI-IP) 2008-2012,

Riswan, S and Yamada I, 2006, A Note on The Progress of Biodiversity research in Indonesia, TRPOICS, The Japan Society of Tropical Ecology.

Samodra, H. 2001. Nilai Strategis Kawasan Karst di Indonesia; Usaha Pengelolaannya dan Perlindungannya [Publikasi Khusus]. Puslitbang Geologi, Departemen ESDM. Bandung.

Samodra, H., Surono dan I. Pratomo. 2005. Grand-Design Pengelolaan Sumberdaya Alam Karst Gunung Sewu [Seri Kars Gunung Sewu, Buku Kelima]. Badan Geologi, Puslitbang Geologi, Departemen ESDM. Bandung.

Kebun Raya Bogor, 2007, Rencana Strategi Pusat Konservasi Tumbuhan - Kebun Raya Bogor, LIPI. (PPKT-KRB-LIPI).

Kementerian Lingkungan Hidup, 2007, Rencana Aksi Nasional Dalam Menghadapi Perubahan Iklim.

Kementerian Lingkungan Hidup, Deputi Peningkatan Konservasi Sumberdaya Alam dan Pengendalian Kerusakan Lingkungan, 2008, Rencana Aksi Pengelolaan Ekosistem Karst Gunung Sewu (Konservasi dan Pengendalian Kerusakan), Tahun 2008-2018, Jakarta.

Kementerian Lingkungan Hidup, 2005. Status Lingkungan Hidup Indonesia Tahun 2004.

Kementerian Lingkungan Hidup, 2006. Status Lingkungan Hidup Indonesia Tahun 2005.

Kementerian Lingkungan Hidup, 2007. Status Lingkungan Hidup Indonesia Tahun 2006.

Kementerian Lingkungan Hidup, 2008. Status Lingkungan Hidup Indonesia Tahun 2007.

Komite Nasional Pengelolaan Ekosistem Lahan Basah, 2004. Strategi Nasional dan Rencana Aksi Pengelolaan Lahan Basah Indonesia.

Kartawinata, K. 2005, Six Decades of Natural Vegetation Studies in Indonesia, Naturindo Publication, Bogor, Indonesia

Kartawinata, K. 2009, Ekologi dan Biologi Vegetasi Alami Cagar Biosfer Cibodas, UNESCO, Jakarta

Kurniawan R, dkk, 2006, Valuasi Ekonomi Jasa Lingkungan Kawasan Karst Maros Pangkep.

Mittermeier et,al., 1997 dalam Badan Perencanaan Pembangunan Nasional. 2003 Peringkat negara dengan keanekaragaman dan endemisme tertinggi di dunia. Dokumen Nasional Indonesian Biodiversity Strategy and Action Plan 2003-2020 (IBSAP). Bapenas. Jakarta

Newman, M.F.,al., 1999. Seri Pedoman Identifikasi Pohon-pohon Dipterocarpaceae (Pulau Sumatera, Kalimantan, Jawa sampai Niugini). Prosea Indonesia. Bogor

Peraturan Menteri Pekerjaan Umum Nomor 11 A/PRT/M/2006 tentang Kriteria dan Penetapan Wilayah Sungai.

Peraturan Pemerintah Nomor 7 Tahun 1999 tentang Pengawetan Jenis Tumbuhan dan Satwa

Peraturan Pemerintah Nomor 8 Tahun 1999 tentang Pemanfaatan Tumbuhan dan Satwa Liar

Peraturan Pemerintah Nomor 21 Tahun 2005 tentang Keamanan Hayati Produk Rekayasa Genetik

Peraturan Pemerintah Nomor 41 Tahun 2006 tentang Perijinan Melakukan Penelitian dan Pengembangan Bagi Perguruan Tinggi Asing, Lembaga Penelitian dan Pengembangan Asing, Badan Usaha Asing dan Orang Asing

Peraturan Pemerintah Nomor 6 Tahun 2007 tentang Tata Hutan dan Penyusunan Rencana Pengelolaan Hutan, serta Pemanfaatan Hutan

Peraturan Pemerintah Nomor 60 Tahun 2007 tentang Konservasi Sumber Daya Ikan

The Nature Conservancy - Coral Triangle Center, 2008, Marine Protected Area Gap Analysis Indonesia.

Undang-Undang Nomor 21 Tahun 2002 tentang Pengesahan Cartagena Protocol and Biosafety to the Convention on Biological Diversity (Protokol Kartagena tentang Keamanan Hayati atas Konvensi Tentang Keanekaragaman Hayati)

Undang-Undang Nomor 4 Tahun 2006 tentang Pengesahan International Treaty on Plan Genetic Resources for Food and Agricultura (Perjanjian Mengenai Sumberdaya Genetik Tanaman untuk Pangan dan Pertanian)

WCS-IP. 2007. Laporan Investigasi di Leuser Wildlife Crime Unit, Bogor

Wetland International-Indonesia Programme, 2004. Sebaran Gambut dan Kandungan Karbon di

Sumatera dan Kalimantan.

---

[i] Most of data was estimated before 2000

[ii] Including peatland asociated with lahan salin dan lahan lebak, dan lahan mineral (gambut tipis)

[iii] Dwiyono & Rahman (1996) dalam Strategi dan Rencana Tindak Nasional Pengelolaan Lahan Gambut Berkelanjutan. Kelompok Kerja Pengelolaan Lahan Gambut Nasional, Departemen Dalam Negri, 2006

[iv] Wahyunto, S. Ritung, H. Subagjo. 2005. Sebaran Gambut dan Kandungan Karbon di Sumatera dan Kalimantan. Proyek Climate Change, Forest and Peatlands in Indonesia. Wetlands International-Indonesia Programme dan Wildlife Habitat Canada, Bogor

[v] Wahyunto, Suparto, Bambang H., dan Hasyim Bhekti. 2006. Sebaran Lahan Gambut, Luas dan Cadangan Karbon bawah permukaan di Papau. Proyek Climate Change, Forest and Peatlands in Indonesia. Wetlands International-Indonesia Programme dan Wildlife Habitat Canada, Bogor

[vi] Sumber Direktorat Rawa dan Pantai, Departemen Pekerjaan Umum, 2007

[vii] Dephut 2002

[viii] BPDAS 2006

[ix] Suharsono (LIPI) dalam COREMAP 2003. Kondisi Terumbu Karang di Indonesia Tahun 2002.

[x] Kuriandewa 2003, komunikasi pribadi dalam Komite Nasional Pengelolaan Lahan Basah 2004. Strategi Nasional dan Rencana Aksi Pengelolaan Lahan Basah Indonesia. Jakarta. Kementrian Lingkungan Hidup. 2004.

[xi] Unit data Sumber Daya Air, Departemen Pekerjaan Umum, 2003

[xii] Direktorat Jendral Sumber Daya Air, Departemen Pekerjaan Umum

[xiii] Direktorat Perikanan Budidaya, Departemen Kelautan dan Perikanan. 1996

[xiv] Ditjen Perikanan Tangkap, Departemen Kelautan dan Perikanan 2005

[xv] Direktorat Jendral Pengairan, Departemen Pekerjaan Umum dalam Puspita, L., E. Ratnawati, I.N.N. Suryadiputra, dan A.A. Meutia. 2005. Lahan Basah Buatan di Indonesia. Wetlands International-Indonesia Programm. Bogor.

[xvi] 2000 Badan Pusat Statistik

[xvii] 2008 Badan Pusat Statistik

[xviii] Direktorat Perikanan Budidaya, Departemen Kelautan dan Perikanan 1996

[xix] Ditjen Perikanan Tangkap 2005

[xx] Puspita, L., E. Ratnawati, I.N.N. Suryadiputra, dan A.A. Meutia. 2005. Lahan Basah Buatan di Indonesia. Wetlands International-Indonesia Programm. Bogor.

Appendix I

Preparation Process of the forth National Report to CBD

Preparation of the forth National Report to the Convention on Biological Diversity had been coordinated by the Ministry of Environment as the National focal Point to the Convention on Biological Diversity with involvement of various government institutions, NGOs and experts in the field of biodiversity. To support preparation of this report the Ministry of Environment established technical and preparatory teams. Technical team consists of representatives from government institutions and NGOs while preparatory team consists of the Ministry of Environment and assisted by experts in the fields of biodiversity from The Indonesian Institute of Sciences (LIPI), The National Planning Agency, PEKA Indonesia Foundation, and MOE's resource persons (widyaiswara).

Steps of the preparation is done within 12 months (July 2008 - May 2009) described as follows:

a. Translation of the Guidelines to Prepare the Forth National Reports provided by the Secretariat of the Convention on Biological Diversity into Indonesian language. This was done to ease the development process of preparing the report.

b. Preparation of the scope of the report refer to the guideline
This began with a launching activity on the preparation of the forth National Report to CBD by the Ministry of Environment as the NFP to CBD to all biodiversity-related stakeholders, to inform the purposes of preparation the forth National Report to the Convention Biological Diversity and the processes of drafting the report.
Further, technical team to set the scope of the report include, among others, the determination of information about the status of biodiversity based on the ecosystem, species and genetic; identification of national indicators for the achievement of the target 2010 in line with global target of CBD, implementation of IBSAP and Sectoral Strategic Plans. In addition, the method for collecting data and information was defined.

c. Inventory data and information required
Carried out by updating information and data from the Third National Reports to the Convention on Biological Diversity and collecting information from various sources, such as the Status of Environmental Report, other government institutions and NGOs

d. Analysis of data and information that has been inventoried by the preparatory team

e. Validation of data and information

This is carried out by requested the technical team to give inputs on the results of analysis of data and information

f. Writing of the report by the preparatory team
In order to verify the report, stakeholders and technical team were invited to give inputs on the draft report

g. Finalization and translation the report into English version by the preparatory team

h. Endorsement by the National focal Point to the Convention on Biological Diversity and printed out the report

i. Submission Report to the Secretariat of CBD

j. Distribution of reports to stakeholders and the SCBD and through Biodiversity Clearing Center publications site (http://bk.menlh.go.id/)

Methods of report preparation:
1. Coordination meetings of all government institutions (Ministry of Agriculture, Ministry of Justice & Human Rights, Ministry of Forestry; The National Planning Agency, The Indonesian Institute of Sciences, Ministry of Marine and Fisheries, Ministry of Energy and Mineral Resources); NGOs (Kehati Foundation; Wetland International-Indonesia Program, TNC; Birds of Indonesia; WCS; Flora Fauna Indonesia; FWI; Conservation International Indonesia; PEKA Indonesia).
2. In particular to gathering information on the implementation of IBSAP programs, questionnaires were circulated to all related government institutions and NGOs, including local governments
3. Mailing list

Reporting Party

Contracting Party	

NATIONAL FOCAL POINT	
Full name of the institution	Ministry of Environment
Name and title of contact officer	Masnellyarti Hilman Deputy Minister for Nature Conservation Enhancement and Environmental Degradation Control
Mailing address	6th Floor, Building A, Jl. DI. Panjaitan Kav. 24 Kebon Nanas Jakarta Timur 13410 Indonesia
Telephone	62-21-85904923
Fax	62-21-85904923
E-mail	nellyhilman@yahoo.com

CONTACT OFFICER FOR NATIONAL REPORT (IF DIFFERENT FROM ABOVE)	
Full name of the institution	Ministry of Environment
Name and title of contact officer	Utami Andayani Assistant Deputy for Biodiversity Conservation
Mailing address	4th Floor, Building B Jl. DI. Panjaitan Kav. 24 Kebon Nanas Jakarta Timur 13410 Indonesia
Telephone	62-21-8517163
Fax	62-21-85905770
E-mail	kehati@menlh.go.id

SUBMISSION	
Signature of officer responsible for submitting national report	
Date of submission	Agustus 2009

Appendix III.1. Progress Towards Achievement of Target Global Strategy For Plant Conservation

Target 1: "A widely accessible working list of known plant species, as a step towards a complete world flora"

Database on plant and animal published online (http://www.biologi.lipi)

Target 2:"A preliminary assessment of the conservation status of all known plant species, at national, regional and international levels"

See page 15 on Government Regulation No. 7/1999 on status of threatened plant

Target 3:"Development of models with protocols for plant conservation and sustainable use"

Target 4:"At least 10% of each of the world's ecological regions effectively conserved

See page 14, 15, 17, 23, 24, 26 on conservation area

Target 5:"Protection of 50% of the most important areas for plant diversity assured"

Target 7:"60% of the world's threatened species conserved in situ"

See page 15 on in-situ conservation of threatened plant species

Target 8 : "60 % of threatened plant species in accessible ex situ collections, preferably in the country of origin, and 10 per cent of them included in recovery and restoration programmes"

1. 230 or 38,98% of 590 plants species listed in IUCN category (2003) has conserved in 4 botanical gardens (Bogor, Cibodas, Purwodadi and Bali). Indonesia has a plan to conserve all of plant species listed in IUCN category in new developed botanical gardens by 2010 to achieve the target that 60 % of threatened plant species be conserved through ex situ collection.

2. Captive breeding of wild plants (see page 15)

3. Recovery program for endangered plant species (*Pinanga javanica* and *Calamus manan*) has been carried out by Bogor Botanical Garden since 2002. 5000 seeds of *Pinanga javanica* has replanted in several sites in Halimun Mountain, West Java Province. In 2006, 1000 seeds of *Calamus manan* has replanted in Bukit Dua Belas National Park. In 2009, *Cinnamomum sintoc* in Java Island and *Amorphophallus titanum* in Sumatera island will be replanted as part of thier recovery program.

4. Reintroduction of 5 plant species (*Calamus manan, Pinanga javana, Arenga pinata, Parkia intermedia, Astonia scholaris*)

5. Since 2003 Indonesia has been established an ex-situ conservation area so called eco-park which covered 20 ha of area in Cibinong Science Center. In this Eco-park various vegetation from different type of ecosystems and different bioregion has been established. To date, about 2000 plant species had been planted based on bioregion as follow:
   1. Jawa and Bali: community of freshwater lake and low land forest
   2. Kalimantan: Dipterocarpaceae low land forest to riparian forest
   3. Sumatera: Dipterocarpaceae low land forest towards freshwater swamp forest
   4. Sulawesi: low land karst
   5. Nusa Tenggara: savana
   6. Maluku: low land forest
   7. Papua : low land forest and sagoo swamp

Target 9:" 70% of the genetic diversity of crops and other major socio-economically valuable plant species conserved and associated indigenous and local knowledge maintained"

See page 2 on conservation of plant genetic resources of agriculture

Target 14:" The importance of plant diversity and the need for its conservation incorporated into communication, educational and public-awareness programmes"

Communication, educational and public-awareness programs have been held as follow:
1. Public education services for local community has been carried out by Bogor Botanical Garden, Cibodas Botanical Garden, Purwodadi Botanical Garden, and Bali Botanical Garden
2. Training for school community ("Repling" program by Purwodadi and Bali Botanical Garden; "Pepeling" program by Cibodas Botanical Garden)
3. Flora ecotourism in Bogor Botanical Garden
4. Website of botanical garden

Target 15:"The number of trained people working with appropriate facilities in plant conservation increased, according to national needs, to achieve the targets of this strategy"

Botanical garden has 400 staffs (researchers, researcher assistants/technicians, and gardeners)

Target 16:" Networks for plants conservation activities established or strengthened at national, regional and international levels"

1. INETPC (International Network for Plant Conservation)
2. Botanic Gardens Conservation International (BGCI)
3. BGCI Asia

Appendix III.2. Progress Towards Achievement of Target Protected Area

Goal	Target	Deadline	National Target (include Adopted from Global Target)	Integration into IBSAP	Integration into Sector Program	Progress in the Target Achievement	Obstacle(s)
Program Element 1. Activities on Planning, Selecting, Developing, and Management of Protected Areas							
1.1.	Establishment of a global network of comprehensive, representative and effectively managed national and regional protected area system by 2010 terrestrially, and 2012 in the marine area	2010 2012	There is no national target 2010 to expand terrestrial protected area. Indonesia has set the target of 21 national parks as model for effective management of terrestrial protected areas. National target for marine protected area is 10 million ha by 2010 and 20 million ha by 2020.	Objective 3.9. Program for implementing the Jakarta Mandate (under the CBD) on on Marine and Coastal Biological Diversity Objective 3.11 Program for improvement the effectiveness management of conservation areas and conservation in small islands	Strategic Plan of Ministry of Forestry 2005-2009 : The Optimum utilisation of Forest Resources Strategic Plan of Ministry of Marine Affair and Fisheries 2005-2009 : Conservation and Monitoring program on Marine and Fisheries Resources	1. Development of Conservation Areas Map 2. Terrestrial protected area coverage (IUCN Categories) was 27.968 million ha (Information on coservation areas in Indonesia, 2008), exceeded 10% of total national terrestrial area 3. National Action Plan on Protected Areas had developed and would be launched shortly 4. Comprehensive gap analysis to be carried out by 2009. In partial, it had been done for Sumatran Key Biodiversity Areas (KBAs), Papua KBAs, and EBA and IBA analyses in several areas of Sumatera. TNC has carried out gap analysis on Marine Protected Areas (MPA) 5. Issuance of provisions on ecosystem restoration in area of production forests 6. Forestry Minister's Decree No. 55/Menhut-II/2008 on the Master Plan for Rehabilitation and Conservation of Peat land in Kalimantan Tengah Province 7. Implementation of best management practices in area of production forests e.g. Sustainable Forest Management 8. Implementation of collaborative management 9. Decentralization in managing of Grand Forest Park areas (Tahura)	Decentralization of Tahura area's management based on the Government Regulation No. 38/2007 not yet supported by local funding

Goal	Target	Deadline	National Target (include Adopted from Global Target)	Integration into IBSAP	Integration into Sector Program	Progress in the Target Achievement	Obstacle(s)
1.2	Integration of all protected areas and protected area systems into the wider land- and sea-scape and relevant sectors, by applying the ecosystem approach and taking into account ecological connectivity and the	2013			Strategic Plan of Ministry of Forestry 2005-2009 : The Optimum utilisation of Forest Resources Strategic Plan of Ministry of Marine Affair and Fisheries 2005-2009 : Conservation and Monitoring program on Marine and Fisheries Resources	1. Corridors of Betung Kerihun National Park (NP) and Danau Sentarum NP, Sulu Sulawesi Marine Eco-Region (SSME) 2. Development of ecosystem-based spatial planning in Sumatera Island (commitment of 6 Governors of provinces in Sumatera) 3. Determination of germ plasm conservation area (GPCA) within production forest and the corridor between GPCA 4. Forestry Minister's Decree No. 55/Menhut-II/2008 on the Master Plan for Rehabilitation and Conservation of Peat land in Kalimantan Tengah Province 5. Decision of Directorate General PHKA No.SK.86/IV-Set/HO/2007 on Technical Guidance on Rehabilitation of Conserved Area 6. President's Decree No.89 Tahun 2007 on Rehabilitation of Forest and Land (Gerhan) 7. President's Instruction No.2/2007 on acceleration of Rehabilitation and Revitalization in Developed Peat Land (PLG) Area in Kalimantan Tengah Province	
1.3	Establish and strengthen transboundary protected areas, other forms of collaboration between neighboring protected areas across national boundaries and regional networks	2010/12			Strategic Plan of Ministry of Forestry 2005-2009 : The Optimum utilisation of Forest Resources Strategic Plan of Ministry of Marine Affair and Fisheries 2005-2009 : Conservation and	1. Heart of Borneo: Kalimantan (Indonesia), Brunei, and Malaysia; 2. Coral Triangle Initiative (CTI); 3. Tri-Nations Wetlands: Kakadu NP (Australia), Tonda NP (PNG) and Wasur NP (Indonesia) 4. Flyway 5. Sulu Sulawesi Marine Ecoregion (SSME) 6. Bismarck Solomon Marine Ecoregion (BSME)	

Goal	Target	Deadline	National Target (include Adopted from Global Target)	Integration into IBSAP	Integration into Sector Program	Progress in the Target Achievement	Obstacle(s)
					Monitoring program on Marine and Fisheries Resources	7. Integrated management program of small Islands and borderland 8. Presidential Decree No. 78/2005 on Outer Small Islands 9. Forestry Ministerial Decree No. 55/Kpts-II/2004 on Strategic Plan for Forest Area Management in Indonesia-Malaysia Borderland in Kalimantan	
1.4	All protected areas to have effective management in existence, using participatory and science-based site planning processes	2012		Objective 3.11 Program for improvement in the effectiveness conservation area management and conservation in small islands	Strategic Plan of Ministry of Forestry 2005-2009 : The Optimum utilisation of Forest Resources Strategic Plan of Ministry of Marine Affair and Fisheries 2005-2009 : Conservation and Monitoring program on Marine and Fisheries Resources	1. Development of Conservation Areas Map 2. National Action Plan on Protected Areas had developed and would be launched shortly 3. Comprehensive gap analysis to be carried out by 2009. In partial, it had been done for Sumatran Key Biodiversity Areas (KBAs), Papua KBAs, and EBA and IBA analyses in several areas of Sumatera. TNC has carried out gap analysis on Marine Protected Areas (MPA) 4. Program development and institutions several new Regional Marine Protected Area 5. Forestry Minister's Decree No. P.41/Menhut-II/2008 on Guideline to formulate Management Planning of Nature Sanctuary Area and Nature Conservation Area	
1.5	Effective mechanisms for identifying and preventing, and/or mitigating the negative impacts of key threats to protected areas are in place	2008				1. Carried out Rapid Assessment and Prioritization of Protected Area Management (RAPPAM) 2. Implementation of CITES provisions 3. Government Regulation No.7/1999 on Plant and Animal Conservation 4. Government Regulation No. 8/1999 on Wild Plant and Animal Utilization 5. President's Decree No. 4/2008 on Combating Illegal Logging in Forest Area and their Distribution within	

Goal	Target	Deadline	National Target (include Adopted from Global Target)	Integration into IBSAP	Integration into Sector Program	Progress in the Target Achievement	Obstacle(s)
						National Jurisdiction 6. Forestry Minister's Decree No.602/Kpts-II/1998 on Environmental Impact Assessment, Environmental management and Monitoring in Development of Forestry and Plantation Sectors. 7. DG PHKA Decree Letter no. SK.86/IV-Set/HO/2007 on Technical Guideline for Habitat Rehabilitation in Protected Area 8. Implementation of Forest and Land Rehabilitation Movement (Gerhan) 9. Salvation of habitat for migrant animal in NP Sembilang, Muara Kapuas mangrove area, Nias mangrove area, Singkarak lake and Tempe lake	
Program Element 2. Arrangement, Participation and equitable Benefit Sharing							
2.1	Establish mechanisms for the equitable sharing of both costs and benefits arising from the establishment and management of protected areas	2008			Strategic Plan of Ministry of Forestry 2005-2009 : The Optimum utilisation of Forest Resources Strategic Plan of Ministry of Marine Affair and Fisheries 2005-2009 : Conservation and Monitoring program on Marine and Fisheries Resources	1. Valuation study on carbon emissions in Bestang, Gunung Leuser NP 2. Research on utilization of non-timber forest products in Gunung Leuser NP 3. Identification of potential use of water in Gunung Leuser NP 4. Development of ecotourism in the South-east Aceh 5. Development of electric hydropower in Gunung Leuser NP	
2.2	Full and effective participation of indigenous and local communities, in full respect of their rights and recognition of their responsibilities, consistent with	2008		Objective 1.3. Program for improving the effectiveness of conservation area management based on partnership and local community participation	Strategic Plan of Ministry of Forestry 2005-2009 : The Optimum utilisation of Forest Resources Strategic Plan of Ministry of Marine	1. Community involvement in developing of green belt in Gunung Leuser NP 2. Forestry Minister's Regulation No. P.19/2004 on Collaborative Management of Nature Sanctuary and Conservation Areas 3. Forestry Minister's Regulation No. P.37/2007 on Society Forest	

Goal	Target	Deadline	National Target (include Adopted from Global Target)	Integration into IBSAP	Integration into Sector Program	Progress in the Target Achievement	Obstacle(s)
	national law and applicable international obligations, and the participation of relevant stakeholders, in the management of existing, and the establishment and management of new, protected areas			Objective 1.4. Program for developing community capacity in biodiversity management	Affair and Fisheries 2005-2009 : Conservation and Monitoring program on Marine and Fisheries Resources	4. Forestry Minister's Regulation No. P.49/2008 on Village Forest 5. Developed Guideline for identification/inventory of traditional wisdom on natural resources utilization to empowering local community 6. Capacity building of local community in managing of *interaction and buffer zones in* Manupeu Tanadaru NP, Sumba, East Nusa Tenggara (Burung Indonesia, 2008) 7. Assistance for wetland management in conservation area's vicinity (Karst in Gombang Selatan and Bantul)	
Program Element 3. Enabling Activities							
3.1	Review and revise policies as appropriate, including use of social and economic valuation and incentives, to provide a supportive enabling environment for more effective establishment and management of protected areas and protected areas systems	2008		Objective 2.12. Development of funding strategy for biodiversity conservation and management within the IBSAP framework, e.g. through incentive system, the use of reforestation fund, community fund, and environmental taxes		1. Defining spatial planning at national, province and district level 2. Finalization of the incentive system to empowering community in the utilization of environmental services and tourism in Nature Sanctuary and Conservation Areas 3. Ecotourism program in. Komodo NP, Bromo-Tengger NP, Gunung Gede NP, Tangkuban Perahu Nature Recreational Park. 4. Identification of potential use of water in e.g. Gunung Gede NP, Gunung Leuser NP 5. Identification of potential use of medicinal plants in Meru Betiri NP 6. Evaluation of accountability of UPTs in managing of conservation areas through obligation to develop LAKIP document in accordance to Head of State Administration Council's Decision Letter No. 239/2003	
3.2	Implementation comprehensive	2010		Objective 1.4. Program for developing		1. National Capacity Self Assessment for the 3 Conventions (CCD, CBD,	

Goal	Target	Deadline	National Target (include Adopted from Global Target)	Integration into IBSAP	Integration into Sector Program	Progress in the Target Achievement	Obstacle(s)
	capacity building programmes and initiatives to develop knowledge and skills at individual, community and institutional levels, and raise professional standards			community capacity in biodiversity management Objective 4.16 Program for developing capacity in biodiversity valuation for local government apparatus		UNFCCC) 2. Capacity building for forest rangers n cooperation with army in the program of unity to take care of forest fire 3. Collaboration with Indonesian State Police and Attorney in enforcing forestry violations; 4. Collaborative management of national parks among stakeholders, e.g. Leuser Indonesia Foundation with Gunung Leuser NP; Mitra Kutai (Kutai NP with private enterprises located surrounding the NP); Gedepahala consortium (Gunung Gede NP with other relevant institutions, universities, NGOs, and private sector); Wallacea Development Agency (Bunaken NP with Wakatobi NP) 5. Collaboration in providing hotspot information system (emergency task force) among Technical Implementation Units, Governors, local forestry authorities, monitoring office of forestry, and concession's holding companies.	
3.3	Substantially improvement in the development, validation, and transfer of appropriate technologies and innovative approaches for the effective management of protected areas, taking into account decisions of the Conference of the	2010				1. GIS, information system for controlling forest fire by operationally NOAA satellite station 2. Development of Fire Danger Rating System (FDRS) in collaboration among Ministry of Forestry, Technological Assessment and Implementation Agency and Canadian Geophysical and Meteorology Agency	

Goal	Target	Deadline	National Target (include Adopted from Global Target)	Integration into IBSAP	Integration into Sector Program	Progress in the Target Achievement	Obstacle(s)
	Parties on technology transfer and cooperation						
3.4	Sufficient financial, technical and other resources to meet the costs to effectively implement and manage national and regional systems of protected areas are secured, including both from national and international sources, particularly to support the needs of developing countries and countries with economies in transition and small island developing States	2008		Objective 2.12. Development of funding strategy for biodiversity conservation and management within the IBSAP framework, through incentive system, utilization of reforestation fund, community fund, and environmental taxes		1. Study on Fundings for Protected Areas (Ministry of Environment and TNC, 2006) 2. Debt Nature Swap (DNS) III Germany for three World Heritage National Parks (Gunung Leuser NP, Kerinci Seblat NP, Bukit Barisan Selatan NP) 3. Multilateral Grant for COREMAP Program 4. Cooperation with World Bank for Coremap II through NCU Coremap II (coordinated by Ministry of Marine Affair and Fisheries) 5. USDA Forest Service for Komodo NP and Kelimutu NP 6. JICA for Halimun NP 7. World Bank for Kerinci Seblat NP 8. TNC for Lore Lindu NP and Komodo NP	
3.5	Public awareness, understanding and appreciation of the importance and benefits of protected areas is significantly increased	2008				1. Environmental education and awareness raising for local people on the presence of conservation area 2. Development of village conservation model as pilot for empowering community 's economics 3. Conservation educational program at schools (teacher and students) 4. National jamboree for conservation 5. Tree planting program (one man one tree) 6. Promotion and dissemination information on Kakatua Kecil Jambul Kuning and other 4 species of paruh bengkok's birads in Sumba, East Nusa Tenggara Timur 7. Integtation protected areas and their	

Goal	Target	Deadline	National Target (include Adopted from Global Target)	Integration into IBSAP	Integration into Sector Program	Progress in the Target Achievement	Obstacle(s)
						management into school curriculum (elementary to university)	
Program Element 4. Standard, Assessment and Monitoring							
4.1	Standards, criteria, and best practices for planning, selecting, establishing, managing and governance of national and regional systems of protected areas are developed and adopted	2008				Government Regulation No.68/1998 on management system in Nature Sanctuary and Conservation Areas	
4.2	Frameworks for monitoring, evaluating and reporting protected areas management effectiveness at sites, national and regional systems, and transboundary protected area levels adopted and implemented	2010			Strategic Plan of Ministry of Forestry 2005-2009 : The Optimum utilisation of Forest Resources Strategic Plan of Ministry of Marine Affair and Fisheries 2005-2009 : Conservation and Monitoring program on Marine and Fisheries Resources	1. 192 of 530 conservation areas (36%) to have management plan 2. Implementation of Rapid Assessment and prioritization of protected area management (RAPPAM) 3. Forestry Minister Regulation No. P.14/Menhut-II/2007 on Provisions for evaluation the function of Nature Sanctuary, Conservation Areas and Game Hunting Park 4. Forestry Minister Regulation No. P.41/Menhut-II/2008 on Guideline for formulation management plan of Nature Sanctuary and Conservation Areas	
4.3	national and regional systems are established to enable effective monitoring of protected-area coverage, status and trends at national, regional and global scales, and to assist in evaluating	2010	By 2010, national and regional systems are established to enable effective monitoring of protected-area coverage, status and trends at national, regional and global scales, and to assist in evaluating progress in			1. CBD and CITES's national reports 2. Formulation strategy plan for flagship species 3. Formulation strategy and action plan for conservation of 5 species ramin, babirusa,, kakaktua jambul kuning, tapir, owa java (2008) 4. Development of Guideline for Primates Inventory (2008) 5. Monitoring on conservation of species	

Goal	Target	Deadline	National Target (include Adopted from Global Target)	Integration into IBSAP	Integration into Sector Program	Progress in the Target Achievement	Obstacle(s)
	progress in meeting global biodiversity targets		meeting global biodiversity targets.			and genetic activities (2009) 6. Formulation strategy and action plan for conservation of tiger, Javanese eagle, rhino, anoa, and orang-utan (2007). 7. Survey or monitoring on population of *kakak tua jambul kuning* and other *paruh bengkok's* bird and *julang sumba* as well at 24 target locations in Sumba including Manupeu Tanadaru NP (Burung Indonesia, 2007-2008) 8. Data collection of biodiversity and key species in Aketajawe lolobata NP, Halmahera (Burung Indonesia, 2008) 9. Maintaining database of CITES (2008) 10. Updating database of wild plant and animal distribution 11. Development of database on conservation of natural resources and its ecosystem. 12. Development of database on environmental services and ecotourism potential in 11 NP models and 20 nature recreation parks. 13. Thematic map of conservation area (2008), database of spatial conservation area in 1183 locations 14. Development of analyze map on biodiversity distribution; 15. Detection system of hotspots distribution by NOAA satellite 16. Fire Danger Rating System (FDRS)	
4.4	Scientific knowledge relevant to protected areas is further developed as a contribution to their establishment, effectiveness, and management					1. Coordination and partnership between private industries (medicinal herbal/cosmetic/ pharmacy) and community that planting medicinal plant (2008). 2. Development Coral Triangle Initiative (CTI) as a regional co-operation among 6 countries	

Goal	Target	Deadline	National Target (include Adopted from Global Target)	Integration into IBSAP	Integration into Sector Program	Progress in the Target Achievement	Obstacle(s)
						3. Collaboration program between TNC and National Park Management Unit and Local Government for security of marine protected areas	
						4. Coordination with the Indonesian Institute of Science in determining conservation value balancing for exchangeable animals	
						5. Co-operation with Bandung Institute of Technology in utilisation UAV for forest protection	
						6. Joint expedition of Indonesian Institute of Science, ITTO and Malaysia in Betung Kerihun NP and Lanjak Entimau wildlife sanctuary	
						7. Analysis on fisheries subsidy carried out by TNC	
						8. Guideline for sustainable the use of ornamental coral (2008)	
						9. Development of guideline for breeding;	
						10. Development of ecotourism in National Park and Nature Recreation Park	
						11. Assessment on vulnerability status of wild animal (3 species)	
						12. Assessment on habitat range of endangered species outside of conservation area in order to establish corridor	
						13. Book on wild plants/germ plasms serves as medicinal plants	
						14. Creation of poster, booklet, leaflet, standing player on trading of wild animals	
						15. Creation of CDs on Protection forest in Sumatra Island	

Appendix Table 2.1. Relationship among Global, National with IBSAP and Sector Strategic Plan

Target 2010	SCBDs Indicators	IBSAP's indicators	Indicators from Strategic Plan (MoF, MoMF, MoA)	National Indicators
Protection of Biodiversity components				
Goal 1. Promote the conservation of the biological diversity of ecosystems, habitats and biomes				
Target 1.1: At least 10% of each of the world's ecological regions effectively conserved.	a. Coverage of protected areas	a. Decline in the rate of deforestation	a. Management plans and investment in 20 model of national parks are listed in the Coordinating Board of Investment (BKPM) / Regional Coordinating Board of Investment (BKPMD)	a. Increase in coverage of conservation areas
	b. Trends in extent selected area of biomass, ecosystem and habitats	b. On average 1 million ha of forest is rehabilitated annually	b. Determination of buffer zone in conservation areas of 66s Integrated Management Units as well as increasing role of communities in KSDAHE in 300 locations (MoF-PHKA);	b. Effective management of conservation areas
	c. Trends in abundance and distribution of flagship species: rhinoceros, elephants, tigers, orangutans, JALAK BALI, turtles, dugong	c. Fish stock and others marine biota in depleted areas are restored to its maximum sustainable yield level	c. Compilation of 40 spatial planning system for coastal areas and small islands (MoMF)	c. Increase in coverage of forest (including re-plantation)
		d. recovery of deteriorated wetlands	d. compilation of 4 Information system on spatial planning for coastal areas and small islands (MoMF)	d. Increase in watershed coverage
		e. decrease in rate of wetlands conversion	e. Decree Ministry of forestry on designation forest and water areas in the remaining Provinces (MoF)	e. Decrease in the rate of deforestation

Target 2010	SCBDs Indicators	IBSAP's indicators	Indicators from Strategic Plan (MoF, MoMF, MoA)	National Indicators
		f. decrease in rate of damage coastal ecosystems	f. Decree on establishment of forest area in group of production and protected forests (50%) and conservation areas of 150 Natural Reserve Area (KSA), Regions Natural Conservation (KPA) and hunting parks	f. Decline in the rate of wetland's conversion
		g. increasing effectiveness in management of conservation areas and preservation areas in small islands	g. consolidation of forest area and consolidation of potential use of genetic resources	g. Availability of population and distribution trends of flagships species: rhinoceros, elephant, tiger, orangutans, jalak bali, bred eagle, turtle, dugong
		h. There are action plans and its implementation on Karsts management (as existed at Gunung Sewu, Bantimurung National Park)	h. re-plantation of watershed areas i. Management of conservation areas	
Target 1.2: Areas of particular importance to biodiversity protected	a. Trends in extent of selected biomass, ecosystems and habitats b. Trends in abundance and distribution of selected species (flagship species) c. Coverage of protected areas	a. There is a map of agro-ecosystem area (BBSDL-MoA) and their biodiversity's richness b. There is data and maps of biodiversity damages in marine coastal areas, including sea grass and coral reef c. There are maps and documentation on potential and damage of biodiversity in small islands	a. Zone determination are implemented in 20 National Parks (MoF) b. Boundaries determination are implemented in 150 Natural Reserve Area (KSA), Regions Nature Conservation (KPA) and hunting parks (TB) (MoF) c. Implementation of zone/blocks arrangement in 300 KSA, KPA and TB (MoF)	a. Zoning of conservation areas has been determined b. Important biodiversity areas in Indonesia have been identified c. Legal protection for important biodiversity areas (National Parks, Sanctuaries, pool of genetic resources, etc)

Target 2010	SCBDs Indicators	IBSAP's indicators	Indicators from Strategic Plan (MoF, MoMF, MoA)	National Indicators
		d. There are area boundaries and up dated information on six biosphere reserves; e. There is a map of Karst area and its potential f. concept management based on the biosphere reserve	d. Population and habitats of rare species in 200 KSA/KPA are protected effectively e. Decree of Ministry of Forestry on design of KPHL in each province . f. KPHL bodies operate effectively and get fully support from communities g. Development of 3.5 million ha marine conservation area h. IBA (Birdlife data). i. District of Conservation (Check SLHI); j. Termination of wetland conversion to palm plantation k. There are rules and framework of national policy for the determination of some areas (draft President's regulation on wetland management) l. Habitats of flagship species are protected (including their range areas) m. Collection garden and genetic resources (MoA)	
Goal 2. Promote the conservation of species diversity				

Target 2010	SCBDs Indicators	IBSAP's indicators	Indicators from Strategic Plan (MoF, MoMF, MoA)	National Indicators
Target 2.1: Restore, maintain, or reduce the decline of populations of species of selected taxonomic groups.	a. Trends in abundance and distribution of selected species	a. There was a termination of destructive practice fishing, and coral mining, decrease in rate coral reef damage (COREMAP)	a. Achieving in Improvement of biodiversity management in 20 national parks (MoF)	a. Trends of population and distribution of flagship species: rhinoceros, elephant, tiger, orangutans, JALAK BALI, bred eagle, turtle, dugong
	b. Change in status of threatened species	b. There was a recovery of fish stock and other sea creatures in depleted area into level of preservation to be yield (data on depleted areas and type of fish for stock)	b. Population and habitats of rare species in 200 KSA / KPA are preserved effectively (MoF)	b. Change in status of threatened species (flagships)
		c. Regulations and its enforcement and alternative lifely-hood program for termination destructive fishing	c. Preservation of commercial plants and animals. (MoF)	c. Increase in number of breeding activities
		d. Flagship species MoM turtles, whales, Napoleon, Dugong		d. regulation on termination of destructive and coral mining is in place
		e. Decrease in hunting of wild animals		e. number of permits issued for wildlife hunting
Target 2.2: Status of threatened species improved.	a. Change in status of threatened species		a. Compilation of data and information on biodiversities potential in 66s Integrated Management Units(MoF)	a. Trends of population and distribution of threatened species
	b. Trends in abundance and distribution of selected species		b. Population and habitats of rare species in 200 KSA / KPA are preserved effectively (MoF)	b. Change in status of species from threatened to be no threatened
	c. Coverage of protected areas			c. Increased in number of breeding activities

Target 2010	SCBDs Indicators	IBSAP's indicators	Indicators from Strategic Plan (MoF, MoMF, MoA)	National Indicators
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.	a. Trends in genetic diversity of domesticated animals, cultivated plants, and fish species of major socioeconomic importance	a. There are policy protection of genetic resources which implemented effectively	a. Development type and genetic conservation in 3 bio-geographic regions; 4 types (MoMF)	a. Regulations to protect genetic resources and Traditional Knowledge
	b. Biodiversity used in food and medicine(indicator under development)	b. Improvement in agriculture productivity based on diversity of seeds and there are seeds conservation		b. Effective conservation of genetic resources through collection parks/gene bank, collection of microbes cultures
	c. Trends in abundance and distribution of selected species	c. Available information on genetic resources along with sample collections in central and local level		c. Availability of data and information on genetic resources
		d. There are statistical data and map of genetic diversity		d. Availability of documented traditional wisdoms related to genetic resources
		e. There is a map of agro-ecosystem areas along with its biodiversity's richness		
		f. There are policies and Law on protection of traditional/local wisdom in management of genetic resources diversity		
		g. Understanding in extends about local / traditional knowledge in the fields of sustainable agriculture,		

Target 2010	SCBDs Indicators	IBSAP's indicators	Indicators from Strategic Plan (MoF, MoMF, MoA)	National Indicators
		through documentation and campaign activities		
		h. There is documented guideline to apply traditional system and customary agreement on protection of biodiversity (the Kehati foundation)		
Promote sustainable use				
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.	a. Area of forest, agricultural and aquaculture ecosystems under sustainable management b. *Proportion of products derived from sustainable sources (indicator under development)* c. Trends in abundance and distribution of selected species d. Marine trophic index e. Nitrogen deposition	a. There are the results and research implementation in the field of sustainable use of biodiversity (agriculture, forestry, fishery) b. There are guidelines and example on the use of biodiversity in sustainable way c. There is a map of agro-ecosystem areas along with its biodiversity's richness d. There are statistical data and map of genetic diversity condition e. Available information on genetic resources **along** with	a. Increased in production and productivities of regions excellent s commodities (Directorate General of Horticulture-MoA) b. Increasing the quality of agriculture products c. increasing in diversification of agriculture products (Directorate General of Horticulture-MoA) d. At least 300 units of forestry industry (high capacity / year) are run efficiently and have global competitiveness (MoF) e. At least 100 IUPHHK Natural Forest and 100 IUPHHK Industrial	a. Number of areas that have obtain certificates b. Non timber forest products that have obtain certificates of FSC or Ecolabelling c. Availability and implementation of methods/approaches for sustainable practices of products utilization

Target 2010	SCBDs Indicators	IBSAP's indicators	Indicators from Strategic Plan (MoF, MoMF, MoA)	National Indicators
	f. Water quality in aquatic ecosystems	sample collections in central and local level f. There is increasing of investment in the field of sustainable and equitable management of biodiversity g. the use of non timber forest products that sustainable and community based, and pilot project on forestry business h. There are clear concepts and policy on environmental sound and sustainable economic development which adopted into 2004 – 2009 of Medium-Term Development Plan i. There are policy to restructure industry-based forestry j. Implementing of wood harvesting pattern based on ecosystem carrying capacity k. Implementing policy on agriculture pattern which is based on bioregion agro-ecosystem l. Decrease in excessive utilization and damage of biodiversity outside conservation area (in the forest ecosystem, marine and coastal,	Forest have obtain Sustainable Forest Management certificate (MoF) f. Sustainable Forest Management is running in 50% of KPHK units and 30% self-funding g. KPHL increase non Timber production and environmental services by 30%	

Target 2010	SCBDs Indicators	IBSAP's indicators	Indicators from Strategic Plan (MoF, MoMF, MoA)	National Indicators
		wetlands) m. There is the concept to manage of islands' biodiversity and bioregion that can be applied		
Target 4.2. Unsustainable consumption, of biological resources, or that impacts upon biodiversity, reduced.	Ecological footprint and related concepts		a. Increasing in seeds availability and horticulture seedling industry (Directorate General for Horticulture-MoA) b. have identified/ synchronized on demand and supply of seeds (Directorate General for Horticulture-MoA)	a. Number of products that have obtain SFM certificates for Forest Management Concession b. Availability of certification for Organic Farming, residue limits of pesticides (for agricultural products).
Target 4.3: No species of wild flora or fauna endangered by international trade.	Change in status of threatened species		Conservation of commercial species plants and animals.	a. Efforts to asses potential and increase of species (flora / fauna) are threatened by international trade b. Number of breeding activities and its locations c. Number of species/wildlife being traded d. Number of trade violation's cases on animals and plants
Address threats to biodiversity				
Goal 5. Pressures from habitat loss, land use				

Target 2010	SCBDs Indicators	IBSAP's indicators	Indicators from Strategic Plan (MoF, MoMF, MoA)	National Indicators
change and degradation, and unsustainable water use, reduced.				
Target 5.1. Rate of loss and degradation of natural habitats decreased.	a. Trends in extent of selected biomes, ecosystems and habitats	a. Decline in the rate of degradation and biodiversity loss	a. up to 90% of targeted RHL area covered by forest vegetation	a. A decrease of deforestation rates over natural forest
	b. Trends in abundance and distribution of selected species	b. Decline in the rate of excision of natural forest	b. Master Plan of RHL (MPRHL) and other rules of RHL defined and implemented in Indonesia.	b. Availability of information on early fire detection (hotspots)
	c. Marine trophic index	c. On average 1 million ha of forest is rehabilitated annually	c. Decline in frequency of forest fire incident in the 32 provinces.	c. Decrease in frequency of forest fire
		d. There was a termination of destructive fishing practices and coral mining, and decrease in rate of coral reef damages	d. Availability of real time data information on early fire detection (hot spot), at least for Kalimantan, Sumatera and Java.	d. Availability of regulation to control pollution in water bodies
		e. recovery of deteriorated wetlands in progress	e. Frequency of timber being stolen in 200 KSA/KPA declined by 90% (MoF)	e. Increase of compliance to regulations on spatial marine and small islands
		f. decrease in rate of wetlands conversion	f. Settling of forestry infringement cases is reached 60%	f. Put into operation of regulation on termination of destructive fishing and coral mining
		g. decrease in rate of damage coastal ecosystems	g. Decrease in level of offenses by 5% per annum (MoMF)	
		h. There are action plans and its execution for Karst management	h. Decrease in coverage degraded area and extinction of species / genetic	
			i. Improvement in compliance to spatial regulations concerning marine and small islands	

Target 2010	SCBDs Indicators	IBSAP's indicators	Indicators from Strategic Plan (MoF, MoMF, MoA)	National Indicators
Goal 6. Control threats from invasive alien species				
Target 6.1. Pathways for major potential alien invasive species controlled.	Trends in invasive alien species	a. spreading of invasive alien species is under control b. Data distribution of invasive alien species (from Quarantine Office, Biotrop)	a. Exotic invasive species in Baluran, Wasur and Yosefa Strait are under control (MoF)	a. There are quarantines and inspection for aliens species in each airport and seaport of entry in accordance with the IPPC pest list
Target 6. 2. Management plans in place for major alien species that threaten ecosystems, habitats or species.	Trends in invasive alien species	a. there is efforts to control spreading of invasive alien species		a. Management plan available for major alien species that threatening ecosystems, habitats or other species b. List of animals and plants of IAS
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	Connectivity/fragmentation of ecosystems		a. implementation of adaptation program to climate change in 20 locations (MoF) b. Increasing in the use of environmental services (adaptation to climate change, water and carbon) in 20 locations (MoF)	Inclusion of biodiversity considerations into the RAN PI (the National Action Plan on Climate Change)
Target 7.2. Reduce pollution and its impacts on biodiversity.	a. Nitrogen deposition b. Water quality in aquatic ecosystems	a. prohibition of submarine tailing disposal practices		a. Availability of regulations controlling pollution in water bodies b. Regulation on prohibition and

Target 2010	SCBDs Indicators	IBSAP's indicators	Indicators from Strategic Plan (MoF, MoMF, MoA)	National Indicators
				permit to the use of pesticides
				c. Increasing the number of organic agricultural products
				d. Regulations on controlling land pollution
Maintain goods and services from biodiversity to support human well-being				
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.	a. *Biodiversity used in food and medicine (indicator under development)* b. Water quality in aquatic ecosystems c. Marine trophic index d. Incidence of Human-induced ecosystem failure	a. wood harvesting pattern based on ecosystem carrying capacity subsequently implemented	a. Compilation of 50 small islands' profiles for feasibility in developing investment (MoMF) b. carried out ecosystem reconstruction in 33 small islands (MoMF) c. carried out dissemination on managing small islands in 33 locations (MoMF) d. carried out fish stock ecosystem rehabilitation and its environment in 8 provinces, 15 districts, and 21 locations (MoMF) e. Mass balance of the national forest resources (NSDH) (MoF)	a. Establishing conservation areas b. Increasing in implementation of SFM c. Improve implementation code of conduct for responsible fisheries d. Implementing good agricultural practices (GAP) through the use of superior seeds, good planting pattern, IPMI (Integrated Pest Management), the use of irrigation water, e. Availability of regulations on environmental services

Target 2010	SCBDs Indicators	IBSAP's indicators	Indicators from Strategic Plan (MoF, MoMF, MoA)	National Indicators
			f. Increased in private sector investment in ecotourism by 20% g. KPHL increase non Timber production and environmental services by 30% h. KPHL improves productivity of clean water at least by 10% i. Watershed areas' productivity increase at least by 10% j. Quality and productivity of forest increase at least by 50% compare to that in 2004	f. Availability of regulations on management of small islands g. Availability of national Forest resources balance h. Establishment of stakeholders union for protected forest (*Kesatuan Pemangkuan Hutan Lindung*)
Target 8.2. Biological resources that support sustainable livelihoods, local food security and health care, especially of poor people maintained.	a. Health and well-being of communities who depend directly on local ecosystem goods and services b. *Biodiversity used in food and medicine*	a. There are guidelines and examples on environmental sounds of the use of biodiversity b. There is increasing of investment in the field of sustainable and equitable management of biodiversity c. There is a long-term program in preservation of biodiversity of marine and coastal areas d. Implementation of policies on effective agricultural pattern based on bioregion agro-ecosystems	a. income generation non timber products increased by at least 5% compare to that in 2004 (MoF) b. Increase in timber productivity from community's forest by about 30% compare that in 2004 c. increase in manpower absorption (job creations), incomes and community business around forests in the field of forestry by 20% compare to that in 2004 d. Management in 200 units of KSA/KPA optimally operate which increased in job creation at least by 10% and increase in sector income	a. Increasing the social forestry program (location, activities, number of farmers' groups) b. Availability of ecotourism program c Improved management of coastal areas and sea-based society (PNPM Mandiri) d. Increase application of LEISA (Low External Input Sustainable Agricultural)

Target 2010	SCBDs Indicators	IBSAP's indicators	Indicators from Strategic Plan (MoF, MoMF, MoA)	National Indicators
			by minimum 10%	e. Food Diversification Program, Traditional Medicine (Location and Regulations)
		e. There is policies to protect genetic resources	e. The use of biological natural resources involved communities by forests, increase income generation, and job creations at least by 10% and increase in sector income by minimum 10%	
		f. Adopted of comprehensive strategic Plan of biodiversity in local level	f. Model of national park increase in job creations and communities' income generation by minimum 10%	
		g. There is documentation of traditional and customary agreement system on protection of biodiversity	g. KPHL increase in job creations and income generation of by forest communities at minimum 10%	
			h. Management of forest tourism increase in job creations at least by 50% compare that in 2004	
			.	
			i. (PWH) Management Forest Tourism increases community's income generation at least by 30% compare that in 2004	
			j. Job creations for community by watershed areas increase at least by 20% compare that in 2004	
			k. Income generation of community by watershed areas increase at least by 20% compare that in 2004	
			l. Involvement of communities by watershed area increased by 50%	

Target 2010	SCBDs Indicators	IBSAP's indicators	Indicators from Strategic Plan (MoF, MoMF, MoA)	National Indicators
			m. communities by forest fully support forest management n. Socio-economic of communities by forest improved by minimum 20% compare that in 2004 o. Small-Medium Business absorbs workforces from community next forest by 20% p. Rate consumption of fish increase by 6.67% per annum q. Average of Indonesian fish consumption reached 32.29 kg per capita in the year 2009	
Protect traditional knowledge, innovations and practices				
Goal 9 Maintain socio-cultural diversity of indigenous and local communities				
Target 9.1. Protect traditional knowledge, innovations and practices.	a. Status and trends of linguistic diversity and numbers of speakers of indigenous languages b.*Additional indicators to be developed*	a. There are policies and law on protection of traditional/local wisdom in management of biodiversity b. Understanding in extends about local / traditional knowledge in the field of	a. Carried out human resources development capacity on fish stock conservation for 25 person (MoMF)	a. There are regulations about the protection of traditional/local wisdom in management of biodiversity b. Availability of database of traditional knowledge

Target 2010	SCBDs Indicators	IBSAP's indicators	Indicators from Strategic Plan (MoF, MoMF, MoA)	National Indicators
		sustainable agriculture, through documentation and campaign activities c. There is documentation of traditional and customary agreement system on protection of biodiversity		
Target 9.2. Protect the rights of indigenous and local communities over their traditional knowledge, innovations and practices, including their rights to benefit-sharing.	*Indicator to be developed.*	a. There is increase of participation and effective partnerships in community-based management for conservation areas in form of social forestry program b. There are policies and law on protection of traditional/local wisdom in management of biodiversity	a. Trained of 4800 cadres for empowerment of coastal communities based on organizational/religion/culture/social and revitalization of tradition/customary in 10 folk communities(MoMF) b. Regulation on access and roles of communities by forest	There are regulations on protection and access to traditional /local wisdom in managing of biodiversity
Ensure the fair and equitable sharing of benefits arising out of the use of genetic resources				
Goal 10. Ensure the fair and equitable sharing of benefits arising out of the use of genetic Resources				
Target 10.1. All access to	*Indicator to be developed*	Not available	a. empowering of 300 cooperation of coastal communities (MoMF)	a. There are regulations about access and distribution of benefits from the

Target 2010	SCBDs Indicators	IBSAP's indicators	Indicators from Strategic Plan (MoF, MoMF, MoA)	National Indicators
genetic resources is in line with the Convention on Biological Diversity and its relevant provisions.			b. Channeling of banks' credit to 240 persons from coastal communities (MoMF)	use of genetic resources b. Documentation of genetic resources
Target 10.2. Benefits arising from the commercial and other utilization of genetic resources shared in a fair and equitable way with the countries providing such resources in line with the Convention on Biological Diversity and its relevant provisions	*Indicator to be developed*		a. Increase in number of horticulture farmers group in supporting quality assurance (Directorate General for Horticulture-MoA) b. Increase in partnership pattern and networks of horticultures (Directorate General for Horticulture-MoA) .	a. Number of MTA in the list of ITPGRFA b. Number of research permits for foreigners in the field of genetic resources , specific to the agricultural
Ensure provision of adequate resources				
Goal 11: Parties have improved financial, human, scientific, technical and technological capacity to implement the Convention		a. There are funding sources for IBSAP activities b. There is increasing of investment in the field of sustainable and equitable management of biodiversity	a. Implement of best applicable technology to the 10 poorest districts/ cities (MoMF) b. Materialization of TOA technology and quality products as well as competitiveness (BALITRO MoA) c. Adopting and utilization of research results by the user (Directorate General for Horticulture-MoA)	
Target 11.1. New and additional financial resources are transferred to developing country	Official development assistance provided in support of the Convention			

Target 2010	SCBDs Indicators	IBSAP's indicators	Indicators from Strategic Plan (MoF, MoMF, MoA)	National Indicators
Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with Article 20.				
Target 11.2. Technology is transferred to developing country Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with its Article 20, paragraph 4.	*Indicator to be developed*			

Appendix Table 2.2. Relationship between activities under IBSAP and articles of the Convention under UNCBD

Articles and Provisions of the Convention	Programs under IBSAP
Article 5 Cooperation	• Strategies for better implementation and coordination of IBSAP • Operational Strategies of IBSAP • Program to improve the coordination of CBD implementation, including coordination with relevant international agreements and programs on biodiversity (CITES, Ramsar, WHC, MAB) • Program to develop institutional arrangements on sustainable development at the national and regional levels • Harmonization between IBSAP and provincial/district strategic plans on biodiversity
Article 7 Identification and monitoring	• Program for mapping agroecosystem areas and the potential of their biodiversity • National census on the state and potential of biodiversity • Program for mapping damaged coastal and marine biodiversity, including seagrass in densely populated areas • Mapping of the potential of and damages to small islands, starting with the Nusra dan Maluku. • Continue the existing program for germplasm collection and maintenance by the Research Center for Biology, especially in the regions • Mapping and revising the boundaries of Biosphere Reserves • Program for ecosystem monitoring dan species and identification (Dephut) • Program for monitoring and identification at the genetic level (LIPI dan Deptan); • Development of NBIN and Biodiversity Clearing House
Article 8 (a) to (e) (protected areas)	• Program for improvement in the effectiveness conservation area management and conservation in small islands
Article 8(h) (alien species)	• Program for controlling and preventing the spread of invasive wild as well as cultivated species
Article 8(j) and related provisions (traditional knowledge)	• Program to identify and develop traditional system/adat agreement system for biodiversity protection • Program to develop and disseminate local and indigenous knowledge in sustainable agriculture
Article 8 (excluding paras (a)-(e), (h) and (j)	• Formulation and implementation of action plan for karst ecosystem conservation and rehabilitation
Article 9 (ex situ conservation)	• Program for basic and strategic research on endemic and indigenous fauna and flora species of Indonesia • Program for mapping agroecosystem areas and the potential of their biodiversity • Program for mapping damaged coastal and marine biodiversity, including seagrass in densely populated areas, and small islands • Germplasm collection and maintenance • Program for national biodiversity conservation and rehabilitation. • Reforestation and forest rehabilitation programsusing various local species • Program to rehabilitate and prevent the degradation of sea grass. • Improvement of law enforcement to prevent and control the overharvesting and degradation of biodiversity outside conservation areas
Article 10 (sustainable use)	• Research and development of applied science in sustainable biodiversity utilization • Research on socio-cultural aspects related to sustainable biodiversity

Articles and Provisions of the Convention	Programs under IBSAP
	management
	• Documentation of best practices in sustainable biodiversity utilization, followed by site-specific applications of those practices
	• Development of diversification in community based business in sustainable management of non-timber forest products
	• Development of sustainable and community-based methods for the utilization of non-timber forest products
	• Program to develop and disseminate local and indigenous knowledge in sustainable agriculture Program to develop institutional arrangements on sustainable development at the national and regional levels
Article 11 (incentive measures)	• Development of funding strategy for biodiversity conservation and management within the IBSAP framework, through incentive system, utilization of reforestation fund, community fund, and environmental taxes
	• Designing compensation system for restructuring the forest industry, and banning of natural forest conversion and mining activity, particularly in the case of existing permits
Article 12 (Research And Training)	• Training program for teachers of elementary and secondary schools and vocational trainings on applying the curriculum ofbiodiversity science and technology.
	• Program on the intensification of extension and law enforcement relating to biodiversity management and conservation
	• Program for basic and strategic research on endemic and indigenous fauna and flora species of Indonesia
	• Research and development of applied science in sustainable biodiversity utilization
Article 13 (education and awareness)	• Program for IBSAP dissemination and distribution to all communities, private sector and government (to achieve common perception and understanding about biodiversity).
	• Program for developing common perception and understanding about biodiversity among members of the executive and legislative bodies, and the public, at the ational and regional levels.
	• Program for developing community capacity in biodiversity management
	• Program for developing biodiversity science and technology curriculum for elementary and secondary schools, and for vocational trainings
	• Trial programs for the integration of biodiversity science and technology curriculum into the syllabus of elementary and secondary schools, and vocational trainings
	• Program for integrating thebiodiversity science and technology curriculum into environmental education at elementary and secondary schools, and vocational trainings at national level
Article 14 Impact Assessment And Minimizing Adverse Impacts	• Program for identification of biodiversity issues in business activities and preparation of guidelines for best business practices based on sustainable and balanced biodiversity management
	• Improvement of law enforcement to prevent and control the overharvesting and degradation of biodiversity outside conservation areas
Article 15 Access to Genetic Resources	• Program to restructureforest-based industry and to control illegal logging as well as harvesting flora and fauna, including endemic species, through improvement in forestry law enforcement
	• Program for improving national agricultural productivity and agribusiness through the utilization of diversification of seeds, fairer policy, and through protection of farmers in terms of commodity pricing

Articles and Provisions of the Convention	Programs under IBSAP
	and the use of seeds • Program penataan pola pertanian tanaman pangan berbasis agro-ekosistem dan kekayaan plasma nutfah bioregion. • Program for the development of food crops agricultural system based on local agro-ecosystem and germplasm diversity of the bioregions
Article 16 Access to And Transfer of Technology	• Program for developing biodiversity science and technology curriculum for elementary and secondary schools, and for vocational trainings • Trial programs for the integration of biodiversity science and technology curriculum into the syllabus of elementary and secondary schools, and vocational trainings • Program for integrating thebiodiversity science and technology curriculum into environmental education at elementary and secondary schools, and vocational trainings at national level
Article 17 Exchange of Information	• Continue the existing program for germplasm collection and maintenance by the Research Center for Biology, especially in the regions
Article 18 Technical And Scientific Cooperation	•
Article 20 Financial Resources	• Development of funding strategy for biodiversity conservation and management within the IBSAP framework, through incentive system, utilization of reforestation fund, community fund, and environmental taxes

Appendix Table 4.1 : Objectives and Targets of Strategic Plan and Its Indicators to measures its Progress

Objectives and Strategic targets	Possible indicators	Implementation
Goal 1: The Convention is fulfilling its leadership role in international biodiversity issues.		
1.1 The Convention is setting the global biodiversity agenda.	CBD provisions, COP decisions and 2010 target reflected in workplans of major international forums	
1.2 The Convention is promoting cooperation between all relevant international instruments and processes to enhance policy coherence.		
1.3 Other international processes are actively supporting implementation of the Convention, in a manner consistent with their respective frameworks.		
1.4 The Cartagena Protocol on Biosafety is widely implemented.		*The Cartagena Protocol has been ratified in year 2004 (Law No. 21 Year 2004)* *Government Regulation on Biosafety of Genetic Engineered Products (GR No. 21 Year 2005)* *Committee of Biosafety is in process of establishment through President's Decree (in draft)*
1.5 Biodiversity concerns are being integrated into relevant sectoral or cross-sectoral plans, programmes and policies at the regional and global levels.	*Possible indicator to be developed:* *Number of regional/global plans, programmes and policies which specifically address the integration of biodiversity concerns into relevant sectoral or cross-sectoral plans, programmes and policies* *Application of planning tools such as strategic environmental assessment to assess the degree to which biodiversity concerns are being Integrated Biodiversity integrated into the criteria of multilateral donors and regional development banks*	MDGs Consideration of biodiversity conservation is incorporated into objectives, targets and Indonesian MDGs' indicators (objective 7, Target 9) namely: Ensuring environmental preservation, with target to combine principles of sustainable development with policies and national program as well as to restore loss natural resources; UNFCCCs Although consideration of conservation and sustainability the use biodiversity resources not directly incorporating, among priority policies there was one policy relevant to conservation namely land and forest rehabilitation, forest conversion as well
1.6 Parties are collaborating at the regional and subregional levels to	*Possible indicator to be developed:* *Number of Parties that are part of (sub-*	CTI A new Coral Triangle Initiative (CTI), centered around high-level political

| implement the Convention. | *regional biodiversity-related agreements)* | commitments and proactive implementation by governments of the Coral Triangle area, and supported and carried forward by private sector, international agency and civil society (NGO) partners, could provide a major contribution toward safeguarding the region's marine and coastal biological resources for the sustainable growth and prosperity of current and future generations. Anggota CTI antara lain: Indonesia, Malaysia, Brunei, Filipina, Papua New Guinea

HOB
Heart of Borneo Initiative is an initiative on conservation and sustainable development in the heart of Borneo at borders of Indonesia-Malaysia and part of Brunei Darussalam. The initiative started in 5-6 April 2006 in the occasion of 3-neighboring countries (Indonesia, Malaysia, Brunei Darussalam) meeting in Brunei Darussalam under theme 'THREE COUNTRIES-ONE CONSERVATION VISION' |
| **Goal 2: Parties have improved financial, human, scientific, technical, and technological capacity to implement the Convention.** | | |
| 2.1 All Parties have adequate capacity for implementation of priority actions in national biodiversity strategy and action plans. | | Institutional National Development Planning Agency (Bapenas), Relevant ministerial, local governments, NGOs, and private sector

HRD
Carried out program/activities on biodiversity conservation for increasing capacity and implementing of strategy and action plan

Funding
National Budget for Development, Regional Budget for Development, NGOs, Private sector, foreign donor |
| 2.2 Developing country Parties, in particular the least developed and the small island developing States amongst them, and other Parties with economies in transition, have sufficient resources available to implement the three objectives of the Convention. | Official development assistance provided in support of the Convention (OECD-DAC Statistics Committee) | HRD and Institution National Board for Development Planning, Ministry of Environment, other relevant ministries, local governments, NGOs and private sectors

National Budget for Development (APBN): Rp.569.878.995.000,00 (year 2003); Rp. 618.217.974.200,00 (year 2002); Rp. 464.202.000.000,00 (year 2001); Rp. 302.191.944.019,00 (year 1999/2000); Regional Budget for Development (APBD) |

		Reforestation Fund Fund from donor INS-0008 (Bilateral cooperation on environmental management between Indonesia- Norway), JICA (Japan), GTZ Germany, DFID (UK), AusAID (Australia), USAID (US), CIDA (Canada), EU, KFW Germany
2.3 Developing country Parties, in particular the least developed and the small island developing States amongst them, and other Parties with economies in transition, have increased resources and technology transfer available to implement the Cartagena Protocol on Biosafety.		International cooperation was engaged with Ambionet for corn crop, IRRI, Biorin and IFPRI for rice, MEE/French for *solanaceae* shrubs, ABSP for tomatoes, ACIAR for peanuts and PENYAKIT LAYU BAKTERI, ARBC for biodiversity and conservation on LIAR, NIAL and KONARC for in situ conservation. Through these cooperation BB-Biogen received research funds, improvement knowledge and vocational through short-term training (3-6 months) and long-terms (graduate and doctoral programs, and materials and apparatus (source: biogen online)
2.4 All Parties have adequate capacity to implement the Cartagena Protocol on Biosafety.		National Strategy and Action Plan on Biosafety is under development, which one of its aims is to bridge/fill out the gap in implementation of Law No. 21 year 2004 and GR No. 21 Year 2005.
2.5 Technical and scientific cooperation is making a significant contribution to building capacity.	*Indicator to be developed consistent with VII/30*	Ministry of Environment as NFP to CBD established a taskforce for each issue of implementation of the Convention and assigned the relevant department as taskforce coordinator. Duties and functions taskforces: a. Support the implementation of strategies and work programs related to the implementation of the thematic program and cross-thematic program and other CBD work programs at national level (IBSAP, RPJM, ISSD, MDGs, Sector RENSTRA) b. Establishing priorities, targets and time frames for the activities based on the strategies and program work on above point a c. Develop networks at the national level with all relevant stakeholders d. Define the monitoring mechanism for implementation of the thematic program and cross-thematic program and other CBD work programs e. Helping NFP in preparing the CBD National Report f. Making criteria for expert selection g. Assist related sectors and NFP in dissemination of the thematic program and cross-thematic program and other CBD work programs to relevant stakeholders h. Provide inputs in preparing the position of Indonesia in the forum of CBD (COP, Ad-Hoc WG, SBSTTA, Regional Meeting, Expert Group Meeting)

		i. Assist NFP in follow-up notifications issued by the CBD Secretariat
Goal 3: National biodiversity strategies and action plans and the integration of biodiversity concerns into relevant sectors serve as an effective framework for the implementation of the objectives of the Convention.		
3.1 Every Party has effective national strategies, plans and programmes in place to provide a national framework for implementing the three objectives of the Convention and to set clear national priorities.	Number of Parties with national biodiversity strategies	IBSAP 2003-2020 This document consist of three documents (National, Regional and Network). Initiated by preparation of Biodiversity Action Plan for Indonesia in 1993, but the review of existing data, the rate of biodiversity diminution during the last decade increasingly worrying. Then, IBSAP or Indonesia Biodiversity Strategy and Action Plan were developed to address the above challenges. This activity was conducted with grants from the Global Environment Facility (GEF TF-023957) and facilitated by the National Development Planning Agency (BAPENAS). IBSAP preparation does not necessarily starting from scratch, but based on the evaluation of the implementation of the BAPI 1993 and other activities related to biological diversity. In the development process of IBSAP as far as possible using a participatory, bottom up, and transparent approach. This approach is also an effort to build up a sense of ownership with the produced documents, and as far as possible to build a national consensus, so that IBSAP document will be binding on both moral and legal. IBSAP is designated for all stakeholders in order to be a guide for policy formulation and planning activities in the field of biodiversity, both government and non-government. If it refers to the three goals to the Convention, namely conservation, sustainable utilization, and benefits sharing, then IBSAP has included several strategies related to achieve these three goals of the convention.
3.2 Every Party to the Cartagena Protocol on Biosafety has a regulatory framework in place and functioning to implement the Protocol.		Law No. 21 year 2004 on Ratification of the Cartagena Protocol on Biosafety to the Convention on Biological Diversity; GR No. 21 year 2005 on Biosafety of Genetic Engineered Products
3.3 Biodiversity concerns are being integrated into relevant national sectoral and cross-sectoral plans,	*To be developed* *Percentage of Parties with relevant national sectoral and cross-sectoral*	As a country which has richness of biodiversity, Indonesia needs to have an inclusive biodiversity management plan by settings a comprehensive, effective and participatory of strategy and action plan. This strategy and

programmes and policies.	*plans, programmes and policies in which biodiversity concerns are integrated*	action plan was compiled in Indonesia Biodiversity Strategic and Action Plan (IBSAP) In one of missions that underlined the National Long-term Development Planning, consideration of sustainable the use of biodiversity is acquainted. Therefore, management and the use of biodiversity is part of any phase of Long-term Planning Development since phase 1 through phase 4, whereas biodiversity shall be kept preserved to maintain value added and competitiveness of the nation, and to increase national development modalities in the future
3.4 The priorities in national biodiversity strategies and action plans are being actively implemented, as a means to achieve national implementation of the	*To be developed* *Number of national biodiversity strategies and action plans that are being actively implemented*	Integration of biodiversity consideration into national strategies and programs such as: Millennium Development Goals (MDGs) in objective 7, Target 9; United Nation

Convention, and as a significant contribution towards the global biodiversity agenda		Framework Convention on Climate Change (UNFCCC); National Programe on Community Empowerment (PNPM Mandiri); National Strategy and Action Plan on Management of wetlands in Indonesia 2004; Environmental Impact Assessment (EIA); Study on Strategic Environment; Incentive program
Goal 4: There is a better understanding of the importance of biodiversity and of the Convention, and this has led to broader engagement across society in implementation.		
4.1 All Parties are implementing a communication, education, and public awareness strategy and promoting public participation in support of the Convention.	*Possible indicator to be developed: Number of Parties implementing a communication, education and public awareness strategy and promoting public participation* *Percentage of public awareness programmes/projects about the importance of biodiversity* *Percentage of Parties with biodiversity on their public school curricula*	Ministry of Environment has developed a communication strategy on education and awareness in year 2008, which involved stakeholders. This document is intended as one of CBD implementation, therefore in its compilation it refers to indicators of IBSAP and CBD
4.2 Every Party to the Cartagena Protocol on Biosafety is promoting and facilitating public awareness, education and participation in support of the Protocol.		INDOBIC, the Clearing House of Biosafety, Coalition of Non Governmental Organization (KONPHALINDO), the Kehati Foundation, in the Report on Communities Participation and Biotechnology Policy in Indonesia was reported that some NGOs encourage community involvement in development policy on Biosafety.
4.3 Indigenous and local communities are effectively involved in implementation and in the processes of the Convention, at national, regional and international levels.	*To be developed by the Ad Hoc Open-ended Working Group on Article 8(j)*	Government efforts to protect traditional communities is through regulations (i.e. draft GR on Forest Management, draft of Law on protection of traditional/local wisdom) and representation of local communities have started to involve in development **of generic issue on** traditional knowledge (draft Law on protection of traditional knowledge). In addition, representation of local communities also took parts in composing Indonesian position in particular issues to the Convention of Biodiversity
4.4 Key actors and stakeholders, including the private sector, are engaged in partnership to implement the Convention and are integrating biodiversity concerns into their	*To be developed* *Indicator targeting private sector engagement ,e.g. Voluntary type 2 partnerships in support of the implementation of the Convention*	The use of natural resources and its ecosystem rely upon conservation principles which increasing in 20% of private sector investment in the field of eco tourism. One of activities will be executed is Regulation Reforms on Ecotourism Investments.

relevant sectoral and cross-sectoral plans, programmes and policies.		In perspective of integration of biodiversity consideration into sector activities, in general, ministries/institutions might be classified into two groups, namely the first group which their main tasks and functions have relevancy with utilization and management of biodiversity, and the second group are which have no direct relevancy with the issue in concerns. The first group has been incorporated biodiversity consideration into their strategic plan. In some ministries, consideration of biodiversity consistently incorporated from vision-mission of the organization to programs. Though to date, there is no specific mechanism to ensure this strategic plan were implemented to contribute in lessening adverse effect to biodiversity. Current established mechanism were monitoring and evaluation as well as reporting which aimed to evaluate performance as designated in the Strategic Plan