

KINGDOM OF CAMBODIA



MINISTRY OF ENVIRONMENT

FOURTH NATIONAL REPORT
TO THE
CONVENTION ON BIOLOGICAL DIVERSITY

October, 2010



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NATION-RELIGION-KING

COUNCIL OF MINISTERS
Ministry of Environment

Phnom Penh, *14 September 2010*

No: *578* MoE

**A Message from the Senior Minister, Minister of Environment and
Chairperson of National Biodiversity Steering Committee (NBSC)**

It is my honour to provide this message for the Fourth National Report to the Convention on Biological Diversity (CBD). This report represents part of our ongoing commitment to the management of our country rich biodiversity. Cambodia is also a signatory to the UN Framework Convention on Climate Change and UN Convention to Combat Desertification and we see these conventions as being linked and we are taking actions to fulfil obligations in a holistic way.

Under the leadership of Samdech Akka Moha Sena Padei Techo **HUN SEN**, Prime Minister of the Kingdom of Cambodia, we have continued our work towards balancing conservation and development. This is an important and not always easy balance. Resource mobilization for biodiversity conservation has been identified as the main problem in developing our own strategic goals and actions. While our country continues economic development, we are taking more attention to better manage our natural resources for promoting poverty alleviation.

Overall there have been some losses to biodiversity, but there are also positive moves to better manage biodiversity. Biodiversity considerations are mainstreamed into policies such as forestry, fisheries, agronomy, animal production, and water resources. The Government Rectangular Strategy (2009-2013), a government policy platform, emphasizes good governance as its core component and one of the four strategic pillars addresses enhancement of agricultural sector through improving productivity and intensifying agricultural sector, and land, forestry and fisheries reforms. The strategy states the need to maximize agricultural production and ensure sustainable use and management of natural resources including Biodiversity.

To support decentralization and deconcentration a National Biodiversity Steering Committee (NBSC) was formed with mandates, among relevant ministries, to cooperate and promote mainstreaming of natural resources and environmental management with an overall development objective to achieve sustainable management of natural resources and the environment, assure an equitable access to land and natural resources and create opportunity for natural resources related economic activities, thus contribute to poverty reduction.

Our future priorities revolve around increased education and capacity for biodiversity management and enhancing local communities rights and roles in sustainable utilization of biodiversity resources. We also seek increased cooperation and

collaboration for biodiversity management within the country and through the region with ASEAN. This report also comes at a time when our first National Biodiversity Strategy and Action Plan (NBSAP), is in need of evaluation and updating so as to be more responsive to our current needs. I trust in the next few years Cambodia will be able to share an updated NBSAP as another part of our continued and ongoing commitment to managing biodiversity in Cambodia.

I leave you with this thought. All of our lives and actions are intrinsically linked to the environment, we need more people to participate and engage others in managing our natural resources for now and the future. *mlp*

Senior Minister, Minister of Environment *mlp*



Dr. Mok Mareth

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EXECUTIVE SUMMARY

1. Overall status of Country's biodiversity

Cambodia is a small country in continental Southeast Asia adjacent to the Gulf of Thailand. It has an area of 181,035 km² between 10 and 15° N and 102 and 108° E. The country possesses 2,308 plant species belonging to 852 genera in 164 families including 7 genera and 14 species belonging to Gymnosperms; 219 genera and 488 species belonging to Monocotyledons; and 626 genera and 1,806 species belonging to Dicotyledons. As no systematic and complete study has yet been done, it is estimated that a full list for Cambodia would be expected to exceed 3,000 species, with at least 700 additional species described as new to science in the country (Aswell, 1997). The World Conservation Monitoring Centre, year 2000 estimates there to be 8,260 plant species in Cambodia, 10% of which are endemic.

Fifty seven and 125 taxa of aquatic macro invertebrate were recorded in a few surveys in two provinces in 1991 and 2001 respectively including Insecta, Oligochaeta, Mollusca, Crustacea and others. Twenty eight species of amphibian and reptile are described. A total of 874 fish species are recorded, of which 490 are freshwater fishes from 64 families, 410 are saltwater fishes from 83 families, 22 are threatened, 1 is endemic and 13 are introduced fish species. Over 500 birds have been recorded but it is likely that the number goes easily to over 600. A list of known species is provided below.

Taxon	Total Number of Known Species	On IUCN Red List
Mammal species	123	39
Bird species	545	36
Reptile species	88	13
Vascular plants species	2,308	38
Fish species	874	-
Hard coral	24	-
Soft coral	14	-
Sea grass	10	-
Amphibian	63	12

Cambodia's protected areas system includes 7 national parks (742,250 ha), 10 wildlife sanctuaries (2,030,000 ha), 3 protected landscape (9,700 ha), 3 multiple use areas (403,950 ha), 6 protection forests (1,350,000 ha), and 8 fish sanctuaries (23,544 ha).

Cambodia's forests have decreased significantly in terms of both area and quality over the last few decades. As of late as 1969, the country's forests covered around 13.2 million hectares, or 73% of the country's total land area. A recent forest resource assessment by FAO (2005) indicates that Cambodia has lost more than a quarter of its remaining primary forest since 2000. The assessment ranks the country third in the world for primary forest loss. The rate of deforestation accelerated during the period between 1997 and 2002 by approximately 5%, or 1% per year (IFSR 2004) and still increased further between 2002 and 2005 at a rate of 2% (CDRI 2006) and afterward.

Of 490 freshwater fish species, at least 45 species are currently commercially important and 23 threatened fish species are recognised for their conservation significance. It is becoming increasingly common that aquatic habitats are being converted for agricultural and other types of land use, and that fish migration patterns are constrained by hydrological infrastructure development, particularly in the upstream region of the Mekong and due to local irrigation schemes in the flood plain. The flooded forests originally extended over an area of more than 1 million hectares, but became reduced to only 614,000 hectares in the 1960s and 362,000 hectares in 1991.

Recent surveys by the International Rice Research Institute (IRRI) have identified over 2000 different strains of rice used in Cambodia. Of the total rice cropping area of 2,585,905 ha (2007) in Cambodia, 86% is rain field lowland rice, 8% is dry season rice, 4% is floating rice and 2% is upland rice.

A number of categories of threats to the country's biodiversity are listed. Genetic erosion occurs due to the fact that people were unable to preserve the old varieties that they used to possess earlier, changes in the agricultural system, increasing use of agricultural chemicals, including pesticides and herbicides that can potentially cause loss of genetic resources and the introduction of new farming systems. Habitat loss occurs due to demand for more agricultural lands, fuel wood, non-timber forest products and infrastructure development. Unsustainable harvesting includes hunting, logging, burning, non-timber forest product (NTFP) collection and over-fishing. Hydropower development and urban and industrial development are putting pressure on the aquatic ecosystems through changes in hydrological regime and pollution. The presence of alien species, some of them introduced for farming purposes, is becoming a threat that could potentially impact Cambodia's natural ecosystems under climate change situation.

2. Key actions taken in support of the Convention's three objectives and to achieve the 2010 target and goals and objectives of the Strategic Plan of the Convention

Biodiversity is mainstreamed into both national and sectoral plans and policies such as forestry, fisheries, agronomy, animal production and water resources.

The Government Rectangular Strategy (2009-2013), a government policy platform emphasizing good governance as its core component, forms one of the four strategic pillars addressing enhancement of the agricultural sector by improving productivity and intensifying the agricultural sector as well as land, forestry and fisheries reforms. The strategy states the need to maximize agricultural production and ensure sustainable use and management of natural resources and maintaining biodiversity. The Cambodia Millennium Development Goals

(CMDGs) represent the national version of the MDGs adopted by member countries to the UN and provide a diagnosis of Cambodia's major policies and programs contributing to each CMDG. The CMDGs are the cornerstones of country's development policies and strategies. The National Strategic Development Plan (NSDP 2006-2013) was developed based on a results-oriented emphasis with extensive consultations among all stakeholders (government ministries and agencies, external development partners, civil society organisations) through a series of workshops bringing together all the parties to agree upon overall priority goals and jointly examine the goals and constraints to be overcome in order to achieve them.

In order to support the reform process, a national committee to support decentralization and deconcentration was formed with mandates, among other things, to promote mainstreaming of natural resource and environmental management with an overall development objective to achieve sustainable management of natural resources and the environment, assure secure and equitable access to land and natural resources and create opportunity for natural resources related economic activities, thus contributing to poverty reduction. An organic law (2008) on sub-national administration provides further basis for the establishment of sub-national councils with the responsibility to oversee local development and natural resources management. The law requires the review of the functions at the national level and their delegation to the lowest most effective levels, including those related to natural resource management.

A mechanism for government and donor coordination was developed to assist government progress in relevant sectoral development, resulting in a total of 19 Government-Donor Technical Working Groups (TWGs) being set up in 2004-05 for key sectors and thematic areas in order to provide a link between high-level policy dialogue and field implementation or project work.

The National Environmental Action Plan for 1998-2002 (now being revised) and the National Biodiversity Strategy and Action Plan (NBSAP) of 2002 emphasise the need to prepare and implement management plans for biodiversity conservation and to integrate them into the government's broader policy framework for environmental management. An Environmental Impact Assessment (EIA) system, as set out in the 11 August 1999 sub-decree on the Environmental Impact Assessment Process, requires an examination and evaluation of EIA reports as well as "monitoring, observing and taking action to ensure that the project owner follows the environmental management plan during the construction, operation and termination" of the project.

The National Biodiversity Strategy and Action Plan (NBSAP) has been under implementation for 6 years. The Plan consists of 98 priority actions covering 17 different themes. It highlights the three pillars of sustainable development (ecological integrity, economic sustainability and social equity) and also sets the stage for the country to assess the adequacy of current efforts to conserve and use biological resources in a sustainable manner and to determine how gaps will be filled and opportunities realized.

Cambodia also developed a National Capacity Action Plan to address the objectives of the three UN Conventions (UNCBD, UNFCCC, and UNCCD) and identified 160 priority actions for implementation over a period of 10 years (2007-2016). A Program of Work on Protected Area developed with 103 priority actions (2008) identified.

The process of developing a National Forest Programme (NFP) has resulted in a national forest policy statement formulated in 2002, a forestry law in 2002 and a series of national plans being

developed. The policy statement defines forest resources of the country as permanent forest estate to be managed by promoting conservation and sustainable forest management initiatives that directly contribute to the rehabilitation and conservation. It stipulates that "The Royal Government of Cambodia commits itself to the conservation and management of the country's unique forest resources in a sustainable manner now and for future generations".

The fishery policy defines the goal of the fisheries sector as maximizing the contribution of the sector to the achievement of national development objectives, especially those related to improving rural livelihoods of the poor, enhancing food security and the sustainable development and equitable use of the fisheries resource base. The government's agricultural strategy promotes diversified farming systems, agro-forestry and protection, and management of critical watersheds. Those strategies, and their direct link to the maintenance of protected areas and biodiversity are key to maintaining stability in agricultural systems and therefore to food security.

The principle of Integrated Water Resource Management is identified as an effective mechanism for national water resource sector and requires coordinated multi-sectoral water use planning including the need for use to conserve of biodiversity and ecosystems. The recognition of the potential for nature based tourism, for which biodiversity is seen as an important source of attraction, is implicitly enshrined in a number of relevant instrument including the government Rectangular Strategy, NSDP, NEAP, and the organic law on sub-national administration.

Years of effort have resulted in more than a quarter of the country's land being set aside for protection including approximately 3 million hectares of national protected areas, 1.35 million hectares of protected forests and a number of fish sanctuaries. In order to promote wildlife habitats and reduce threats to biodiversity, at least 3 corridors have become protected areas, including the coastal-central Cardamom Range, the northern plain in Preah Vihear Province, and the north-eastern plain in Mondulkiri Province as well as several projects around Tonle Sap. Selected species have also received attention through research, conservation and monitoring. These include elephants, tigers, vultures, ibis, dolphins, and the Sarus crane.

While alternative livelihoods of local communities have been promoted as part of effort to include local people in resource conservation, a landscape approach to management resources has become part of an innovative intervention to encourage harmonized actions by sectoral agencies.

3. Areas where national implementation has been most effective or most lacking

The most recent achievements in relevant sectors include 420 Community Forestry sites covering an area of approximately 399,798 ha. A logging moratorium has been imposed on all existing logging concessions; 2,158 cases of forest crimes have been entered into the case tracking system; 606 offenders have been arrested and sent to courts; 1,636 illegal saws, 2,776 m³ of round and squared logs and 14,925 m³ of sawn-wood, as well as the remains of 6,971 wild animals head and 3,044 kg wildlife meat were confiscated; 215,521 hectares of forest land have been reclaimed from land grabbing and encroachment; several annual bidding coupes have been prepared to meet domestic timber demands; tree planting and forestation activities have all been significantly increased and become part of on-going activities.

Community Fisheries have been established to facilitate management and use of common fisheries resources. National policies recognise the rights of fishing communities to manage local fisheries and the importance of their involvement in protection of the resource. In total, 469 Community Fisheries (CFi), 432 inland and 37 in coastal areas, have been established, including 126,490 households. Community Fisheries encompass 8 inland fish sanctuaries and 1,900 ha of protected sea grass beds. Community Fisheries have shown to result in an increase of fish catch in the surrounding areas and a reduction of up to 75% in illegal fishing practices. System of Rice Intensification (SRI) has been promoted through field trials and farm introduction in an on-going effort. Five hundred households adopted the approach for 70 SRI field trials conducted in 2007 in 5 provinces.

Already in some parks, tourism is bringing in significant revenue for local communities. A number of initial investments have been made in infrastructure in some parks, with NGOs assisting in establishing community based ecotourism at many sites. In 2006-07, three ecotourism destinations were established and two more destinations were being developed. Although the assessment of tourism potential in some PAs and other sites may have been made, there are no clear guidelines on regulation of tourism activities or site capacity.

Awareness campaigns are also undertaken on a semi-regular basis under an initiative by the MoE's Department of Environmental Education and Communications. TV spots and radio shows, including music and songs dedicated to biodiversity protection, are strongly promoted. Awareness is also undertaken through national days such as the National/International Environment Day, National Harbour day, National Fish day, and World Wetlands Day. While such education and awareness campaigns focus mainly on students and the public at large, newsletters are also produced targeting decision and policy makers as well as practitioners.

4. Major obstacles

Resource mobilization is the main problem in developing its own goals and objectives of the strategic plan of the Convention to ease in the implementation process. Weak institutional capacity may act as a barrier to achieving goals and implementing objectives. Human weaknesses affect results when a one-time show of animal rescue occurs rather than sustained in-captive breeding. Limited funds reach the communities which can perform some research and study their traditional practices of utilization of biological resources. This might involve non-economic activities made at the central and middle government line agencies, including the degree of governance in natural resource management and leadership.

5. Future priorities

To enable optimal implementation of the Biological Diversity Convention, the following points need to be developed and strengthened:

- Raising public awareness and knowledge in implementing the relevant legislations for biodiversity conservation and the Convention and the importance of biodiversity, improving and building capacity for government and institution management regarding biodiversity at central and local levels.
- Developing structure, systems and mechanisms to ensure that the programs and plans in relevant sectors are in line with implementation of the Convention.

- Increasing and promoting stakeholders' awareness and knowledge on the Convention and their working programs and plans by integration of biodiversity conservation in national, ministerial, and local plans. Priorities should be given to regional biodiversity planning, implementation of EIA for infrastructure and investment development projects with regular follow-up, and user-payment policies for commercial exploitation of biodiversity and ecological service beneficiaries.
- Mainstreaming the Convention and its programme of work from national to local levels (provincial and district/city) at the appropriate level, time and scale.
- Enhancing the rights and capacity of local communities in a way so that they will actively participate in biodiversity conservation and sustainable utilization.
- Establishing ex-situ biodiversity conservation centers to collect, study and preserve biodiversity and develop a monitoring programme for a biodiversity database.
- Increasing regional cooperation mechanisms and strengthening diversification and effective management of funding sources for conservation of nature and biodiversity conservation.
- Building skills and capacity, including an exchange of experiences and knowledge among the Parties to the Conventions.

CHAPTER 1: OVERVIEW OF BIODIVERSITY STATUS, TRENDS AND THREATS

1. General overview of Cambodia's Biodiversity

1.1. Biological Characteristics

Cambodia is a small country in continental Southeast Asia adjacent to the Gulf of Thailand. It has an area of 181,035 km² between 10 and 15° N and 102 and 108°E. The country is affected by the monsoon climate and has two different seasons with the annual precipitation between 1,200 and 1,875 mm over most of the plains and a higher annual rainfall (to over 3,000 mm) on the Cardamom and Elephant mountain ranges south west of the country and on the slope facing the coast.

Cambodia possesses 2,308 plant species belonging to 852 genera in 164 families including 7 genera and 14 species belonging to Gymnosperms; 219 genera and 488 species belonging to Monocotyledons; and 626 genera and 1,806 species belonging to Dicotyledons. As no systematic and complete study has yet been done, it is estimated that a full list for Cambodia would be expected to exceed 3,000 species, with at least 700 additional species described as new to science in the country (Aswell, 1997). The World Conservation Monitoring Centre, year 2000 estimates there to be 8,260 plant species in Cambodia, 10% of which are endemic.

Table 1: List of known species of Cambodia ¹

Taxon	Total Number of Known Species	On IUCN Red List
Mammal species	123	39
Bird species	545	36
Reptile species	88	13
Vascular plants species	2,308	38
Fish species	8741	-
Hard coral	70	-
Soft coral	17	-
Sea grass	102	-
Amphibian ³	63	12

¹ absite6.aseanbiodiversity.org/bio_joomla/index.php?option=com_content&view=article&id=154&Itemid=142

² National Action Plan for Coral Reef and Seagrass Management in Cambodia, 2006-2015.

³ Neang Thy, FFI, personal comm. 2009.

Fifty seven and 125 taxa of aquatic macro invertebrate were recorded in a few surveys in two provinces in 1991 and 2001 respectively, including Insecta, Oligochaeta, Mollusca, Crustacea and others. Twenty eight species of amphibian and reptile are described. A total of 1010 fish species are recorded, of which 490 are freshwater fishes from 64 families, 520 are saltwater fishes from 97 families, 58 are threatened, 1 is endemic, and 13 are introduced fish species (FishBase 2009)⁴. Over 500 birds have been recorded but it is likely that the number goes easily to over 600.

1.2. Pressure and Threats

a. Genetic erosion

The loss of old varieties of crops due to displacement, changes in agricultural systems, the increasing use of agricultural chemicals, pesticides and herbicides are potential causes for loss of genetic resources. Recent introductions of new modern varieties also threaten to replace the diverse native rice and other crops.

b. Habitat loss

The pressures causing habitat loss in both terrestrial and aquatic environments include the demand for increased agricultural lands, fuel wood and non-timber forest products. Recent road and irrigation infrastructure development and rehabilitation not only result in fragmentation to the original habitats but also open regions for more access to other destructive activities. The increased access to areas has resulted in land claims, increased wildlife hunting and wildlife trade networks that operate on the local and international levels.

c. Unsustainable harvesting

Whilst anthropogenic activities such as selective logging, shifting agriculture, burning and non-timber forest product (NTFP) collection have multiple effects, hunting supersedes all these in posing the most intense and immediate threat, particularly to mammals. It is expected that overfishing is occurring in some fisheries, although this is very difficult to substantiate.

d. Change in hydrological regime

Changes in land usage and infrastructure development, particularly on the Mekong and its tributaries, pose a potential severe threat to the hydrological regime of the Mekong and Tonle Sap systems. Fish production is potentially strongly influenced from such changes and development as fish migration is triggered by not only the size and duration of flooding, but also the timing of pulse flooding. The current contentious issues are related to the fact that a series of hydropower projects on both the Mekong and its tributaries are planned in the Mekong riparian countries.

e. Pollution

More and more small industries are becoming established but without effective waste management. Cambodia's population is mostly concentrated around the lowlands and near inland freshwater sources. In these areas the water is becoming increasingly polluted due to untreated

⁴ www.fishbase.org

sewage and a lack of appropriate waste management. Agricultural run-off is becoming more polluted due to increasing use of agricultural chemicals such as fertilizers and pesticides.

f. Alien species

At present there does not seem to be any documented cases of detrimental effects caused by alien invasive species in Cambodia. However, a number of known aggressive invaders are reportedly present in Cambodia. There are also many activities in agriculture, forestry, fisheries, horticulture, and rural development that involve intentional introduction of alien species. The FishBase¹ lists 13 fish species introduced into the country.

g. Climate Change

As much of Cambodia consists of lowlands and particularly wetlands, any rise in sea level caused by climate change would significantly affect the freshwater fishery. If sea level changes affect the salinity of the Mekong and Tonle Sap, it will also directly impact fish species diversity, as many freshwater fish are sensitive to salt water. The coastal zone would also be negatively impacted, as increasing water level would lead to considerable habitat loss in the short term.

2. Terrestrial Biodiversity

2.1. Status

Terrestrial biodiversity in the country is listed under different statuses on the IUCN Red list. The list of known species in the country includes the following number of species listed as threatened on the IUCN red list of globally threatened species: reptile - 20, Birds - 39 and mammal - 34 species.

Table 2: List of terrestrial species under IUCN Red List

Taxonomic Groups	IUCN Red List Status (2000)				
	CR	EN	Vul	NT	DD
Reptile	4	6	7	2	-
Bird	7	4	14	26	-
Mammal	2	2	20	10	15
Amphibian ⁴	-	-	3	3	6

There has been no comprehensive assessment of conservation status for floral species in the country. However, a multi-disciplinary team for the Cambodian Tree Seed Project (CTSP) identified 34 priority species for tree species conservation purposes in a 2003 assessment.

A variety of vegetation and land use mapping programs have recently been completed for Cambodia. A number of different perspectives on land use questions and resource management have been the basis for these efforts and thus divergent schemes of classification for images from satellite and aerial photography have been used in their construction.

Table 3: Extent of forests in Cambodia by category

Forest cover assessment of 2006 (hectares)	
Evergreen forest	3,668,902
Semi-evergreen forest	1,362,638
Deciduous forest	4,692,098
Other forests	971,341
Bamboo	35,802
Wood shrub dry	37,028
Wood shrub evergreen	96,390
Non-forest area	7,296,475
Total	18,160,674

Source: FA 2007a

Cambodia designated 23 protected areas in 1993 covering about 18% of the country under the authority of the Ministry of Environment. The Ministry of Agriculture, Forestry and Fisheries also made a series of designations including 6 additional areas protected by its Forestry Administration covering 1.35 million hectares and 8 fish sanctuaries managed by its Fisheries Administration. The major habitats under the current PAs are presented in table 4 below.

Table 4: Major ecosystems covered under current national protected areas systems

Management category	Number	Main ecosystem coverage	Area (hectare)	IUCN Category
<i>Protected areas system under the Royal Decree of Nov 1993</i>				
National park	7	Lowland evergreen forest also coastal forest, mangroves, <i>Dacrydium/ Podocarpus</i> , swamp forest, corals reef and seagrass	742,250	II, IV
Wildlife sanctuary	10	Evergreen forest, Mangroves, Coral reef	2,030,000	II, IV
Protected landscape	3	Lowland evergreen forest	9,700	V
Multiple use area	3	Flooded forest, mangrove and coastal wetland	403,950	VI
<i>Forest protected areas</i>				
Protected forests	6	Lowland evergreen forest and	1.530.981	II, IV

		wetlands		
<i>Aquatic conservation areas</i>				
Fish sanctuary	8	Inland wetlands	23,544	II, IV
Dolphin Conservation Area in Mekong River	9			
? Please Translate From KH version	8			
Seagrass Conservation Area			3.532	
Coral Reef Conservation Area			15	

2.2. Trends

Cambodia's forests have decreased significantly in terms of both area and quality over the last few decades. As of late as 1969, the country's forests covered around 13.2 million hectares, or 73% of the country's total land area (Thomas et al. 2000 as quoted by FA and Danida 2003). A recent forest resource assessment by FAO (2005, as quoted by FLD, CTSP and FA 2006) indicates that Cambodia has lost more than a quarter of its remaining primary forest since 2000. The assessment ranks the country third in the world for primary forest loss. Recent estimates by the GTZ/MRC Forest Cover Monitoring Project based on 1996/1997 satellite imagery shows that the forest cover diminished to only 10.5 million hectares, or 58% of the total land area and much of this is degraded. Only 3.1% of the remaining forest, or roughly 322,000 hectares, is classified as primary forest, the most biodiverse form of forest.

There are currently three official national datasets calculating forest cover (1993, 1997 and 2002). Data comparisons make it difficult to determine the true extent of deforestation and degradation as the categorization system for vegetation types changed between 1997 and 2002. Data included fewer categories and status changes were introduced, such as wood and shrub-land being reclassified as "other forest" when it had previously been classified as non-forest (SCW 2006). The rate of forest changes accelerated during the period between 1997 and 2002 by approximately 5% or 1% per year (IFSR 2004) and still increased further between 2002 and 2005 at a rate of 2% (CDRI 2006) and afterward.

Some of the latest status information for the key large animal species is provided through the Cambodia Community Wildlife Ranger Tiger and Elephant Conservation Program⁵ that monitored tigers, elephants and other large mammals monthly in the most important regions of the country from 2000 to mid-2005. The *Kouprey (Bos sauveli)* is most likely extinct since there

⁵ Chheang Dany, Nong Divan, Julia Chase Grey, Kristin Nowell, Prum Sovanna, Hunter Weiler. 2006. Cambodia Community Wildlife Ranger Tiger And Elephant Conservation Program. Final Report. www.felidae.org/LIBRARY/CWRP%202003-2005%20PROGRAM%20REPORT.pdf

has been no confirmed sighting since 1980. Wild water buffalos are likely feral rather than truly wild stock, but their conservation importance is still quite high. The *Khting Vor (Pseudonovibos spiralis)* appears to never have existed, but the debate will probably continue until every set of horns in every collection is tested for DNA. Numerous wildlife surveys throughout Cambodia since 2000 have uncovered no trace of the Javan Rhinoceros anywhere although it was reportedly present at least until the 1930s. Eld's Deer populations have now been confirmed in multiple locations and its potential for long term survival and expansion of its populations is high. It is estimated that there is a population of 10-20 tigers and 300-400 elephants in patrol areas of Mondulkiri, and 10-20 tigers and 15-25 elephants in the Cardamoms, although informal speculations estimate an elephant population of roughly 50 to 100 in each of the two regions. Nevertheless, 116 Asian elephants have been reported in the Seima Biodiversity Conservation Area⁶. Tiger prey such as Wild Pig, Muntjac, Sambar, Gaur and Banteng are all commonly recorded and collectively comprise the regional prey base.

Table 5: Change in forest cover by assigned forest type

No	Forest type	Forest cover, (hectares and %)				Comparison 2006-2002	
		2002		2006		Ha	%
1	Evergreen	3,720,492	20.49	3,668,902	20.20	-51,591	-0.28
2	Semi-evergreen	1,455,183	8.01	1,362,638	7.50	-92,545	-0.51
3	Deciduous	4,833,887	26.62	4,692,098	25.54	-141,789	-0.78
4	Other forest types	1,094,728	6.03	1,007,143	5.55	-87,585	-0.48
Total forest cover		11,104,291	61.15	10,730,781	59.09	-373,510	-2.06
5	Non-forest area	7,056,383	38.85	7,429,893	40.91	373,510	2.06
Total non forest area		18,160,674	100	18,160,674	100	-	-

Source: MAFF annual report, 2008

2.3. Major Threats

The causes of forest degradation include commercial logging, slash and burn cultivation, land encroachment for human settlements, farming and infrastructure development and cutting wood for fuel. The degradation of forest quality is significantly higher than the loss in forest area as logging has concentrated on commercially valuable species and larger-sized trees. Large-scale clearing of timber has serious environmental effects on other economic sectors. Estimates now indicate that commercial management is only feasible in less than four million hectares of the

⁶ WCS. 2008. The Status and Conservation of Asian Elephants in Seima Biodiversity Conservation Area, Cambodia. Phnom Penh.

forest area. These activities have been a major threat on large mammals, particularly those whose populations are mostly already dwindling.

3. Freshwater Biodiversity

3.1. Current Status

The freshwater floodplains of Cambodia can be categorised into varieties of habitat types including marshes/swamps, shrub-lands, grasslands, flooded forest, and rice fields. Cambodia has one of the most productive freshwater fisheries in the world. The fish yield of the Tonle Sap floodplain is 139-190 kg/hectare/year (Lieng and van Zalinge 2001) and 230 kg/hectare/year (Baran et al. 2001a). The annual inland fish catch in Cambodia is estimated between 130,000 and 682,000 tonnes.

As indicated earlier, the study of and information available on aquatic invertebrate, amphibians and reptiles has been limited as most studies have focused on fish. Four hundred and ninety freshwater fish species occupying various ecological niches have been reported, including plankton feeders, detritus feeders, predators and opportunists. At least 79 fish species are already recognised as commercially important and 29 threatened fish species are recognised for their conservation significance.

3.2. Trends

Changes in the species composition and especially a decline in the abundance of larger slower growing species indicates a high present exploitation rate and that the scope for future increases in overall annual catches from heavily exploited areas may be limited. In less heavily exploited areas, some scope for modest increases may exist.

Table 6: Change of aquatic habitats

Habitats	Area (hectare)	Area (hectare)
	1985-1987	1992-1993
Permanent water	567,100	411,100
Flooded forest	795,400	370,700
Flooded secondary forest	28,200	259,800
Flooded grasslands	80,800	84,900
Receding and floating rice field	17,500	29,300
Seasonally flooded crop fields	366,800	529,900
Swamp	12,200	1,400
Total	1,868,100 hectare	1,687,100 hectare

Source: Ahmed et al. 1998 based on Cambodia land cover Atlas, Mekong Secretariat, Bangkok

It is becoming increasingly common that aquatic habitats are being converted for agricultural and other types of land use, and that fish migration patterns are constrained by hydrological infrastructure development, particularly in the upstream region of the Mekong and due to local irrigation schemes in the flood plain. The flooded forests originally extended over an area of more than 1 million hectares, but became reduced to only 614,000 hectares in the 1960s and 362,000 hectares in 1991. Change in types of aquatic habitats which support freshwater capture fisheries in Cambodia is presented in table 6.

3.3. Threats

It has become apparent that reptiles, especially turtles, snakes, and monitor lizards, are heavily hunted for food and especially for their value in medicinal and food trades in Vietnam and China. Illegal fishing practices may have an adverse effect on some invertebrate groups. Use of explosives in rivers and ponds for example may physically destroy habitat and increase turbidity, which can affect the plants, and algae that some macro-invertebrates rely on.

Because fish productivity is related to the extent of flood plain inundation, any developments which may lower peak flood levels will be detrimental to the fishery. The dramatic impact of dams on fisheries in Cambodia is illustrated by the Yali dam located in Vietnam on a river flowing down to Cambodia. It was estimated that the erratic flow release of this dam resulted in over USD 2.5 million in lost income in 1999 for 3,434 households. Cutting or conversion of flooded forest to create agricultural land has a negative effect on fishery production.

Along with illegal fishing practices, including electrocution, use of explosives and poisoning, that are claimed to cause severe destruction to the aquatic biodiversity, chemicals also pose a threat to fisheries. Sixty-seven percent of the farmers surveyed in and around the Tonle Sap Lake used pesticides in 2000 (EJF, 2002), with volumes as high as 72 litres/hectare/year for farm use and 1.3 million litres of pesticides used in the Tonle Sap catchment area (Yang et al., 2001).

Known exotic species that may cause harm to the ecosystem, particularly to aquatic ecosystem, but not well documented consist of 17 fish species including red-bellied pacu (*Piaractus brachypomus*); an apple snail (*Pomacea gigas*); and plant species including water hyacinth (*Eichornia crassipes*), giant mimosa (*momosa pigra*), *M. invisa* and *M. pudica* and two grass species including *Brachiaria mutica* and *Echinochoa stagnina*.

4. Coastal and Marine Biodiversity

4.1. Current Status

Five hundred and twenty fish species from 97 families were found in 1983 in the waters within Cambodia's exclusive economic zone. Four species of marine turtles have been reportedly seen. Cetacean stranding reports include the first country-record of the Short-finned Pilot Whale (*Globicephala macrorhynchus*). Dugong (*Dugong dugon*) and a large rorqual whale (either Fin Whale, *Balaenoptera physalus* or Bryde's Whale, *B. edeni*) are also reported. This brings the total number of marine mammal species recorded in Cambodian waters to eleven. Finless Porpoises (*Neophocaena phocaenoides*) and Irrawaddy Dolphins (*Orcaella brevirostris*), as well

as unconfirmed local reports of Indo-Pacific Humpback Dolphins (*Sousa chinensis*) were also reported in a survey in the Cambodia's coastal waters.

Coral reefs are reported around almost all islands off the coast of Cambodia. Around 70 coral species in 33 genera and 11 families have been identified. Coral diversity is higher in offshore reefs, while inshore areas have low species diversity and are dominated by massive corals. Little is known about the current distribution, composition and health of these coral reefs. Its extent is currently about 2,805 hectares.

Seagrass of Cambodia's coastal waters can be divided into extensive seagrass meadows along the mainland and paths of seagrass intermingled with coral reef around islands. The current extent of seagrass in Cambodia's coastal water is 32,494 hectares. Ten seagrass species and some 30 species recognised as true mangroves have been identified so far.

4.2. Trends

Coastal and marine development is emerging. Almost all the islands in the coastal waters of Cambodia are offered on concession. A few urban and tourism developments currently starting up have changed some of the current coastal habitats, particularly mangroves on the mainland and potentially coral reefs on the fringe of islands.

A 4,934 hectare reduction of mangrove forest from 62,416 hectares in 1993 to 57,482 hectares in 1997 has been reported. Based on the assessment of pressures and state indicators of biodiversity and coastal habitats, and considering the trend for biodiversity and mangrove coverage in the coastal area, there is no indication that this downward pattern has been stopped or reduced. Following the current trend, the mangrove cover may become further reduced by 2015 to only 60% of the 1993 coverage (MoE, 2005).

4.3. Threats

The most immediate concerns are marine mammal by-catch in various forms of monofilament gillnets, chiefly 'set-nets' and Spanish Mackerel nets, habitat degradation and over-fishing, both through industrial-scale trawling of offshore waters by foreign fishing vessels, and smaller-scale trawling and push-netting in inshore waters by a very large fleet of Cambodian boats.

Dugong populations suffer from direct persecution and from the loss and destruction of their specialised seagrass habitat. Seagrass beds are vulnerable to impact from degradation of water quality and destructive fishing practices. Logging, hydropower development upstream, mining currently taking place in the catchment of a number of rivers, increased use of fertilizers and pesticides in the coastal agricultural land and discharge of domestic and industrial waste waters are the prime causes.

5. Agricultural biodiversity

5.1. Status

The agricultural landscape of the country is characterised by rice fields, particularly in the central lowland extending from the northwest to southeast of the country, with a recent increase in large monoculture plantations of a commercial scale. Traditional rice agriculture is an important example of biodiversity as it utilizes a diversity of rice strains and a diversity of rice ecosystem

species to provide food security. Recent surveys by the International Rice Research Institute (IRRI) have identified over 2000 different strains of rice used in Cambodia.

Of the total rice cropping area in Cambodia, 86% is rainfed lowland rice, 8% is dry season rice, 4% is floating rice and 2% is upland rice. Traditional rice agriculture in Cambodia has excellent potential for future sustainability in the agricultural sector. Typical shifting cultivation in Cambodia is the practice of clearing and utilizing a plot of land for 1 – 5 years and then clearing another plot of land. The plots are rain-fed and usually 1 –3 ha large but often include another 5 – 6 ha of fallow land. Shifting cultivation in the upland areas of Cambodia can have very rich agricultural biodiversity. Here, rice is still a major crop. However, the typical highlander family plot may have 60 – 100 varieties of plants being cultivated due to the strong tradition of seed exchange. As such, shifting cultivation agriculture may serve as an important means to agricultural biodiversity.

Commercial field crops, including annual plantation crops such as tobacco, cotton, sugarcane, pineapple and bananas are on the increase, particularly in recent decades. In Cambodia, rice is the predominant crop followed by maize. Other crops include legumes such as soybean and mungbean, oilseeds including groundnut and sesame, and commercial crops of sugarcane, jute and tobacco. Vegetables also occupy a large area under cultivation. Sweet potato is becoming more common along with an increase in cassava plantations, particularly in the last few years.

High value perennial crops such as coconuts, rubber, sugar palms, oil palms, tea, citrus and other fruit trees are grown at varying scales throughout settled parts of Cambodia. Most of the perennial crops are part of other crops systems. Large-scale plantations of perennials such as rubber and oil palm are typically undertaken as monocultures and are more likely to use increased inputs of agro-chemicals.

5.2. Trend

In general, agro-ecosystems are managed to reduce biodiversity. Attention is mainly centred on enhanced productivity of a small number of target species with efforts to eliminate other non-desirable species. There is a growing trend towards more modern rice agriculture. Increased agricultural chemical use will directly reduce the diversity of the ecosystem. For the last five years (2002-2006), rice cultivated, harvest areas, yield and total production have increased by 3.95%, 4.25%, 0.10% and 4.64% respectively⁷. Production of rice, the major crop sustaining most of the rural population of Cambodia, after reaching a peak rate in the 2005-06 season, has been steadily increasing thereafter, though at a lesser rate (about 6% per year). The increase in crops was 27.6% in 2005, followed by 5.3% in 2006 and 8.2% in 2007.

Table 7: Trend in rice production in Cambodia

Description	2003	2004	2005	2006	2007
Cultivated land	2,314,285	2,374,175	2,443,530	2,541,433	2,585,905
Harvested land	2,242,036	2,109,050	2,414,455	2,516,415	2,566,951
Yield	2.101	1.977	2.479	2.489	2.621

⁷ MAFF's annual report 2008

Production	4,710,957	4,170,284	5,986,179	6,264,123	6,727,138
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Source: MAFF's annual report, 2008

There is increasing use of low cost and high yield approaches like SRI (system of rice intensification), organic farming methods, and IPM (integrated pest management). Diversification into cash crops is increasing and marketing of agricultural products is improving, thanks in part to more favourable pricing conditions.

Major crops such as maize, cassava, mungbean and soybean showed no major changes in yield and production. Roots and tubers increased in production and yield while decreasing in harvest area. Oil crop production and fruit and vegetable production increased. However, the amount of cultivated land has increased in the last few years, particularly for rubber and cassava.

5.3. Threats

Many of the agricultural chemicals in Cambodia are not used according to safety and quantity instructions and as such may be causing environmental and health problems (Yang et al 2001). There is also an increasing availability of highly toxic agricultural chemicals that are banned in many other countries.

Just as the spread of agriculture has altered and modified natural or unmanaged ecosystems, other land uses compete for the land that agriculture now occupies. The competition for and sterilization of first class agricultural land by urban, industrial and transport developments is made more serious because of the limited amount of this type of land.

The largest impact of agriculture on the environment and therefore on agricultural ecosystems is accelerated soil erosion. The process has been sped up by the removal of vegetation and the tillage of soils, particularly on slopes. The loss of topsoil also causes a considerable loss of organic matter and nutrients, therefore reducing the agro-ecosystems productivity.

6. Implications of Changes

The country's society and economy may be affected to varying degrees of impact from loss and degradation of biodiversity in the country. Biodiversity can both provide a source of income and livelihood, providing security as well as meeting other needs, and provide a direct source of livelihood and protection to people without offering direct monetary value.

The high value forest reserves and other terrestrial biological resources represent an enormous asset for Cambodia. Sustainable use could provide substantial benefit, especially to local forest communities. The forests could support a large industry, while supplying domestic demands. Forests also provide for essential environmental benefits impacting the outcome of other sectors, in particular agriculture. The importance of the forests' environmental benefit in regulating climates and local water circulation and reducing floods and the effects of droughts is enhanced by Cambodia's low elevation and in many areas infertile soils. The forests sequester atmospheric carbon and provide for conservation of biological diversity for present and future use.

Deforestation may accelerate soil erosion and increase the occurrence of flash floods. Impacts on biodiversity from natural disasters are normal. The further effects of human activities during or in the aftermath of natural disasters, however, can exacerbate the impact. Cambodia is one of the fourteen countries in Asia considered by the UN Department of Humanitarian Affairs to be the

most prone to disasters, of which floods, drought, and fire are some of the prominent issues. Floods are a very apparent natural disaster in Cambodia and the government is concerned with flood prevention and control. In 2000, for example, floods killed 800 people and caused severe human suffering, serious damage to infrastructure, major disruption of social and economic activities and loss of agricultural land and crops.

It is estimated that over 95% of the population of Cambodia uses wood or charcoal for energy. More than 70% of Cambodians live in areas that cannot sustainably provide their fuel wood needs. A wood energy flow study estimated that approximately 24,000 tonnes of fuel wood arrive in Phnom Penh annually. The flow of fuel wood into urban areas places increased pressure to over log easily accessed forest areas, such as along roads and rivers. The degradation of forest as source of energy means that local people have to spend more and more time to obtain this energy source.

Timber and non-timber forest products are also essential, particularly for the indigenous people living in remote forest areas. Some local wild plants have been domesticated for many years. The loss of non-timber forest biodiversity would have significant implications for their extensive uses as Derleth (in Ashwell, 1997) notes that Cambodians habitually utilized at least 931 species of Cambodia's 2,304 plant species.

Research by CDRI concluded that 42% (or USD 280) of the total household economic activities for the low income group and 30% (USD 345) for the medium income group derive from NTFPs. As approximately 33% of the population lives within 5 km of a forest, this indicates the high absolute value of forest resources to the well being of many people.

In terms of volume, fish and other aquatic products far outweigh any one of the four main terrestrial commodity groups including beef, sheep, pork and poultry meat. For example, in 2002 the fish production (373,933 metric tonnes) was double that of beef, pork and poultry combined (191,208 tons). Since many rural Cambodians do not produce enough agriculture for their consumption, a decline in fisheries resources means that rural people have to face increased food insecurity. In the fishing provinces of Cambodia, small scale fisheries can provide 65-75% of animal protein intake for households, while the value would be 40% that of the rice production. Even in a relatively less important fishing region, families living near bodies of water catch on average 86 kg of fish per year, while those living far away catch only 30 kg per year. Families whom consider themselves fishing families catch 123 kg and 56 kg per household per year for those who live near and far away from water bodies respectively. When including various forms of fish, the average consumption is rises to an estimated 75.6 kg per capita per year.

In addition to production, fisheries are also important in terms of employment. Overall, about 88% of inhabitants rely on natural fishing and fish related activities for their livelihood and income generation. 10.5% of households count fishing or fishing related activities as their primary occupation while another 34.1% are engaged on a part-time basis. Thus, over one million people are either fully or partly dependent on fisheries resource harvesting and related activities for their income.

Because of the open access nature of aquatic resources, fisheries in particular, and because fishing does not require land ownership, it often becomes an employment of last resort, attracting people who have no other means of subsistence. Ninety percent of households still prefer free and unlimited access rather than restrictions or regulations on the use of common property.

Cambodia is an agrarian country. About 90% of the population still thrives on agriculture. The Cambodian national economy is also largely based on agriculture, mostly rainfed and mono-cropped, under a rice based farming system. Rice is a staple food for Cambodians just as potatoes may be in the West. The importance of rice is reflected in the Cambodian terms for the three daily meals: morning rice, midday rice and evening rice. Under conditions of poor soil and extreme climate, the loss of agro-biodiversity would not only mean a risk to food security but also the loss of the cultural practice of farming.

CHAPTER 2: CURRENT STATUS OF NATIONAL BIODIVERSITY STRATEGIES AND ACTION PLANS

1. Overview of NBSAP

The National Biodiversity Strategy and Action Plan (NBSAP), representing national policy on biodiversity conservation and sustainable use including certain cross-cutting issues, was developed through a participatory process involving input and extensive consultation with various line ministries, research institutions, local governments and NGOs in addressing international obligations as required by the CBD and its COP decisions. Approved in July 2002, the NBSAP consists of 98 priority actions covering 17 different themes in order to use and conserve biological resources in a sustainable manner.

The NBSAP recognizes existing constitutional and legislative responsibilities for biodiversity conservation and sustainable use in Cambodia. It also emphasizes the importance of intergovernmental cooperation to create the policy, management and research conditions necessary to advance sustainable management of natural resources. National and regional governments and sectoral ministries and departments, in cooperation with stakeholders and members of the community, will pursue implementation of the directions contained in the Strategy according to their policies, plans, priorities and fiscal capabilities.

A clear vision on "Equitable Economic Prosperity and Improved Quality of Life through a Sustainable Use, Protection and Management of Biological Diversity" was well accommodated in the NBSAP development process and thus more protection beyond the minimum standard as set by the Convention was introduced. The Strategy provided a framework for actions at all levels that would enhance our ability to ensure the productivity, diversity and integrity of our natural systems and, as a result, our ability as a nation to reduce poverty and improve the quality of life of all Cambodians. It promotes the conservation of biodiversity and the sustainable use of our biological resources, and describes how we will contribute to international efforts to implement the Convention.

The strategic objectives listed in each theme, followed with priority actions, constituted a reflection of the intentions of the government regarding each sector of activity. They are specific and measurable objectives that will guide the relevant ministries during the implementation phase of the strategy and action plan. Ministries will regularly document and report on the identified indicators attached to each objective. Sets of indicators, but not targets, are defined in general terms according to the nature of monitoring the achievement of each priority action. The indicators are not as precise as the intended output or outcome. No global targets for 2010 were incorporated into the NBSAP. However, national instruments developed following the adoption of the NBSAP define more specific targets and indicators. They include CMDGs, NSDP, and relevant sectoral plans (see appendix IV).

Successful implementation of the Strategy will be determined, to a large extent, by the degree to which all parts of society adopt the visions and principles that contribute to achieving the NBSAP goal. Ultimately, the conservation of biodiversity and the sustainable use of biological resources will require the support and participation of individual citizens, local communities,

urban and local authorities, conservation groups, business and industry and educational and research institutions.

As described in the financial sector under chapter 3, it is impossible to calculate the total financial resources allocated by the Cambodian Government (at all levels) to address matters related to the implementation of the Convention of Biological Diversity as the issues related to the Convention lie with many different government ministries and its line agencies. Also, it is not possible to segregate the amount spent on matter related to biodiversity from overall budget of any agency.

2. Progress in NBSAP Implementation and Contributions to CBD

2.1. Protection of Natural Resources

The NBSAP contains nineteen priority actions set with a focus on strengthening on-going management to include selected bio-ecological regions and endangered species for their conservation management, application of a landscape approach to management of selected PAs, the application of internationally agreed instruments such as CITES and capacity development to address both in-situ and ex-situ conservation.

Management of PAs and protected forests are within the mandate of the MoE and MAFF respectively. Significant progress made includes the designation and management of extensive national key habitats for protection with boundary markers and management plans established and developed. Five national wildlife rescue centers and zoos were established throughout the country for ex-situ conservation. Progress was made in capacity building and tools developed for management of resources using a landscape approach taking into account different economic activities. Details on the progress of activities, including challenges, are further elaborated in appendix III under the heading "Progress towards Targets of the Global Strategy for Plant Conservation and the Programme of Work on Protected Areas."

2.2. Animal Wildlife Resources

The three priority actions identified under this theme include a national campaign against illegal hunting, a national monitoring programme and database on alien invasive species and exploited wild animal species, and management plans for commercially valued species.

Efforts to promote national awareness have been taking place on a semi-regular basis, while legal actions to address illegal hunting have been an on-going effort. This includes raising awareness through media, boxing campaigns and patrolling. Selected wildlife surveys were conducted to identify the baseline for monitoring, followed up with camera traps to monitor the presence of large mammals. Details on raising awareness are illustrated in appendix III (section 3.5). MAFF has adopted a list of Cambodia's national animals and trees species, including two species of large mammals, one bird, one turtle and one fish, in order to enhance their protection. Only a few alien invasive species have been identified. A species action plan and a species conservation programme have been developed for two endangered aquatic animals, the dolphins and the crocodiles respectively.

2.3. Freshwater Fisheries and Aquaculture

Seven priority actions defined under this theme include demarcation and management of fisheries areas, a community-based fisheries management programme, a Tonle Sap floodplain

integrated management programme, a fisheries environment protection programme, an indigenous fish aquaculture development project, a critical fisheries ecosystem monitoring and protection programme, and a revision of the Department of Fisheries organizational structure.

Significant progress has been made regarding the set priority actions. With fisheries reform started in 2000 and followed with the adoption of a new fisheries law, the national fisheries policy and the implementation of guidelines for a structural change in the sector have been an on-going effort. Details of progress are provided in chapter 3 (fisheries sector).

2.4. Coastal and Marine Resources

Five priority actions proposed include a full Monitoring Surveillance and Control (MSC) Plan for commercial fishing and establishment of a working pilot scheme for MSC of middle scale fisheries, monitoring and management programmes for target fish species, protection of mangrove forests, staff capacity building and training, and provision of patrol boats to the Department of Fisheries.

Significant progress has been made on designation and protection of important habitats such as mangrove and seagrass. Some limited studies have been made targeting important species and habitats for protection such as seahorse and coral reefs. The adopted sub-decree on aquatic endangered species also covers marine species. Significant important aquatic habitats have been designated under protection through a community based approach. More detailed information is provided in chapter 3 (fisheries sector) and also in appendix III (Progress on implementation of the Programme of Work on Protected Areas).

2.5. Forest and Wild Plant Resources

The eight priority actions listed under the NBSAP include the development of a comprehensive national plan for the management of the forest estate, development of sustainable forest management plans, development of EIA guidelines for forest exploitation activities, a forest concession management and control pilot project, a community-based forestry management programme, a vegetation survey and assessment of the current status of wood extraction, an extension of the forest crime monitoring unit (FCMU) project, and development of policy and guidelines promoting the use of native species in cultivation and restricting the introduction of introduced species.

Forest resources have been a focus of attention by the government. About 1,530,981 ha of forest has been designated for protection. A comprehensive national forest programme has just been finalized to cover 6 priority components for more effective forest management. A number of community based forest management forms have been promoted. Two forest gene conservation areas have been established and 23 forest gene sources (conservation stands) identified and protected. Please refer to chapter 3 (forest sector) and appendix III (Progress toward achieving the Targets of the Global Strategy for Plant Conservation).

2.6. Agriculture and Animal Production

The seven priority actions identified under the NBSAP comprise of farmers' training on improved cultivation and livestock production systems respectful of the environment, extension of the Integrated Pest Management (Farmer Field School) programme, a program to promote agricultural diversity for food security, an agricultural land protection and land-use programme, adoption and improvement of sustainable cultivation management systems, adoption and

improvement of sustainable cultivation management systems, and strengthening research in new and alternative crops.

The System of Rice Intensification has been an on-going effort promoted through field trials and farm introduction. An IPM programme has been implemented in Cambodia since 1993, operating in 15 major agriculturally productive provinces. By 2007 the programme had trained more than 600 district trainers, 2000 farmer facilitators and 100,000 farmers through the establishment and operation of Farmer Field Schools. IPM training had led to an increase in yield, sustainable and cost-effective production, reduction of ecology disruption and environmental contamination, reduction of public health and toxic residues in food, and improvement of the livelihood of farmers, biodiversity and marketability of produce. Other options being promoted include the Integrated Farming System, organic farming and effective microorganisms. This is further elaborated on in chapter 3 (Agriculture sector).

2.7. Energy and Mineral Resources

Three priority actions listed under the energy theme include an energy efficiency programme for households in areas where fuel wood is limited, promotion of fuel wood and multipurpose tree plantations at the family and community level, and environmental guidelines and impact assessment for energy development projects. Three actions listed under the mineral resource theme include a study on the feasibility, costs and benefits of correcting existing mining industries for environmental soundness, development of environmental guidelines for mining activities, and the establishment of EIA procedures for mining development projects.

Progress includes a rural electrification programme being implemented throughout the country for household supplies of energy from more environmentally friendly sources, including renewable sources. Biomass and biogas are being promoted with rice husk and wastes used to generate gas and ultimately electricity. Ethanol is also being produced from cassava. A biomass project is being implemented for involving the installation of 130KW biomass electricity generators in Ratanakiri. Most projects are only demonstrations.

The master plan for the energy sector includes a goal of electric coverage to all villages by 2020 using all available resources in the sector to ensure that 70% of population has access to electricity by 2030, in which RE would be the potential source for off-grid supply. A Rural Electrification Fund has been established to support rural electricity enterprise investment for the provision of electricity to rural areas and funds provided to the RE developers including Hydro, Solar and Biomass power.

The 1999 sub-decree on Environmental Impact Assessments requires an EIA to be completed for hydropower plants exceeding one MW and for all “petroleum mining research.” The EIA Sub-decree thus provides a level of environmental review for energy development projects. The sub-decree is supported by EIA guidelines for hydropower and other energy development prepared by MIME. More information on progress for both energy and mineral resources is provided in chapter 3 (Energy and mining sector).

2.8. Industry, Technology and Services

The priority actions under these themes include an awareness programme on EIA and an Environmental Pollution Control and Monitoring System for the manufacturing sector, development and implementation of a biosafety strategy and action plan in compliance with the international protocol on biosafety, integrating biodiversity conservation and environmental

management concerns into the tourism policy and development plans and guidelines, a village based tourism development programme, a programme for integrating conservation on cultural heritage and nature through tourism for protected landscapes, and the creation of a national master plan to promote ecological tourism in natural areas.

Environmental education has been done on semi-regular basis including on EIA and environmental pollution. The national biosafety law was adopted in 2008 in compliance with the international protocol on biosafety. The National Tourism Policy includes the development of infrastructure and conservation of touristic values in protected areas for which MOE and MOT have embarked on a cooperative initiative to develop a master plan for selected protected areas to promote eco-tourism. Ecotourism development has been part of most PA management with a code of conduct for eco-tourism rangers developed.

Cambodia became a party to the Cartagena Protocol on Biosafety in 2003. In 2004, the country developed its national biosafety framework covering regulatory regime, administrative regime, a system to handle application, monitoring and enforcement of LMOs released into the environment and public participation, awareness and education. For more detailed information, see chapter 3 (Tourism and environmental education sectors) and also appendix III (Progress toward achieving the Goals and Targets of the Programme of Work on Protected Areas, section 3.5).

2.9. Environmental Security

Priority actions described by the NBSAP include integrating biodiversity protection in flood prevention awareness programmes and rehabilitation plans, a plan focusing on conservation and the protection of biodiversity, environment and ecology, creating environmental security for integrated biodiversity water resources management and development, preventing damage due to flood, drought, watershed degradation, erosion and sedimentation and protecting aquatic and fish resources.

A review of protected areas was undertaken in 2003 with recommendations for integration of biodiversity and protected areas management and conservation as they provide the environmental and ecological services for other sectoral developments. Water governance dialogue has now been conducted in the country as part of the three countries (Cambodia, Laos and Vietnam) to look at more effective approaches for integrated water resource management, while taking into account water for irrigation, fisheries and aquaculture, hydropower and energy, tourism, navigation, water supply and sanitation.

2.10. Land Use Planning

The priorities include institutional capacity building programmes on land use planning, development of a national land use master plan and provincial land use plans integrating environmental concerns and community consultation and development of community-based land use plans.

An Inter-Ministerial Council for Land Policy was established in 2000. The first phase of the government's 15 years Land Administration, Management and Distribution Programme (LAMDP) was approved in 2002 to improve land tenure security and promote the development of efficient land markets. The Land Law (2001) provides for land classification and land use planning, and an Interim Land Policy Framework was adopted in 2002. A land dispute resolution mechanism through the Cadastral Commission has been established at the sub-national level.

Where economic and social land concessions are concerned, an EIA is required for each concession. A number of instruments to secure access to land include a sub-decree on the procedures for commune land use planning that was adopted in 2009 with the aim to identify guidelines, mechanisms and procedures for commune land use planning, a sub-decree on procedures of registration land of indigenous communities in 2009, a policy on registration and right to use lands of indigenous communities in 2009 and the declaration of the Royal Government on Land Policy.

Biodiversity considerations has been introduced into provincial level land use planning processes and demonstration of specific mainstreaming interventions are undertaken at four key sites including community land-use tenure, community contracts and incentives for biodiversity supportive land-use practices, as well as work to mainstream biodiversity into the forestry and tourism productive sectors under the Conservation Areas Landscape Management (CALM) of the northern plain in Preah Vihear province. Participatory land use planning and community based land use planning have also been realised.

2.11. Water Resources

Priority actions identified under this theme include a programme for management of water resources, a public water programme to improve water quality, a program to ensure the financial sustainability of hydraulic infrastructure, a groundwater monitoring programme, a water pollution prevention programme for the industry sector, a water pollution prevention programme for the agriculture sector, and an urban waste water treatment programme.

Reconnaissance surveys in the lowland areas were undertaken to determine the availability of groundwater and the potential for dry season irrigation. A well development programme was implemented between 1960 and 1993. A recent detailed groundwater survey was undertaken with support from JICA in Takeo, Kandal, Svay Rieng, Prey Veng and Kampong Speu provinces. To date no groundwater sources of sufficient potential for large-scale irrigation have been identified. Any use of groundwater for irrigation is thus likely to be restricted to small scale vegetable and fruit gardens, especially those cropped in the dry season. The Ministry of Water Resources and Meteorology has been promoting Farmer Water User Group to secure water for agriculture. Sound management of chemicals is being mainstreamed into the national planning process to protect water from contamination by agriculture. No programmes for urban waste treatment have yet been developed, but major cities like Phnom Penh, Battambang, Sihanoukville and Siem Reap have moved forward with the development of wetlands type urban waste water treatment facilities.

2.12. Climate Change and Biodiversity

Priority actions in the NBSAP include the integration of biodiversity objectives into the future National Climate Change Action Plan, improvement of weather forecasts to ensure timely warnings of natural occurrences and of the meteorological networks, and the lobbying of developed countries to decrease emission related to climate change.

Cambodia became a Party to UNFCCC and the Kyoto Protocol in 1995 and in 1997 respectively. The country Climate Change Office (CCCO) was established in June 2003 and is responsible for a wide range of climate change-related activities including planning and policy formulation, implementation of the UNFCCC, assessment of new technologies to adapt to the adverse effects of climate change or to mitigate greenhouse gas emissions, and capacity building and awareness

raising. It also serves as the Secretariat of the National Climate Change Committee, established in 2006 and CDM National Designated Authority established in 2003.

Cambodia has developed reports on national circumstances including GHG inventory, GHG mitigation analysis, vulnerability and adaptation assessment, and other cross-sectoral issues. The National Adaptation Programme of Action on Climate Change was developed and adopted in 2006. In 1999, the first national communication was developed and submitted to UNFCCC with the second developed in 2007. The CCCO had undergone extensive training and capacity building. The country had endorsed 6 CDM projects of which four have secured approval from the Executive Board and together have the potential to reduce and avoid emission of 565,388 tonnes of CO₂-equivalent. Cambodia is also active in promoting the Reduced Emissions from Deforestation and Forest Degradation (REDD) pilot projects, with one being established and a number more REDD projects potentially being explored and also actively engaging in negotiations towards the CoP15. Energy efficiency and renewable energy are also promoted (See also the energy resources section).

2.13. Community Participation

The NBSAP identified the following priority actions for this theme: strengthening institutional training in community-based natural resource management, development of a community based wildlife protection programme and development of community based forestry/fisheries/land use and rural development programmes.

Since the first democratic election in 1993, Cambodia has embarked on a process of decentralization beginning with the establishment of elected Commune Councils in early 2002. Chapter 4 of the Law on Commune Administrative Management (2001) provides for a bottom up commune development process in which the commune authority functions to manage natural resources. The organic law on sub-national administration (2008) further elaborates the need for sub-national councils and the review of sectoral functions for consideration in transferring to appropriate lower levels. As a result, capacity building and financial mechanisms have been targeted at sub-national levels, particularly the commune level.

The sectoral agencies also promoted a participatory process of resources management with the Farmer Water User Group, Community Forestry, Community Fisheries and Community Protected Areas Management promoted by the Ministries of Water Resources and Meteorology, Agriculture Forestry and Fisheries and Environment respectively. Implementation regulations and guidelines have also been developed to guide the community based management processes. There are now 124 CF sites, 468 Community Fisheries, 166 Community Fish refuges and 82 Community Protected Areas established. See also chapter 3 (Forestry and Fisheries Sector) and appendix III (Goals and Targets of the Programme of Work on Protected Areas: 2.2). The sectoral agencies use this participatory approach to enhance and secure involvement of indigenous and local communities and relevant stakeholders for sustainable use of natural resources.

2.14. Awareness, Education, Research Coordination and Development

The priority actions include a biodiversity awareness programme, a national biodiversity research, training and information centre and library, integrating environmental and biodiversity issues in school curriculums a government staff capacity-building programme, a biodiversity research development programme at the Royal University of Phnom Penh, and the set up of a

training programme on management of natural resource and environment conservation to biodiversity holding communities.

Training, education and awareness activities on biodiversity and sustainable use in Cambodia were carried out by ministries, NGOs, academic institutions and provincial authorities. The Ministry of Environment has a long standing awareness programme on biodiversity, climate change, and biosafety. At least 600 students participated in debates on climate change, more than 1,000 students participated in an environmental youth debate on biosafety and an unaccounted number of audiences have participated in debates on biodiversity and related issues. The Ministry of Agriculture, Forestry and Fisheries regularly conducted debates on animal production, fisheries and forestry protection. The Ministry of Tourism, Ministry of Rural Development, Ministry of Interior, NGOs and provincial authorities undertook various forms of awareness and training on biodiversity conservation at various locations using both formal and informal forms. Ministries and NGOs organized song and painting contest on nature conservation. Events such as National Biodiversity Day, International Wetland Day, World Water Day, National Fish Day and National Tree Planting Day have been organized throughout the country on an annual basis to promote the understanding on respective themes, their value and conservation value.

Cambodia now has 20 universities, at least three of which offer courses in life sciences including biology, fisheries, forestry, animal production, veterinary sciences, land use, microbiology, etc. Three universities offer master degrees in Biodiversity Conservation and its related fields: the Royal University of Agriculture, the Royal University of Phnom Penh, and Prek Agricultural College. See also appendix III (Goals and Targets of the Programme of Work on Protected Areas, 3.2 and 3.5).

2.15. Legislation and Institutional Structure

Priority actions are identified in the NBSAP as development/amendment of by-laws and regulations on biodiversity related issues, institutional capacity building projects on EIA, national awareness campaign on environmental legislation and continued implementation of regional cooperation aimed at environmental protection and conservation of common natural resources.

Since becoming a Party to CBD and Cartagena Protocol, Cambodia has passed many new laws including the Law on Environmental Protection and Natural Resource Management (1996), Forestry Law (2002), Land Law (2003), Fisheries Law (2006), Water Resource Management Law (2007), Protected Areas Management Law (2008), Biosafety Law (2008), Law on Crop Seed Management and Rights of Plant Breeders (2008) and related regulations. Many implementing regulations have been enacted or are under preparation to provide detailed guidelines for enforcement of the laws. These provide mandates to the country to act properly and quickly to conserve and use biological diversity resources. In addition, biodiversity and sectoral policies such as forestry, fisheries, land use, water and climate change have been mainstreamed into a national development plan. The Ministry of Water Resources and Meteorology is currently exploring the application in four provinces around Tonle Sap. More on laws and policy are provided under different sectors.

2.16. Quality of Life and Poverty Reduction

The priority actions include Community-based natural resource management programmes, environmental awareness programmes in rural areas, poverty monitoring and analysis programmes, poverty reduction strategy formulation, and participatory poverty assessment.

Being one of the poorest countries in the region, Cambodia has over 85% of its population living in rural area. An estimate produced in 2007 showed a poverty rate of 30 percent, an improvement from 35 percent in 2004. The National Institute of Statistics ensures regular availability of data on NSDP indicators for monitoring and evaluation purposes. The Statistical Master Plan sets out the long-term prioritized plan for the country's national statistical system. CamInfo, the NIS's information system, is intended for use to support NSDP monitoring and dissemination. For monitoring and evaluation at the ministry/agency level, the major sources of information are their administrative networks and reporting systems.

A poverty assessment was made by the World Bank in 2006. The Ministry of Planning and the National Committee for Sub-national Democratic Development has initiated and with the support from UNDP developed, in 2009, a commune database that provides sets of valuable information relating to socio-economic trends, including disaggregated data on gender, age, and ethnic/religious minorities. It represents an important means of CMDG monitoring at the national and sub-national levels, linked to Goals and Targets as identified in the National Strategic Development Plan. The sub-national monitoring and reporting also helps build local support and demand for changes that will help meet CMDG goals and contribute to poverty reduction. To promote sustainable development, a national roadmap for Green Growth has been developed.

The government is now designing a coherent, dynamic, focused and sustainable safety net system that will not only address issues of hunger and shield the poor from economic shocks, reversals of fortune and the devastating effects of illness, but also stimulate entrepreneurship and empower them to take risks to improve their lives and their income generation opportunities. Improving governance at all levels, including the consolidation and rationalization of planning and budgeting systems, linking national and sub-national systems, improved civil service capacity and performance in delivering services, fighting corruption, improving the rule of law and respect for human rights, and fostering and institutionalizing a constructive dialogue with civil society are also tasks at hand.

3. Selected Lessons Learnt

Tonle Sap Environmental Management Project

The objectives of the Tonle Sap Environmental Management Project (2002-07) are to strengthen natural resource management coordination and planning, organize communities for natural resource management, and build management capacity for biodiversity conservation. A component of the project, the Environmental Information Database Project (TSBR-ED), was to establish an environmental information database within the Tonle Sap Biosphere Reserve Secretariat that supports the Secretariat's coordination function and serve the information needs of partner agencies, non-governmental institutions and civil society. The project participants were the MOE, MAFF, and Cambodian National Mekong Committee (CNMC). It was supported through internationally recognized management models, trainings, environmental education,

research and monitoring programmes. The project provides a model of cross-sectoral coordination among various line agencies at the national level and also a platform for information sharing among all key players. This contributes significantly to protecting one of the largest floodplain fisheries systems in the country. (www.tsbr-ed.org/english/projects&programme/projects.asp).

Cambodia Tree Seed Programme

The Tree Seed Programme focused on conserving local tree seeds in natural habitats. Deforestation and logging of the remaining primary forests continues and the genetic resources of some of the economically important indigenous species are becoming endangered. Therefore, the potential for good seed sources and reforestation of natural species is deteriorating. To date, indigenous species and populations have not been included in tree improvement programmes. Indigenous tree species are therefore believed to have a large potential for improvement in quality and growth rate. Unfortunately, the handling of indigenous tree seed is an area of which little is known, and therefore, further research is necessary to develop simple but effective methods of handling and storage. It is increasingly recognized that maintenance of forest genetic resources is a pre-condition for sustainable development. A number of tree species are vulnerable or endangered, and at the same time, genetic erosion is occurring through continuous selection of the best trees for cutting. Conservation of genetic variation at the species and population level is important for future tree seed supply and tree improvement programmes and for adaptation to environmental changes and planting sites. The effort provides a basis for protecting the remaining forest genetic resources and ecosystems, particularly for the evergreen and semi-evergreen and deciduous forests of the country. www.treeseedfa.org/

UNEP/GEF Biosafety Capacity Building Project

Cambodia obtained the assistance from UNEP/GEF for an enhancing capacity of biosafety in March 2006. This made Cambodia become the second country out of the countries participating in the Development of the National Biosafety Framework in undertaking the implementation of its NBF. This project helps RGC to strengthen the existing institutional and technical structures and infrastructures needed to meet the obligations of the protocol and to have an operational National Biosafety Framework. In 2007, the MOE developed a National Guidelines on Risk Assessment and Risk Management of LMOs, a Glossary on Biosafety and Biotechnology, an Action Plan on Biosafety and Biotechnology, a Training Manual on Biosafety as well as a plan for monitoring and evaluation of LMOs and Regulation. Moreover, the MOE with assistance from UNEP/GEF is building a mini-lab for LMO detection and identification. Output from the project strengthens existing government efforts in helping to protect national biological resources. www.cambodiabiosafety.org

Conservation Area Landscape Management (CALM) of the Northern Plain in Preah Vihear Province

The project is working toward an effective conservation of the key components of the biodiversity of Cambodia's northern plains landscape by enhancing national and local capacities to conserve an area of approximately 400,000 hectares of dry forest in the Northern Plains of Cambodia. The main activities under the project include land use zoning, participatory land use planning, land use mapping, development of protected areas management plans, setting up management structures for site conservation areas and equipping them with adequate staff and conservation facilities, training and public awareness raising, field forest and wildlife monitoring

and forest and protected areas law enforcement, community engagement through incentive schemes and village agreements in forest protection and wildlife conservation and protected areas management, and development of financial mechanisms for long-term conservation of the areas.

As a result, 70 families experienced a sustained improvement in cash income as a direct consequence of the project's initiatives in 2007. Two Commune Development Plans have included conservation activities with environmental assessment and social impact. Assessments have been completed including two village land-use plans (including conservation priorities) completed in 2007. Two villages received community tenure or title over agricultural and residential land in 2007. Incentive scheme contracts were established with one village and 50 families in 2006. The project provides a model for bottom-up planning and strengthening the role of sub-national authority in facilitating land use planning. (www.un.org.kh/)

South West Elephant Corridor (SWEC) programme

Covering nearly two million hectares of land, the Cardamom Mountain Range represents the largest mainland forest in Southeast Asia and is considered one of the main biodiversity hotspots on the planet, with 16 distinct ecosystems and 14 globally endangered and threatened species. It is one of the last seven remaining elephant corridors in Southeast Asia and is the hunting range for the Pileated Gibbon, Asiatic Black Bear, Malaysian Sun Bear, Marbled Cat, Southern Serow, and half of Cambodia's bird species. The Cardamom Mountain Range and the Tonle Sre Pok are the only locations where Siamese Crocodiles and Royal Turtles can still be found in the wild.

The South West Elephant Corridor (SWEC) programme implements a three tiered approach to conservation combining ranger patrolling, community outreach, and wildlife monitoring to stop wildlife poaching and illegal logging while helping to develop income alternatives for surrounding communities. Through the programme, the area is now being patrolled regularly, awareness on the need for protection of wildlife is conducted systematically and a green community has been developed. As a result, illegal activities have been considerably reduced. The project helps protect large tracts of the country's remaining lowland evergreen forests.

<http://wildlifealliance.org/where-we-work/cambodia-conservation/south-west-elephant-corridor/>

4. Effectiveness of NBSAP and Improvement Needs

The effectiveness of the NBSAP is dependant upon regular checks on the progress, finding a way to correct and removing threats toward biodiversity and especially regular review to improve the quality of the NBSAP. As indicated in the NBSAP, there are six cycle steps to see the progress of the NBSAP implementation.

One of the prominent approaches to ensuring the provisions and targets in the National Biodiversity Strategy and Action Plan are implemented is their incorporation into the national and sectoral policies and plans. While the sectoral policies and plans are developed by sectoral agencies, development of a National Strategic Development Plan also depends largely on inputs provided by sectoral agencies. This is where the National Biodiversity Steering Committee chaired by the MoE with a deputy from the MAFF, and 13 members from 7 ministries, four governors in 4 provinces and 2 committees (CNMC and CDC) play a role. The committee meets on need basis and it is the role of the members to ensure that the provisions in NBSAP are incorporated into both national and sectoral policies and plans. At a technical level, meetings of

the technical working groups provide a forum for coordination and alignment of plans and actions.

Land, fishery and forestry reform forms one of the four pillars in the government's rectangular strategy and the issues of sustainable forest management policy, Protected Areas System, and Community Forestry that are part of the NBSAP are thus being addressed. The NSDP also focuses on the implementation of the environmental impact assessment, climate change, biodiversity conservation and land degradation. It also defines key strategies and actions for agriculture and environmental conservation. Some of the key elements in the plan include preparing a comprehensive strategy for the agriculture sector, increasing public investment in the sector, encouraging and facilitating private sector involvement in agriculture and agro-processing, improving food security and nutrition, facilitating for an increase in yield through expanding extension services, improving the management of protected areas, conserving forest through sustainable management practices, formulating and implementing a comprehensive land policy and implementing a programme of land allocation for the poor.

Measures taken individually and collectively by sectoral agencies in implementing NBSAP and provision of the Biodiversity convention have contributed to addressing and making changes to the status and trends of biodiversity in the country. For example, the MAFF's Action Plan (2004-08) incorporates objectives to continue forest sector reform through sustainable forest harvesting practices, improving classification systems for the forest, requiring forest concessions to conduct inventory and develop a sustainable forest management plan, and fisheries reform through allocation of fishing areas under community management. These contribute to sustaining both terrestrial and aquatic resources and ecosystems.

Against the backdrop of the progress made, there are substantial challenges and bottlenecks. These include ambiguous and overlapping mandates and responsibilities by sectoral agencies, as well as gaps. There are also issues with the limited human and financial capacity that leaves large sections of planned activities unimplemented. With limited skills and professionals to perform tasks as well as poor and ad-hoc coordination, there were few incentives to seek long lasting solutions. This is also compounded by increasing priority given to commercial interests.

An improvement in both intra- and inter-agency information sharing and transparency is needed if an informed plan is to be developed, particularly with regard to land and other resource allocations. A more systematic and coordinated approach should be adopted by relevant agencies to promote synergy and long lasting impacts from sectoral interventions. Livelihood strategy should form part of the landscape approach to addressing biodiversity conservation.

CHAPTER 3: SECTORAL AND CROSS-SECTORAL INTEGRATION OR MAINSTREAMING OF BIODIVERSITY CONSIDERATIONS

1. Intersectoral Policy

Cambodia ratified the Convention on Biological Diversity (CBD) in 1995, but the country's history on implementation of the convention related principles dates back to 1925, long before the establishment of the Convention and of the Ministry of Environment (1993), when the first protected area in Southeast Asia was established. Although the concept and principles of the convention have been increasingly adopted in many government and sectoral policy documents, biodiversity is not always expressly elaborated and frequently embedded under the term natural resources.

The government policy framework governing Cambodia's implementation of CBD provisions by sectoral agencies and also providing the basis for participation and input by development partners, NGOs and communities of the provisions of CBD lie in the following documents:

- The Government Rectangular Strategy (2009-2013)
- The Cambodia Millennium Development Goals (CMDGs 2003)
- The National Strategic Development Plan (NSDP) 2006-2010
- The National Environmental Action Plan (1998-2002)
- The National Biodiversity Strategy and Action Plan - NBSAP (2002).

Starting in the late 1990's, Cambodia has undertaken numerous initiatives to embark on a decentralisation process that involves a three-tiered system of planning and budgeting focused on the commune, district, provincial and the national levels under the Royal Government of Cambodia's (RGC) overall reform programme. The reform was further reinforced through the government's rectangular strategy announced in 2004 and has now entered into the second term of implementation⁸.

Governance reforms lay the foundations in which local Commune/Sangkat Councils, along with the District and Provincial Councils, will have the power to govern, coordinate and provide oversight in resource management, with the technical support of line departments at these various levels. As a result of this effort the demand for natural resources, biodiversity protection and sustainable use in particular, has been adopted and become increasingly seen in the commune development planning processes.

In order to support the reform process, a national committee to support decentralization was formed with mandates, among other things, to promote mainstreaming of natural resource and environmental management with an overall development objective to achieve sustainable

⁸ The strategy emphasizes good governance as its core component and one of the four strategic pillars addresses enhancement of agricultural sector through improving productivity and intensifying agricultural sector, and land, forestry and fisheries reforms. The strategy states the need to maximize agricultural production and ensure sustainable use and management of natural resources including Biodiversity. The second phase of it implementation is 2009-2013.

management of natural resources and the environment, assure secure and equitable access to land and natural resources and create opportunity for natural resources related economic activities, thus contributing to poverty reduction.

An organic law (2008) on sub-national administration provides further basis for the establishment of sub-national councils with the responsibility to oversee local development and natural resources management. The law requires the review of the functions at the national level and their delegation to the lowest most effective levels, including those related to natural resource management. Since its passage in mid 2008, a national committee for sub-national democratic development with a mandate to review the national sectoral functions for their reallocation to sub-national councils was decreed on December 31, 2008. The election of the district and provincial councils was scheduled to be held in May 2009.

Cambodia Millennium Development Goals (CMDGs) represent the national version of the MDGs adopted by member countries to the UN and provide a diagnosis of Cambodia's major policies and programs contributing to each CMDG. The CMDGs are the cornerstones of country's development policies and strategies. The relevant CMDG goals are listed in appendix IV.

The NSDP was developed based on a results-oriented emphasis, with extensive consultations among all stakeholders (government ministries and agencies, external development partners, civil society organisations) through a series of workshops bringing together all the parties to agree upon overall priority goals and jointly examine the goals and constraints to be overcome in order to achieve them. A public investment programme for 2006-2008 was developed to support the implementation of the NSDP. The Public Investment Program (PIP) was approved by the meeting of the council of ministers on January 27, 2006 and the NSDP 2006-2008 was published by Royal Government of Cambodia on August 15, 2006. Benchmark and target values for the most relevant CMDG7 indicators at key time horizons are presented in appendix IV.

The Government of Cambodia also commits to improving development effectiveness through a process of harmonisation and alignment. The RGC's Action Plan for Harmonisation and Alignment (H&A) 2006-2010 has been prepared to implement the agreement between RGC and Development Partners on Enhancing Aid Effectiveness signed in December 2004. A key part of that Action Plan is the greater uptake of more programmatic approaches to development support. This process has been agreed through discussions between the government and the donor community which supports development in Cambodia. The process is an effort to promote the implementation of output from discussions that ultimately led to an endorsement in early 2005 of the so called the Paris Declaration on Aid Effectiveness. It aims at improving aid effectiveness in order to increase the development impact on reducing poverty and inequality, increasing growth, building capacity and accelerating achievement of the Millennium Development Goals.

A mechanism for government and donor coordination was developed to assist government progress in relevant sectoral development, resulting in a total of 19 Government-Donor Technical Working Groups (TWGs) being set up in 2004-05 for key sectors and thematic areas in order to provide a link between high-level policy dialogue and field implementation or project work. The main responsibilities of the TWGs are to coordinate the implementation of the relevant sectoral plans, develop and report annually on the progress of implementation of TWG action plans and H&A action plans against agreed joint monitoring indicators (JMIs) to the Cambodia Development Cooperation Forum. Each key reform agency thus has to join hand in

their respective TWG's secretariat to develop a TWG action plan and H&A action plan including setting JMIs in addition to the sectoral plans developed consistent with the NSDP. The TWGs hold regular meetings, usually one every two months, to exchange information and discuss the different issues in their related fields, including the assessment of the JMIs for which it is responsible.

Examples of TWG activities are provided here. A Four Year Action Plan for Forestry and Environment 2007-2010 has been developed by the Technical Working Group on Forestry and Environment (TWG-F&E) and has recently been approved. Informed by the NSDP 2006-2010 and the overall forest policy statement, the prime objective of the plan is the development of a National Forest Programme (NFP) including coordination and planning. The plan includes a major development element of capacity building activities down to the level of communes and rural people. It involves comprehensive planning and process oriented actions, which will be new challenges to the Forestry Administration (FA) and TWG-F&E.

The Technical Working Group on Fisheries (TWGF) is taking its own similar initiative. It is now in the process to develop a three year action plan for 2009-2011 and a strategic plan for 2009-2015. In order to enhance greater uptake of more programmatic approaches to development support, an integrated policy planning and review process for fisheries sector is being developed. This is to provide an opportunity for bringing the various development efforts together into a coordinated programme of interventions that breaks away from the current project-driven approach. It also provides a basis to stimulate discussion through the TWGF and to help assess the potential of such an approach in the fisheries sector.

TWG-F&E and TWGF as a coordinating and supporting national body links not only the domestic and the donor support to the relevant forest and environmental and fisheries sector respectively, but considers also other important adjacent sectors like management of land, local government and the private sector. TWG-F&E is not replacing genuine line department or ministry tasks, but rather facilitates inter-ministerial and donor dialogues on the above issues. Other Technical Working Groups including Technical Working on Agriculture and Water, Technical Working Group on Land, and so on to a total of 19, have similarly developed their own action plans with members from relevant government ministries.

2. Sectorial Policy

2.1. Environment Sector

The main instrument mandating the MoE to implement the provisions of CBD includes:

- The law on Environmental Protection and Natural Resource Management, 2006;
- The Protected Area Law, 2007;
- The Royal Decree on Creation and Designation of the National Protected Area System, 1993; and
- A sub-decree on Environmental Impact Assessment; 1999;
- The National Environmental Action Plan, 1998-2002;
- The Environmental Strategic Plan, 2004-2008;

The National Environmental Action Plan for 1998-2002 (now being revised) and the National Biodiversity Strategy and Action Plan (NBSAP) of 2002 emphasise the need to prepare and implement management plans for biodiversity conservation and to integrate them into the government's broader policy framework for environmental management. The Environmental Impact Assessment (EIA) system, as set out in the 11 August 1999 Sub-Decree on the Environmental Impact Assessment Process, makes it clear that Ministry of Environment (MoE) is responsible for examining and evaluating EIA reports as well as "monitoring, observing and taking action to ensure that the project owner follows the environmental management plan during the construction, operation and termination" of the project. While the MoE is the primary government authority leading the review and evaluation of the EIA reports submitted by project owners, other government institutions, ministries and local agencies with authority participated in such a review only for the projects that are relevant to their respective sector and within the scope of their jurisdiction.

The EIA Sub-Decree requires project owners to submit an initial EIA and feasibility study for all proposed and ongoing projects that are listed in the annex to the sub-decree and to request the MoE to review them. A full EIA and feasibility report are required for projects with potential to have a heavy environmental impact on natural resources, the ecosystem, health and public welfare. While the EIA Sub-Decree itself does not contain standards to guide the MoE in reviewing feasibility studies and EIAs for decision, a *prakas* is under preparation that provides full scope of definition on EIA to include social, economic and health aspects and also to cover risk assessment. The MoE does not have the authority to reject project proposals and is limited to providing recommendations to project owners and monitoring the implementation of such recommendations. Please refer to chapter 2 for actions related to NBSAP and relevant progress and actions undertaken under the sector.

2.2. Forest Sector

Forests have been a major sector of the country's economy and also involve contested issues. Since 1993-1998, the RGC started activities to consider on development of a national forest policy. In late 1995, the MAFF and the Ministry of Economy and Finance (MEF) conducted a joint study on Forest Policy Assessment in the country with the support from World Bank, FAO and UNDP, the report being submitted for consideration by the government in 1996. Since then the RGC expressed strong interest on forest management policy reform. As a result, a National Committee to Manage and Execute Forest Management Policy (NACOMFOP) was created under the chairmanship of the Prime Minister. The committee was mandated to identify a concept to monitor and assess forest policy, coordinate for forest policy development and investment through government-donor consultative group meetings, and to launch plans of action for the implementation of the forest policy by relevant agencies.

The process of developing a National Forest Programme (NFP) has resulted in a national forest policy statement formulated in 2002. The policy statement defines forest resources of the country as permanent forest estate to be managed by promoting conservation and sustainable forest management initiatives that directly contribute to the rehabilitation and conservation. It stipulates that "The Royal Government of Cambodia commits itself to the conservation and management of the country's unique forest resources in a sustainable manner now and for future generations".

The results and the follow up processes of the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992 were taken into account to consider the

concept of sustainable forest management within the framework of the sustainable development of Cambodia. The RGC acknowledges the multiple perceptions, interests and objectives of the numerous forest interest groups of the country's society, in the region of the Mekong Basin and at the global level regarding the conservation and sustainable management of forest resources. A long term NFP has to be consistent with the framework of the Inter-governmental Panel on Forests/Intergovernmental Forum on Forests (IPF/IFF) promoted by the International Arrangement on Forests with the United Nations Forum on Forests and the Collaborative Partnership on Forests.

With support from Asian Development Bank (ADB), a Sustainable Forest Management Project was implemented between 1999 and 2000 in which forest concession contracts and agreements were reviewed and developed into a new model of forest concession agreements. These are supported with community forestry policy and guidelines for implementation, including drafting of the new forestry law and the operational support of the secretariat of the NACOMFOP.

Article 8 of the forest law (2002) strengthens the move articulating an imperative for establishment of a National Committee to Prepare National Forest Sector Policy, chaired by the Minister of Ministry of Agriculture, Forestry and Fisheries, with membership from other relevant ministries.

The 2002 National Forest Policy Statement outlines the country's key forest management objectives. The statement is centred on sustainable forest management, with particular reference to the conservation of biodiversity, soil and water resources. It also dedicates appropriate forest lands to a permanent forest estate. A large part of the statement, however, relates to social and development objectives for forest management. The statement anticipates sustaining and increasing the supply of forest products for social and economic development, and enhancing the welfare of the population, while also assuring the traditional rights and privileges of local communities. Communities are expected to undertake greater participatory roles in forest management, protection and development. The policy emphasizes support to community forestry programmes.

The current forestry reform provides for regimes of protection as a development strategy. The forest policy and law require concession management plans to become vehicles for biodiversity conservation and the establishment of special protection zones. The values of forests for development, such as water regulation and quality, soil erosion control and NTFPs, in addition to their timber are to be given greater emphasis in forest management strategies. Forestry legislation and policy reform, including the Forestry Law, the Community Forestry Sub-Decree, and the Statement of the Royal Government on Forestry Policy, are part of a comprehensive reform package. A forestry policy is currently being developed by MAFF in consultation with related sectors including MOE. Relevant targets for the sector are presented in appendix IV.

Contribution of the Forest sector

In 1997, the RGC issued a ban on export of round logs and rough sawn timber which is still valid. Four studies were conducted to explore options for forest policy reform, forest concession management, logging control and log verification and legal counsel assignment.

The FA's initiatives established 10 protected areas covering 1,530,981 hectares. This provided a significant contribution to conservation of internationally important biodiversity and the maintenance of development values other than timber. The establishment of the Sarus Crane

Reserve and Cardamom Mountains Forest Protected Area are significant contributions to the conservation of internationally important biodiversity and the maintenance of development values other than timber. The central and southern Cardamom Mountains Forest Protected Areas have been designated to provide a link with the Samkos and Aural wildlife sanctuaries in their north and southern extremes.

An intimate working partnership between the MoE and MAFF has been initiated for inclusive management of the national protected areas system. For example, the Forest Crime Monitoring and Reporting Project bring MAFF and MoE together to work on an issue of great mutual concern, including the control of illegal exploitation of forest and wildlife resources. The link between the two agencies is established at both the central and local levels and thus promotes co-operation and collaboration between two important natural resource management agencies in dealing with forest crime. The linkage also bridges the gap between the central and provincial/district levels. This positive contribution of the project needs to be strengthened, however, and expanded in other aspects of planning and management of forests and protected areas. For example, difficulties remain in sorting out management consistency and arrangements for Tonle Sap fishery conservation overlying parts of the multiple use area. Another linkage is through representation of the officials from the MoE in the Joint TWG-F&E and TWGF.

The MAFF has established two “gene pool conservation areas” in existing protected forest areas. All protected areas act as gene banks. The designated two gene pool conservation areas covering forest systems is an important step by the MAFF in acknowledging the importance of maintaining endemic plant and animal stocks in situ as a sound investment. To promote species conservation, a list of Cambodia national animals and trees species has been developed and adopted by the MAFF including two species of large mammals, one bird, one turtle, one fish, one palm tree and two plant species.

Community Forestry (CF) has been promoted for over a decade and guidelines were finalised in early 2006. There are now 264 CF sites covering an area of about 179,020 hectares approved by the MAFF. A logging moratorium has been imposed on all existing logging concessions; 2,158 cases of forest crimes have been entered into the case tracking system; 606 offenders have been arrested and sent to courts; 1,636 illegal saws, 2,776 m³ of round and squared logs and 14,925 m³ of sawn-wood, as well as the remains of 6,971 wild animals totalling 3,044 kg were confiscated; 215,521 hectares of forest land have been reclaimed from land grabbing and encroachment; several annual bidding coupes have been prepared to meet domestic timber demands.

Tree planting and forestation activities have all been significantly increased; a sub-decree has been issued on the procedures for using state forest land for tree planting to facilitate and encourage local individuals, communities and the private sector to participate in such activities; the capacity development of local communities has been implemented in parallel with legalisation of existing forestry communities and establishing new forestry communities. Fifteen Tree planting stations produced 2 million seedlings in 2007 for distribution and planting by themselves and by military personnel and the community. As a result, 1000 ha of acacia and eucalyptus have been planted by the stations, 1,579 ha by military personnel and an unknown amount are planted on National Arbour Day by local communities.

Until early 2008, 1,231,522 ha of economic concessions were awarded to 98 companies. Of these, 37 companies, covering an area of 332,240 ha, have had their land concessions since cancelled for lack of proper management plans and activities. Thirty seven of the remaining 61

companies have had their development plans approved and of these, 22 are currently invested in plantations of rubber, teak, polonia, acacia, eucalyptus, cashew, cassava, and sugar cane covering an area of over 29,696 ha and including 449,516 teak trees planted along designated roads. Twenty one others are currently in preparatory stages to implement their plans. Of the target 8,338 ha of commercial plantations, 7,173 were planted in 2007, covering mostly fast growing exotic species such as acacia and teak, with 11 economic land concessionaires (MAFF Annual Report 2007-2008).

2.3. Fisheries Sector

A new fisheries law was adopted in 2006. In relation to the old fisheries law, this new law defines the fisheries domain based on an ecosystem approach and an emphasis is included on conservation of fish habitats and resources therein. This contrasts with the previous fisheries law in which the focus was on revenue generation. The fishery policy defines the goal of the fisheries sector to maximize the contribution of the sector to the achievement of national development objectives, especially those related to improving rural livelihoods of the poor, enhancing food security and the sustainable development and equitable use of the fisheries resource base.

Six priorities addressed in the sector strategy and action plan for 2005-08 emphasise the improvement of the policy, plans, legislation, institution and capacity of the sector, increasing access for family fishing, enhancement of fish stock through conservation and research study, promotion of community based fisheries management as a means for livelihood diversification, a participatory approach to fisheries management, improving livelihood of poor rural people by enhancing the role of fish in food security and employment and income generation while adhering to Cambodia's international obligations in relation to aquatic resource-use such as CBD, World Trade Organisation (WTO), CITES, ASEAN and with due reference to FAO's Code of Conduct for Responsible Fisheries.

Contribution of Fisheries Sector

Regimes of protection have been introduced as a development strategy in the fisheries sector. The Fisheries Policy and new Fisheries Law reinforce the importance of fish habitat sanctuaries and seasonal fishing controls in maintaining fish stocks and their diversity. Relevant targets for the sectors are presented in appendix IV.

An initial system of 8 fish sanctuaries has been established at national level. The fish sanctuaries play a significant role in sustaining the viable population for fish reproduction. Three thousand hundred thirty-two hectares of seagrass beds have been protected, resulting in an increased fish catch in the surrounding areas and a 75% reduction in illegal fishing practices. Five fishery refuges have been established and protected.

Community Fisheries have been established to facilitate management and use of common fisheries resources. National policies recognise the rights of fishing communities to manage local fisheries and the importance of their involvement in protection of the resource. Furthermore, they emphasise the importance of increasing habitat protection to ensure the sustainable use of the resource. The Fisheries Law includes a provision for community co-management of fish sanctuaries. In total, 469 Community Fisheries (CFi), 434 inland and 35 in coastal areas, have been established, including 129,490 households. Forty nine percent of these are designated fish refuges.

A sub-decree on the national listing of 58 threatened aquatic species was submitted for consideration by the MAFF and was approved by the government. FiA works actively to conserve the dwindling population of Irrawaddy Dolphins in collaboration with NGOs and local communities. The result of the last few years of effort has seen a decline in the death rate of the dolphin calves. Four seahorse spawning grounds have been identified and actions are now in the process to put them under protection.

Similarly, aquaculture production of fish and shrimp is also promoted by FiA. Targets of 40,000 tonnes were met for 2008, including 156,500 crocodiles, exceeding the goal of 80,000, and 37.2 million fish spawn out of a target of 50 million. FiA celebrates national fish day in selected provinces on an annual basis when fish seed of indigenous species are released to the wild to replenish existing stock. In 2008, 44,000 flooded forest seedlings and 382,750 mangrove seedling were planted in the Tonle Sap Lake and in coastal areas, respectively.

2.4. Agriculture Sector

The agricultural sector strategic development plan for 2006-2010 was developed along with the Agriculture and Water Strategy (2006-2010) that was adopted in 2007. The plan defines development goals to include pro-poor agricultural systems and community arrangements, effective agro-business, efficient, sustainable and pro-poor management of land and water resources, including water quality, coordinated capacity for agricultural based research, information sharing and technology transfer and promoting good governance in agriculture. Integrated Water Resource Management is the main principle to support multi-sectoral use, including the use for conservation of biodiversity and ecosystems.

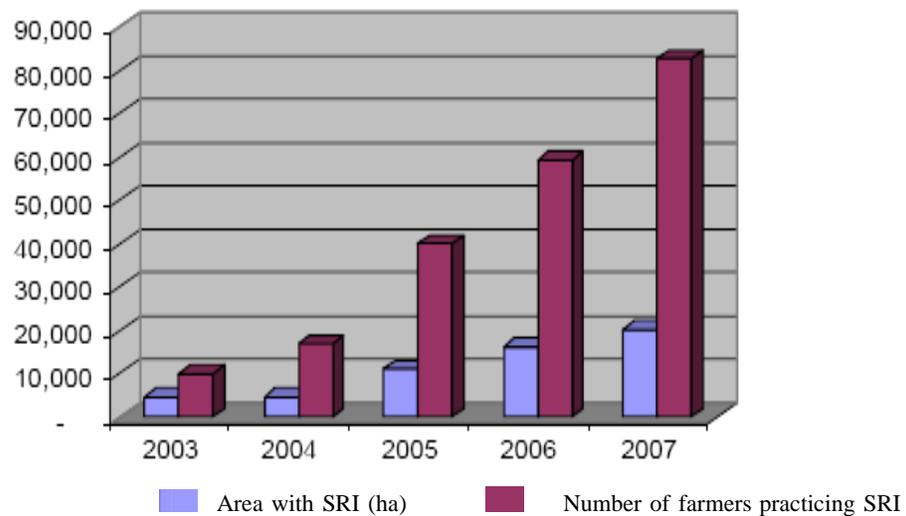


Figure 1: **Trend in land for System of Rice Intensification and participating farmers**

The government’s agricultural strategy promotes diversified farming systems, agro-forestry and protection, and management of critical watersheds. Those strategies, and their direct link to the maintenance of protected areas and biodiversity are key to maintaining stability in agricultural systems and therefore to food security. The significant protected area contribution to the supply and regulation of water for agriculture is recognised. Populations are expanding and bringing

agricultural activities to the edge of protected areas, including subsistence plots, market gardens and commercial operations. Farmers and commercial operators acknowledge this contribution, although it is treated as a free gift.

System of Rice Intensification has been promoted through field trials and farm introduction in an on-going effort. Five hundred households adopted the approach for 70 field trials conducted in 2007 in 5 provinces. The trend in areas and farmers engaged in SRI is presented in SRI is presented in **Error! Reference source not found.**figure 1 above⁹.

Cambodia also sees increasing awareness among farmers on use of improved variety of seeds, organic fertilisers, plant-based pesticides and compliance with instructions when chemical pesticides are applied. The trend for such practices between 2003 and 2007 is illustrated in Figure 2².

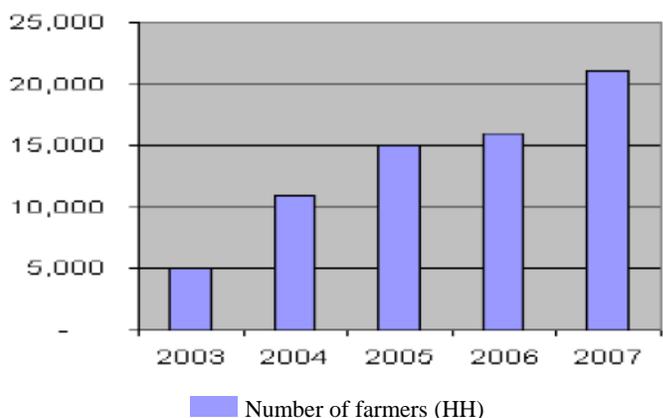


Figure 2: **Trend of farmers implementing environmentally friendly farming practices**

2.5. Water Resources Sector

The creation of a Ministry of Water Resources and Meteorology (MOWRAM) centralises jurisdiction over water resources policy and management. The ministry is responsible for management of fresh and marine water resources, including defining water resources policy and development strategies to support sustainable use, development, and national and international conservation and protection. The comprehensive Law on Water Resources Management defines the rights and obligations of water users, proclaims the fundamental principles of water resource management, and identifies the institutions with authority to implement and enforce the law and to regulate the participation of users in the sustainable development of water resources.

The principle of Integrated Water Resource Management requires coordinated multi-sectoral water use planning including the need for conservation of biodiversity and ecosystems. However, there is still a long way to go with regards to the implementation of the concept. Regardless of the Mekong River Sustainable Development Agreement (1995), hydrodams are becoming hot issues for countries in the region, including Cambodia where the EIA capacity remains weak.

⁹ MAFF's Annual report, 2008

The other achievements include the development and implementation of Farmer Water User Groups.

2.6. Energy Sector and Mining

Cambodia is currently involved in the move to tap its mineral resources, including offshore oil, inland mineral deposit and hydropower potential. Article 21, paragraph 2 of the Law on Management of Mineral Exploitation (2001) recognizes the need for environmental protection as stated in the Law on Environmental Protection and Natural Resource Management (1996) and the sub-decree on Environmental Impact Assessment (EIA) Process (1999) including the need for environmental management plans for each mineral exploitation. However, mineral exploration and exploitation have now become a priority and the relevant activities are reportedly occurring almost every where both legally and illegally, including within the national protected areas system.

The 1999 sub-decree on Environmental Impact Assessments requires an EIA to be completed for hydropower plants exceeding 1 MW and for all “petroleum mining research.” The EIA Sub-decree thus provides a level of environmental review for energy development projects. The sub-decree is supported by EIA guidelines for hydropower and other energy development prepared by MIME.

A protected area review¹⁰ in 2003 found that the first two EIA system hydropower projects in Cambodia were not working effectively, with minimum involvement by the GDANCP and protected areas staff at central government and on site. Consequently, the full effects of the projects for other development sectors, such as tourism, and for other values of the host protected areas have not been adequately studied. In principle, MIME follows the Asian Development Bank’s EIA guidelines and procedures and seeks to develop contracts for work on energy projects on the basis of an EIA report and the mitigation measures it recommends.

There is no mechanism for the energy sector and beneficiaries to pay for the ecosystem services. The economic benefits of the two hydropower schemes will be substantial. Currently, the critical role played by biodiversity and ecosystems in maintaining the productivity and lifespan of hydropower projects has been taken as a free service.

Mining in protected areas had previously been prohibited by a 1994 Prakas on protected areas, but it was repealed in August 2006 to open a way for government revenue generation. Under the Protected Area Law (2008), each protected area should first go through a process of zoning its territory after which it can potentially allow mining activity to take place, but only in those areas classified as ‘sustainable use zones’. As a result, between August 2006 and January 2008, mining operations had started in five of Cambodia’s protected areas, particularly in Mondulkiri Province, a heavily forested area of northeast Cambodia where a large number of mining concessions have already been allocated.

2.7. Tourism Sector

The National Tourism Policy includes the development of infrastructure and conservation of touristic values in protected areas for which the MOE and MOT have embarked on a cooperative initiative to develop a master plan for selected protected areas to promote eco-tourism. The

¹⁰ see www.mekong-protected-areas.org

recognition of the potential for nature based tourism is implicitly enshrined in a number of relevant instruments including the government Rectangular Strategy, NSDP, NEAP, and the organic law on Sub-national Administration.

Government, including local government and communities, increasingly recognises the broader development values of natural ecosystems, especially relating to tourism. Already in some parks, tourism is bringing in significant revenue for local communities. A number of initial investments have been made in infrastructure in some parks, with NGOs assisting in establishing community based ecotourism at many sites. In 2006-07, three eco-tourism destinations were established and two more destinations were being developed. Although the assessment of tourism potential in some PAs and other sites may have been made, the Ministry of Tourism is preparing guidelines and a national eco-tourism strategic plan for eco-tourism development in Cambodia.

2.8. Environmental Education

Awareness and education regarding biodiversity is mainly taken in the form of environmental education and awareness. Although this is not explicitly in the education curricula, the education policy opens for mainstreaming of relevant social and environmental issues and biodiversity as welcomed by the Ministry of Education, Youth and Sports for integration on a case by case basis and to specific locations. As a result, teacher guidebooks and students manuals have been developed under various initiatives and have been in used in schools haphazardly throughout the country.

Awareness campaigns are also undertaken on a semi-regular basis under an initiative by the MoE's Department of Environmental Education and Communications. TV spots and radio shows, including music and songs dedicated to biodiversity protection are strongly promoted. Awareness is also undertaken through national days such as the National/International Environment Day, National Arbour day, National Fish day, and World Wetlands Day. While such education and awareness campaigns focus mainly on students and the public at large, newsletters are also produced targeting decision and policy makers as well as practitioners.

2.9. Financial Sector

As part of an effort to increase resources for implementation of CBD, a national capacity self-assessment (NCSA) accompanying an action plan for national capacity development regarding implementation of the 3 UN Conventions was developed and adopted by the government in 2007. The RGC recognized that there is a lack of capacity for concerned ministries, especially the Ministry of Environment and Ministry of Agriculture, Forestry and Fisheries to work on biodiversity, climate change and land degradation. It also agreed that capacity is a cross-cutting issue that requires help from relevant ministries, NGOs, universities and the private sector to invest for sustainable development in Cambodia. The prime minister made a call to those who care about preserving biodiversity and land quality, preventing climate change, and poverty reduction to support the NCSA Action Plan and push for a long term plan.

As noted in Cambodia NR3, it is impossible to calculate the total financial resources allocated by the Cambodian Government (at all levels) to address matters related to the implementation of the Convention of Biological Diversity as the issues related to the Convention lie with many different government ministries and its line agencies and also it is not possible to segregate the amount spent on matter related to biodiversity from the overall budget of any agency. Nevertheless, the percentage of budget allocation for the central Ministry of Environment and

Ministry of Agriculture, Forestry and Fisheries increased from approximately 0.27% and 1.06% of the total national budget in 2003 allocated for expenditures at the central level for the two ministries respectively. The budget allocation for line departments of each of the two ministries above at the provincial level also increased from 2003 at 25.3% and 41.15 % of the global budget allocated for each of the two ministries respectively.

The Environmental Endowment Fund was established under the Law on Environmental Protection and Natural Resource Management (1996), but is too small and without a focus on biodiversity. Although biodiversity is under commercial exploitation for national revenue, the current financial system requires all revenue be put in the national treasury before it is allocated through annual the budget process. At the field level, however, there are cases where revenues have been generated through eco-tourism initiatives and collection of access fees in which the revenue may be used directly at the place where they are generated.

3. Other International Agreements

Cambodia signed on to the Cartagena Protocol on Biosafety in 2003. Progress in relation to the protocol includes adoption of a national law on biosafety (2007), the extension of the mandate of the National Biodiversity Committee to also cover biosafety issues. Cambodia developed its Guidelines for Risk Assessment and Risk Management of Living Modified Organisms in 2007 and a draft National Action Plan on Biosafety and Biotechnology was developed in 2008. A biosafety clearing house has been established with the Ministry of Environment for the purpose of sharing information with the CBD secretariat and other Parties to the Protocol (www.cambodiabiosafety.org).

Ramsar Convention:

Cambodia ratified the Ramsar Convention on Wetlands in 1999 along with its listing of three sites of international importance covering three main habitat types: river system, floodplain system and coastal mangroves with the MoE serving as the National Administrative Authority. A draft country wetland action plan was developed in 1999 through a participatory process in which relevant agencies and NGOs have full involvement, and an attempt has been made to establish a national wetland committee, but has yet to be formalised. The Ramsar's New Guidelines for management planning for Ramsar sites and other wetlands has been adapted.

Nevertheless, through joint efforts with relevant national and provincial sectoral agencies, local authorities and NGOs, progress made to date includes a draft management plan developed for the three sites. In addition, a comprehensive assessment¹¹ of the biodiversity conservation significance of the Mekong Ramsar site in Stung Treng Province was made to identify resources in place and a basis for a potential zoning scheme for development of an improved management plan for the site. The assessment also benefited from an application of a test for the development of a tool on the Integrated Assessment of Biodiversity which provides a useful means for an integrated approach to considering the ideas of communities which are frequently or heavily dependent on wetlands resources in negotiation for planning of the area.

¹¹ Timmins, R. J. 2006. An assessment of the biodiversity conservation significance of the Mekong Ramsar site, Stung Treng, Cambodia. MWBP. Vientiane, Lao PDR

As part of the joint effort with BirdLife International, 1 EBA (Endemic Bird Area) and 40 IBAs (Important Bird Areas) covering 8 different landscapes over an approximate total area of 4.4 million ha, equivalent to 24% of the total land area, have been identified¹². Of the 40 IBAs, 27 support critically endangered species and 29 support endangered species. The work was done under a collaborative effort between FA, GDANCP, BirdLife and WCS.

UNESCO Network of Biosphere Reserves:

Pursuance to Cambodia's nomination of the Tonle Sap Lake as biosphere reserve in the UNESCO's global network of Biosphere Reserves in 1997, three biodiversity hot spots in the lake area were designated core areas and framework for management and administration has been set in place. As the area is under overlapping jurisdiction between the MoE and MAFF, a Royal Decree was issued in 2001 to clarify responsibilities concerning the Tonle Sap Biosphere Reserve, with the MoE being given the mandate for managing three core areas, while FiA/MAFF is responsible for managing the buffer zone in collaboration with other agencies. This collaborative framework has yet to work effectively in practice.

The progress in this area also includes a draft policy for the Tonle Sap Biosphere Reserve developed (2007) using a multidisciplinary team from relevant government agencies (FiA and MoE at both national and local levels) and academy (the Royal University of Phnom Penh) to address the multi-disciplinary and multi-sectoral approach to management of the resources and their uses with three goals (i.e., to contribute to biodiversity conservation and habitat restoration, to foster sustainable socioeconomic development and equitable access to assets, and to build supporting system for biodiversity conservation and sustainable development). The immediate successes seen include the cessation of waterfowl hunting and population increases in selected species on IUCN red list, reduction of illegal fishing, and legal instruments that allow for a review of the fishing lot system every five years in for the purpose of biodiversity conservation.

United Nations Framework Convention on Climate Change (UNFCCC)

Cambodia ratified the UN Convention on Climate Change in 1995 and the signed on Kyoto protocol in 2002. In 2005, the country analysed its policies to identify gaps in addressing climate change impacts in the country and developed the National Adaptation Programme of Action to Climate Change (2006). An inventory of GHGs found that land use changes contribute significantly to the share of national emissions as industrial processes and agricultural sectors start to take its toll. In addressing climate change issues, a National Climate Change Committee was established (2006) chaired by the Minister of Environment and including participation of the secretary of state and equivalent from relevant ministries.

In implementing the Kyoto Protocol, the MoE was nominated the Designated National Authority to facilitate private and community involvement in the implementation of a Clean Development Mechanism (CDM) through establishment of a CDM project review, endorsements and publication of a manual on CDM related requirements and potential in the country. The results include 5 projects (1 biomass, 2 biogas, 1 heat recovery and 1 hydropower project) submitted, of which 3 projects are registered with executive board and 2 are under validation. All 5 projects

¹² Seng Kim Hout, Pech Bunnat, Poole, C. M., M. Thordoff, A. M., Davidson, P. and E. Delattre (2003) Directory of Important Bird Areas in Cambodia: key sites for conservation. Phnom Penh: Department of Forestry and Wildlife, Department of Nature Conservation and Protection, BirdLife International in Indochina and the Wildlife Conservation Society Cambodia Program.

together would have the potential for avoidance and capture of 431,956 tonnes of CO₂-equivalent annually for 7 years. See www.camclimate.org.kh for more detailed information. Cambodia is among the first country's to initiate Reduced Emissions from Deforestation and Degradation through sustainable community-based management of forests. A REDD pilot project has been established with the aim to assist local communities in 12 CF sites in the NW of the country.

United Nations Convention to Combat Desertification (UNCCD)

Cambodia is also a signatory to the United Nations Convention on Combating Desertification for which Cambodia ratified in 1997 with the MAFF serving the focal point. The Draft National Action Plan is being developed to combat land degradation, develop capacities on how to sustainably manage land, and integrate the landscape approach for sustainable land management into national and sub-national policies and planning.

Convention on International Trade of Wild Floral and Faunal Species (CITES)

Cambodia ratified CITES in 1997 with the country CITES Management Authority established within the Ministry of Agriculture, Forestry and Fisheries (MAFF). The Cambodia CITES Scientific Authority is comprised of three agencies including FA for terrestrial species, FiA for aquatic species, and GDANCP for species originating from Protected Areas.

In implementing CITES, Cambodia has developed and implements national registration and monitoring. The registration process involves submission of a summary document including among others items a description of the type and purpose of facility and number of animals, a letter of endorsement from the Council for Development in Cambodia (CDC) (attached to the letter to the Minister) and a letter of support from the Forestry Administration (FA). Regarding crocodiles, the Fisheries Law of 2006, which provides the main legal basis for crocodile management in Cambodia, and a *Prakas* issued by the Minister of the MAFF on 21 February 2005, concluded that crocodiles, turtles and frogs are under the jurisdiction of the Department of Fisheries.

Convention on Conservation of Migratory Species

Cambodia has not ratified the Convention on Conservation of Migratory Species. However, the country, through the MAFF, signed an MoU on conservation and management of marine turtles and their habitats of the Indian Ocean and Southeast Asia in 2003 which is an instrument under the Convention on Migratory Species. Effort under the initiative include joining the East Asian Network for Migratory Birds, producing field guide for identification of marine aquatic animals including marine turtles, and a proposal for the listing of selected marine turtles as part of the national list of aquatic endangered species (now before MAFF).

Cambodia is also a party to other international conventions including the International Plant Protection Convention (1952). Cambodia is also a signatory to the World Heritage Convention (1991). Progress gained includes the designation of the Angkor complex as a World Heritage Site in 1992, Preah Vihear Temple in 2008, and a series of other sites being prepared for nomination including the Banteay Chhmar complex, Banteay Prei Nokor complex, Beng Mealea complex, Preah Khan complex at Kampong Svay; Sambor Prey Kuk cluster, Koh Ker, Angkor Borei and Phnom Da, Uddong, and Koulen. The central Cardamom complex was also once promoted by the MoE for listing but this has materialised due to the need for further study. (For other multilateral and bilateral agreements, see National Report 3).

4. Regional Agreements

Cambodia is a member of the Association of South East Asian Nations (ASEAN) and thus is bound by its agreements, particularly on the Conservation of Nature and Natural Resources. ASEAN's forestry program includes, *inter alia*, the development of guidelines for criteria and indicators, trade harmonization and promotion through the ASEAN Forest Product Industry Club (AFPIC), and work on forest fires and haze.

Cambodia has representation in the ASEAN Senior Officials on Forestry (ASOF) and has been involved in many regional programmes including, among others, international issues affecting forestry and forest products, International Forest Policy Process (IFPP), Peer Consultation Framework (PCF), Social forestry policy, Asia Forest Partnership (AFP), Forestry research and development, Forest law enforcement and governance (FLEG), Monitoring assessment and reporting mechanism (MAR), Clean development mechanism (CDM) in forestry, Asia forest alliance improving the sustainable management of forest resources and biodiversity in Asia, and the Regional Custom Cooperation Framework.

The Forestry Administration of Cambodia has been actively involved in ASEAN forums on forestry including the ASOF meeting, ASEAN Expert Group (AEG) meeting, workshops, etc. Cambodia, in 2005, was endorsed as a lead country in coordinating activities of the ASEAN member countries to implement the international forest policy and forest regime, and to develop guidelines as a common reference framework for implementation of the IPF/IFF Proposals for Action and the MAR format for SFM in the ASEAN region.

So far, the guidelines for the implementation of the Intergovernmental Panel on Forests/Intergovernmental Forum on Forests (IPF/IFF) Proposal for Action and the MAR Format for SFM in ASEAN based on "the ASEAN Criteria and Indicators for Sustainable Management of Tropical Forests" (ASEAN C&I) 2006 are being developed in consultations among ASEAN member countries. The ASEAN Start-up Workshop for the Field Trial on Application of ASEAN C&I 2006 and "ASEAN Guideline for the Implementation of the IPF/IFF Proposals for Action" was conducted in Phnom Penh, Cambodia in 2007, as an awareness campaign to get involvement from all relevant forestry stakeholders. Within this process, the drafted guideline and the MAR format for SFM in ASEAN are being tested in Cambodia by Cambodian National Task Forces (NTF).

Participation in a Policy Round-table Discussion of ASOF from which the ownership and commitment for regional cooperation in forest policy, the common understanding on principles of regional forest policy and on the effectiveness of the International Arrangement on Forests have been gained. The Policy Round-table Discussion gives additional knowledge to Cambodia in its preparation of reports for United Nations Forum on Forests. Cambodia also designates two NPs, Virachey NP and Preah Monivong NP as ASEAN Heritage Parks.

Cambodia also signed up to undertake the goals determined by the *Millennium Resolution* and *Millennium Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region* as part of its commitments to the participation of local communities in fisheries management. The *Resolution, paragraph 5*, states that: "states should encourage effective management of fisheries through delegation of selected management functions to the local level." The *Plan of Action, paragraph 1 of Fisheries Management*, also emphasises that "states should establish and

implement comprehensive policies for innovative fisheries management, such as the decentralisation of selected fisheries management functions to the local level."

5. Impacts of Biodiversity Mainstreaming on Poverty

No assessment has been made as to how much implementation of biodiversity conservation and development as mainstreamed in the different sectors so far has any particular impact on poverty reduction or social wellbeing. However, a broader picture is given through a mid-term review in 2008 of the implementation of the National Strategic Development Plan (2006-210) in which biodiversity plays an important role.

Cambodia has seen double digit economic growth in recent years, although it continues to be narrowly based. The poverty level remains high, especially rural poverty. Although the poverty level has been decreasing, the pressure on natural resources remains high. The overall poverty level has been estimated to have decreased from 34.7% in 2004 to 30.1% in 2007, a reduction of more than 1 percentage point per year. Poverty levels have declined at all sub-national levels, including from 4.6% to 0.8% in Phnom Penh, from 24% to 21.9% in other urban areas and from 39.2% to 34.7% in rural areas from 2005-2007.

By sector, the increase in productivity of rice per hectare has not been very significant (at a little over the 2005 level, or 2.48 tonne/ha), and is well below the figures for many neighbouring countries. A large potential for increased productivity remains to be realized. Fish constitutes 75% of the total animal protein diet of Cambodians, and fish and fish products are important sources of nutrition for the vast majority of the rural population. About 4.5 million people earn a living out of fishing. The sector contributes about 7% of the GDP and employs 10.5% full time and 34% part time of the total labour force. Several annual bidding forest coupes have been prepared to meet domestic timber demands. Tree planting and forestation activities have all been significantly increased, particularly to meet local demand for energy and construction materials. The promotion of forest management regimes at national and regional levels, especially the Reduced Emissions from Deforestation and Degradation (REDD) is under way to generate revenue for local communities.

Protection and conservation of the unique eco-systems of Cambodia contribute to sustain the livelihood of all Cambodians either directly from employment in conservation work or from sustainable use of the resources therein. In 2006-07, three eco-tourism destinations have been established and several more destinations are being developed. Community Fisheries (CFi) and Community Forestry (CF) have been promoted for over a decade and there are now 468 CFis and 264 CFs that benefit from access to sustainable fisheries and forest resources respectively. Of a total of 82 Community PAs, 46 have become economically viable and thus encourage their involvement in protection and sustainable use of resources in defined zones within PAs. In 2006-07, an area of 3,606 ha of illegally occupied lands was taken back in to protected areas. At least another 215,521 hectares of forest land have been reclaimed from land grabbing and encroachment. However, environmental protection and natural resource management continue to face constraints with regard to institutional and legal framework, in particular the weak coordination among concerned agencies and authorities.

CHAPTER 4: CONCLUSIONS: PROGRESS TOWARDS THE 2010 TARGET AND IMPLEMENTATION OF THE STRATEGIC PLAN

The entire chapter 4 draws upon the information from the first three chapters of the report to analyze and synthesize how national priority actions being taken to implement the CBD are contributing to achievement of the 2010 target and relevant goals and objectives of the Strategic Plan. This chapter also provides summary information on how Cambodia intended to report against the guidelines for these chapters.

Cambodia has not established its national goals or targets with regard to the 2010 target as agreed by parties to the CBD. Some targets were set in a variety of reports and plans. Therefore, information on assessing targets is provided through descriptive analysis and assessment other than filling in the matrix table as suggested by the guideline of the 4th National Report preparation and in its annex II, decision VIII/15 of the convention on biological diversity.

Following is the key information or findings on the progress that Cambodia has made such as targets and outcomes arising from implementing priority actions of the NBSAP and relevant projects and programs.

1. Progress towards the 2010 Target

1.1. Relevant National Targets

Based on previous chapters, certain targets were set for forestry, fisheries, agriculture, conservation, and other relevant sectors. However these targets are set for beyond 2010. They are presented as follows.

This part summarizes the outputs and progress made toward 2010 targets that the country made in contributing to the implementation of the NBSAP.

With regard to the 2010 target, Cambodia has not set any specific targets pertinent to biodiversity, conservation and sustainable use. However, at least some targets were set on POWPA and CMDGs, which are addressed in chapter 1.

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

Although no specific targets were set for effective conservation of ecological regions, most of the ecological regions existing in Cambodia, for instance Southeast-Asian dry-deciduous Dipterocap forests, are adequately represented in the protected areas and protected forest system. Most ecosystem and natural areas that are outside the protected areas and protected forest areas are generally defragmented and degraded by people pressure.

Target 1.2: Areas of particular importance to biodiversity protected

There are no national targets for protection of important areas of biodiversity. However, most of the important biodiversity areas are covered under the protected area system.

Since 1993, 4.65 million hectares of the 10,859,695 million hectares of forested areas in Cambodia (59.82% of the country's land area), were designated as protected areas, national parks, wildlife sanctuaries, multiple use area and protected landscape (18% of the country's land area) and forest-protected areas (7.6% of the country's land area). These are in line with the country's commitment in biodiversity conservation. Together these exceed the 2010 target of 10%.

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

There are no national targets to restore, maintain or reduce the decline of species of selected taxonomic groups. Consequence of the establishment and development of protected areas and protected forest area system is effective protection of species diversity. Through effective management of selected protected areas, protected forest areas and community-based conservation areas for the stewardship initiative programmes, now those areas recovered and maintained healthy populations of wild ungulates, water birds, particularly Eastern sarus crane, Siamese crocodiles, and Irrawaddy dolphins.

Cambodia designated animals and plants as National Symbols of the Kingdom of Cambodia, including Kouprey (*Bos sauvali*), Giant Ibis (*Pseudibis gigantean*), Royal Turtle (*Batagur baska*), Giant Mekong Barb (*Catlocarpoi siamensis*), Sugar Palm (*Borassus flabellifer*), Rumdul (*Mitrella mesnyi*) and Chicken Egg Banana (*Musa aromatica*). A sub-degree on the list of endangered fishes was enacted and proclaimed by the government sub-decree.

Target 2.2: Status of threatened species improved

Various *in-situ* conservation programmes are carried out by key implementing agencies such as the General Department of Administration for Nature Conservation and Protection, the Forestry Administration and the Fishery Administration in collaboration with civil societies and development partners in various states to achieve this goal.

Cambodia hosts a number of threatened species including, as of 2009, 31 higher plants, 37 mammals, 23 birds, 12 reptiles, and 28 fish. Of the animals category, 34 are listed as endangered and 18 are listed as critically endangered. Regarding plants, 13 are listed as endangered and 9 are listed as critically endangered. Of birds, 39 are listed as globally threatened. Regarding aquatic species, 57 are listed as endangered.

Cambodia has no targets for improvements in the status of the threatened species and has never surveyed to assess the present status of these species. These continue to be in the threatened status.

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.

Besides strengthening genetic conservation of fauna and flora, preservation, reforestation and restoration programmes and plans have been promoted the rice, crops, trees and forest and fish

species. Varieties of rice and agricultural biodiversity are stored in seed gene banks, field gene banks and wildlife genetic resource banks.

Almost 80% of the land area in Cambodia is cultivated with local, unimproved varieties of rice as well as seasonal and perennial crops and domestic cattle and poultry. Cambodia possesses more than 2,000 rice varieties of which the genes are conserved at IRRI. Cambodia planted 10,000 ha of trees and distributed over 2 million tree seeds (of at least 18 species) in 2008. Every year, the fisheries sector produces millions of fish seeds and even returns many back to the natural habitats. In order to sustain natural stock, fishing lots around the Tonle Sap Lake floodplains close operations for a few months during the flooding periods.

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.

In situ conservation of non-timber forest products, which are main resources for local livelihood income and subsistence, and their sustainable use, was a major component of the mountainous and wetland conservancy projects and programmes. They identify many important areas, and integrate for conservation of the NTFPs and traditional herbs with the active involvement of local communities. However, the present status of their management and condition is limited and undocumented.

Currently protected areas, protected forest areas and wetlands in Cambodia together with other natural resources are managed based on sustainable management practices. The development of community-based management and sustainable use of biological resources have been explored and brought positive results for biodiversity conservation and environmental protection while creating more employment and supporting incomes of local communities. Up until 2007, 46 Community Protected Areas (CPAs) have been officially registered, practiced and managed by local communities who are living adjacent to the 23 Protected Areas in a sustainable use manner through various approaches, namely ecotourism- and community-based management and conservation, and agro-forestry practices. Four hundred and sixty eight Community Fisheries (CFi) are registered and recognized, of which 434 are inland and 35 are in coastal areas. These include 129,490 households. Forty nine percent of these are designated as fish refuges.

Target 4.2. Reduction of unsustainable consumption of biological resources and that which negatively affects biodiversity.

Cambodia does not allow the export of species or their products as included in the CITES appendix I and II. However, there are no national targets to reduce the unsustainable consumption of biological resources. The government has claimed a successful management of shifting cultivation to permanent agricultural practices which are mainly engaged by remote communities. The number of PA, forest and fishery offenses dropped since 2005. Cambodia has suspended all forest concessions until the proper management plans have been submitted and approved.

In addition, the Ministry of Water Resources and Meteorology and the Ministry of Environment monitors water quality of the most important rivers. The Basin Report Card produced by Mekong River Commission has indicated that the Mekong River and its tributaries in Cambodia are at a level of good to medium in ecological health for aquatic life during the period 2004 to 2007.

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

Besides implementing the CITES obligation, Cambodia has other legislation tools to address this target. Law enforcement officers and rangers in cooperation with others are stationed at important border accessibilities and various official checkpoints of entry to curb illegal animal trade activities.

Presently, there is very limited information on species of wild flora and fauna endangered by international trade. The export of wild flora and fauna is controlled by national laws and relevant regulation. However, Cambodia exported 20,000 monkeys in 2008 for research purposes and studies. There is little change in Cambodia's CITES appendix list, although 2 species were changed (slow loris from appendix II to I of CITES and enlisted sandal wood to appendix II). Farm crocodiles are also exported.

Goal 5. A reduction in pressures causing habitat loss, land use change and degradation and unsustainable water use

Target 5.1. A decrease in the rate of loss and degradation of natural habitats.

Lands not suitable for crops, including those outside protected forest areas, in the protected area system and wetlands are subjectively prone to degradation and deforestation due to improperly defined land tenure rights, social development schemes and migration.

Nevertheless, this target can be achieved by the efforts to achieve Goals 1 and 4. For instance, efforts in terms of establishing and maintaining protected areas, protected forest areas, fish sanctuaries as well as other conservation areas at provincial and local level can contribute to a reduction in the rate of loss and degradation of natural habitats. Hundreds of hectares of degraded mangrove forests have been improved through the reforestation program in a joint effort of communities and the government institutions with support of development partners.

Goal 6. Control threats from invasive alien species

So far, various studies on invasive alien species including investigation, assessment, and interventions for management and prevention were conducted. However, Cambodia has not taken a nationwide action to control potential alien invasive species, namely *Mimora pigra*, water hyacinth, rosy wolf snail, giant African snails, *Chromolaena odorata*, brown tree snake, etc. Rather than being carried out systematically, the control measures were carried out individually, ad-hoc and case-by-case when farmers needed to clear land for farming or increase fish production in their ponds.

The country does not have a plan or concrete policy to get rid of potential invasive species. However, Cambodia does have IPM program to help farmers to increase crop productions by killing or preventing pest such as the invasion of Brown Planthoppers.

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.

Adaptations to climate change and mitigation measures are under active consideration and attention of the government. The issue of climate impact on crop, particularly agricultural, biodiversity was discussed in a recently held national workshop on the issue. In addition, policy and mechanisms of designation of protected areas and protected forest areas to conserve

biodiversity can contribute towards maintaining and enhancing the resilience of the components of biodiversity to adapt to climate change.

There are currently various initiatives by government, civil society and development partners regarding working on and building the capacity of climate change adaptation knowledge across the national to the field level. This will indirectly enhance the resilience of the components of biodiversity to adapt to climate change. For instance, introducing local crops and rice that have the potential to resist climate change is under active consideration of the Ministry of Agriculture, Forestry and Fishery.

Target 7.2. Reduce pollution and its impacts on biodiversity.

The implementation of Environmental Law (1996), Protected Areas Law (2007) and sub-decrees on Water Pollution Control (1999) and Solid Waste Management (1999) contribute directly to this target. In addition, Cambodia is implementing biodiversity corridors to improve habitat fragmented and corridors of wildlife, and planted 10,000 ha of trees/annum and distributed over 2 million of tree seeds (at least 18 species) and also in 2008, planted 44,000 flooded forest seeds and 382,750 mangrove seeds in the Tonle Sap Lake and in the coastal area respectively.

Additionally, concerns relating to pollution and climate change are addressed under the establishment of the National Climate Change Committee (NCCC) by sub-decree in 2006 with the mandate to prepare, coordinate and monitor the implementation of policies, strategies, legal instruments, plans and programs of the government to address climate change issues within the country, thus contributing to the protection of the environment and natural resources and biodiversity. The NCCC coordinates activities concerning the implementation of the UNFCCC. The Climate Change Technical Team (CCTT), to be formed, reviews and approves work plans and reports.

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

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

Target 8.2. Biological resources that support sustainable livelihoods, local food security and health care, especially of poor people maintained.

The two targets above are achieved by the efforts to achieve above Goals. Referring to establishing and managing protected areas, forest-protected areas, fish sanctuaries, other conservation and important areas at sub-national levels and the introduction of closed period of fishing will ensure that capacity of ecosystems are maintained. These protected ecosystems will be able to provide resources for local communities in terms of sustainable livelihood, local food security and health care. Cambodia's government has paid much attention to maintaining the capacity of ecosystems to deliver goods and services and support livelihoods. This is one of the major objectives for the management of the national system of forests, fisheries and the protected areas. In addition, restoration of degraded terrestrial and aquatic ecosystems to improve the ecosystem goods and services receives a high priority in allocation of national financial resources and efforts.

Goal 9. Maintain the socio-cultural diversity of indigenous and local communities

There has been scattered efforts to document the diversity of indigenous communities, their traditional knowledge, innovations and practices. The indigenous and local communities have complete freedom to maintain and practice their socio-economic-cultural diversity.

Efforts focusing on protection of forest sacred sites are integrated in community-based natural resource management, namely Community Protected Areas (CPA), Community Forestry (CF), and Community-based Ecotourism. Many religious, social and cultural beliefs and practices are mainstreamed in the conservation initiatives. Shrines and sacred sites are spread all over Cambodia, mainly in the Northeast and Southwest of the country. These are proving to be a mechanism of conservation of natural resources and biodiversity within the areas.

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

Target 10.1. Ensure all access to genetic resources is in line with the Convention on Biological Diversity and its relevant provisions.

Target 10.2. Ensure benefits arising from the commercial and other utilization of genetic resources are 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.

Without national legislation on the access and benefits of sharing genetic resources, Cambodia's various implementing agencies also have guidelines and regulations on access to genetic resources. There has been no commercial utilization of the genetic resources of Cambodia, but local and small scale commercial utilization of genetic resources has been observed because the present lack of legislation has led to unrestricted exploration and exploitation of genetic resources. There are hundreds of traditional medicine shops operating in Cambodia and regulated by the Ministry of Health. There is an increasing recognition of a need for legislation on ABS. To ensure equitable sharing of the benefits of utilization of biological resources, community's rights and participation in reviewing policies, strategies, plans, programmes and investment projects related to development scheme in PA and PFA.

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 to be 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 to be 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.

The above targets are limited and not applicable to Cambodia. However, the human, scientific, technical and financial capacity has partially improved during the last decade, mainly due to development partners. In order to make significant progress towards achieving the objectives of the CBD, there needs to be more attention and consideration in these areas.

Cambodia has made progress toward achieving the 2010 targets in general. Targets set are not consistent to 2010 and some were set beyond 2010. Few of these targets have been achieved, but significant progress has been made towards nearing achievement for those targets.

In general, the government has expanded its law enforcement capacity, conducting R&D and in Pas and forest protections and marine to know more about biodiversity. The government has increased its capacity to plant more trees every year and release more fish seeds into wild ponds and natural habitats. Water quality of marine and inland water is still in good condition for aquatic life and consumption, but there is a concern about the increase of sedimentation every year as that buildup that could disturb habitats of aquatic life and the movement of water.

While the government has undertaken some activities to improve the protection of endangered species, it is not enough to ensure that the wild populations return to a satisfactory level. It is wise that the government formed PA communities, Forestry and Fisheries communities and Community-based ecotourism sites to handle the sustainable use and protection of natural resources and biodiversity. With an absence or limit in funds, the government recognizes that more community establishment structure/mechanisms can handle this practice. The rights of communities have been acknowledged, their languages, indigenous traditional knowledge and sustainable uses of natural resources have being documented and explored.

1.2. Obstacles Encountered

1.2.1. Social obstacles

In remote areas where there is little infrastructure, local communities are not aware of the obligations to implement the CBD and rather just practice use of biological resources based on their own ways for subsistence living including shifting cultivation and NTFP collections. This condition also prevents them from participating in the relevant activities of biodiversity conservation programmes organized by the government such as planning, awareness campaigns and development. Moreover, relevant sectors are not well enough mainstreamed biodiversity conservation and sustainable use into their plans, policies and strategies.

1.2.2. Institutional, technical and capacity-related obstacles

Institutional capacity of some agencies is not sufficient and needs to be strengthened and developed. The MOE is not adequately empowered as the lead agency in biodiversity conservation and protection in general and sustainable use. Dissemination of information and communication between the MOE lime management hierarchy and relevant agencies and vice versa still needs to be improved to support the planning and decision-making processes. Human resources are critically lacking at sub-national levels (provincial, district and commune levels) while they still need to be improved and extended despite growth over the past 15 years (1993-2008). Traditional knowledge on the conservation and sustainable use of biodiversity is not appropriately documented and transferred into practices at other areas. Scientific research is very limited and not sufficiently delivered to conduct pertinent studies on species and the ecosystem., economic valuation of the area and the usefulness of the areas conserved due to a lack of funding, human resources and technologies from the government side.

1.2.3. Lack of accessible knowledge/information

Cambodia has little knowledge of how the many species once existed in the wild which have been lost due to human activities and the introduction of invasive species into the country. Dissemination of CBD related information and materials including COP decisions, conferences and meetings at national and provincial levels are very limited and not sufficient to ensure greater participation of government agencies and society in implementing the COP decisions. Some government agencies do not have a website for stakeholders to access information. Some

agencies have websites that contain out-of-date information related to activities pertaining to biodiversity, nature conservation, forestry, fisheries, land use and water campaigns.

- a. Economic policy and financial resources: Appropriation of public funds to key concerned agencies such as the MOE, MAFF and MOWRAM are not sufficient while the GEF fund is not fully drawn from the RAF. Cambodia does not have any economic and policy incentives on nature conservation in general, but has incentives for commercial (particularly in forest and PA) or economic land concessions. Benefit-sharing of genetic resources such as medicinal plants and other biodiversity is not yet practiced.
- b. Collaboration/cooperation: Implementing the CBD, including required participation and cooperation with relevant stakeholders did not occur at a satisfactory level. Cooperation with the Ministry of Defense and Interior, a key actor dealing with people management, is an essential mechanism to mitigate the impact of human activities on the conservation and sustainable use of biodiversity.
- c. Legal/juridical impediments: While Cambodia has passed some laws, these need to be further developed with decrees, sub-decrees and other by-laws, to be able to guide and monitor a full implementation.
- d. Socio-economic factors: Cambodia still has constraints on population pressure, whereby approximately 5 million live within 5 km from PAs and protected forest areas and 90% of them fall into categories listed as poor. This creates a lot of pressure on the conservation and restoration efforts and sustainable use of biodiversity and ecosystem. Cambodia still lacks capacity in wood and other natural resource processing in terms of adding values and creation values, sustainable consumption and sustainable forest management. Some fish sanctuaries have declined in stock due to high fishing pressures,, inappropriate management of resources and the use of illegal fishing equipment.
- e. Natural phenomena and environmental change: Cambodia suffers seasonal floods and droughts and some areas are affected by pest break out. This may be caused by climate change and the effects of ice melting from the Tibetan plateau which flows into the Mekong River basin. As a result, for instance, the spread of dengue fever occurs in rural areas. Sea levels in Cambodian coastal areas will rise 20 cm by 2040 and 100 cm by 2100 (Vietnam conducted the assessment in 2008). This will affect the ecosystem in the region.

2. Progress towards the Goals and Objectives of the Strategic Plan of the Convention

Cambodia does not develop its own goals and objectives for the strategic plan of the Convention. With regard to Table 8, all relevant information and indicators have been collected and plugged in as much as possible to reflect the goals and objectives of the strategic plan of the Convention.

2.1. Overall State of Progress

Based on the compilation of the previous chapters in this report, Cambodia has made significant progress in the overall goals and objectives provided in Table 13. Regarding the objectives

numbered 1.1 to 1.3, the country developed several plans and policies on biodiversity and especially mainstreamed biodiversity into sectoral plans including forestry, fisheries, agriculture, land use, tourism, water resources, energy and rural development. Biodiversity has been integrated into cross-cutting conventions such UNFCCC, UNCCD (RGC/MOE, 2007) and the Ramsar Convention. Biodiversity is also mainstreamed into donor agencies' annual operational plans. Cambodia is keen to work with neighboring countries to add biodiversity into a regional plan and policy such as the Vientiane Program of Action (<http://www.aseansec.org/VAP-10th%20ASEAN%20Summit.pdf>), the GMS Core Environment Program of 2006-07(<http://www.adb.org/documents/reports/gms-cep-progress-report/gms-cep-progress-report-2006-2007.pdf>) and the Mekong River Commission Environmental Program (<http://www.mrcmekong.org/programmes/environment.htm>).

Regarding objectives 2.1, 3.1, 3.3, and 3.4, Cambodia has improved its capacity to implement the CBD since it became a party. Several plans and policies have been developed to gain better management. Although, all PAs and forest protected areas have a management. There is limited ODA allocated to biodiversity except its linkages to poverty reduction because there are other priority themes competing for funding too although biodiversity conservation and sustainable use is in the government priority as stated in the subset of "Enhancing Agriculture Sector" in government Rectangular Strategy (2004) and is adopted for a second phase policy between 2008-2013.

With regard to objectives 1.4, 2.4, 3.2 and 4.2, Cambodia made two reports to the CBD Secretariat on its implementation of the CPB that included an interim report to the CPB implementation and first national report to CPB implementation. Biosafety and biotechnology is new for many Cambodians. Cambodia has been undertaking UNEP funded projects on capacity building to develop the national biosafety framework, in which public awareness for high level to local communities have been outreached by employing media services including TV, radio, brochures, newsletters and website. Cambodia established its national biosafety clearing-house, which contains the most up to date information pertinent to biosafety, biotechnology, decisions on LMOs and regulation in the country. Cambodia has its own law on biosafety, which allows the country to regulate LMOs intended for various uses. In 2008, Cambodia managed to create a glossary in Khmer on biosafety, biotechnology, risk assessment and risk management guidelines. Cambodia is establishing a limited capacity LMOs Lab under the MOE with the function to identify LMOs.

With reference to objectives 4.1, 4.3 and 4.4, there are 751 communities participating in natural resource management as a collective force with the government agencies and NGOs to conserve and use natural resources in a sustainable manner. Cambodia integrated biodiversity knowledge into primary and secondary curriculums. At the university level, at least two universities offer a Master's Degree in Biodiversity Conservation in cooperation with international organizations and universities. Since 2005, Cambodian TVK has aired youth debates on the environment and biodiversity related issues almost every week. Cambodia has paid attention in promoting CDM projects, approving five projects to date. For more information and indicators on the progress of the country in implementing the goals and objectives of the Convention, a reference should be made to Table 7.

Table 8: Goals and objectives of the Strategic Plan and provisional indicators for assessing progress

Strategic Goals and Objectives	Possible Indicators
Goal 1: The Convention is fulfilling its leadership role in international biodiversity issues.	
1.1 The Convention is setting the global biodiversity agenda.	- International Biodiversity Day (May 22) organized every year to increase the value of biodiversity among the public;
1.2 The Convention is promoting cooperation between all relevant international instruments and processes to enhance policy coherence.	- Other International Days for Water, Wetlands, Ozone, Clean up the World and Environment also held;
1.3 Other international processes are actively supporting implementation of the Convention, in a manner consistent with their respective frameworks.	- Mainstreamed biodiversity into its regional plan with Greater Sub-Mekong Region (GMS) and ASEAN Vientiane Action Program; -Global initiative on capacity development into the NCSA Action Plan of the 3 conventions: UNCBD, UNFCCC and UNCCD developed and mainstreamed.
1.4 The Cartagena Protocol on Biosafety is widely implemented.	- Biosafety Law, RA and RM guidelines developed and disseminated throughout the country; - National Action Plan for Biosafety and Biotechnology drafted in 2008 and will be submitted to the Council of Ministers in 2009 for approval; - Most articles of the CPB implemented except articles 26-27 which have been raised in a number of meetings locally.
1.5 Biodiversity concerns are being integrated into relevant sectoral or cross-sectoral plans, programmes and policies at the regional and global levels.	- Mainstreamed biodiversity into sectoral plans and policies such as forestry, fisheries, agronomy, animal production and water resources; - Biodiversity Conservation has been integrated into a country operational plan of UNDP, UNEP, UNIDO, FAO, WB, ADB, DANIDA, EU, UNDP/GEF Small Grant Programme, IDRC, USAID, AusAID, MRC and ACB; - Mainstreamed biodiversity conservation into a programme of works of Technical Working Group on Forestry, Environment and Technical Working Group on Fisheries and Decentralization and Deconcentration Programme of the RGC;

	<ul style="list-style-type: none"> - About 100 NGOs and IOs dealing with natural resource management in Cambodia (as of December 2008).
1.6 Parties are collaborating at the regional and sub-regional levels to implement the Convention.	<ul style="list-style-type: none"> - Cambodia is an ASEAN Member State willing to ratify the ASEAN Agreement on Natural Conservation, but the agreement is being placed in a revising process; - Cambodia is a Party to GMS Agreement and Mekong Agreement which also tackle biodiversity conservation along riparian counties in the region; - Cambodia is a Party to COBSEA.
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.	<ul style="list-style-type: none"> - Financial capacity of Cambodia stands between lacking and severely lacking; - Human capacity stands between lacking and sufficient, but at the national level, the government has better capacity than the provincial government; - Organizational capacity stands between lacking and severely lacking; - Constituency capacity stand between lacking and severely lacking; - In general, at the national level, capacity for planning and implementing the NBSAP is much better than the provincial level. However, a lack of adequate incentives means the government struggles to retain a competent staff employed..
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.	<p>Cambodia's ODA in environment and conservation was USD 8.6 million and funding from NGOs was USD 322,000 in 2007. This is supported by the Agriculture sector with ODA USD 41.2 million, and NGOs USD 2.3 million in 2007 (87 projects).</p>

<p>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.</p>	<p>Cambodia has established, maintained and updated a BCH with resourceful information from on-going project activities, legislation and decision on LMOs release into the environment.</p>
<p>2.4 All Parties have adequate capacity to implement the Cartagena Protocol on Biosafety.</p>	<ul style="list-style-type: none"> - Promoted public understanding on obligation of CPB for students, government ministries, customer officers, border control officers, NGOs and private companies. - At least 10 labs and research institutes but none of these can perform a reliable test on LMOs items. An LMO Detection Lab is being constructed by MOE and CARDI with some equipment from UNEP (2008-09).
<p>2.5 Technical and scientific cooperation is making a significant contribution to building capacity.</p>	<ul style="list-style-type: none"> - Main conservation NGOs, WildAid, WCS, WWF, FFI, and CI cooperated to conduct research and conservation activities inside Cambodia PAs system including 10 law enforcement trainings held with approximately 400 rangers (MOE and FA); - Conduct research and set up monitoring systems for key species such as elephants, tigers, vultures, ibis, dolphins, cranes and others; - Set up an <i>ex-situ</i> conservation area of wildlife breeding for certain endangered species at the Phnom Tamao Wildlife Rescue Center; - Four Marine Research Centers established along the coastline to assist marine aquatic research and conservation; - A study to conserve tropical tree seeds formed with the assistance of DANIDA and a university in Denmark; - Several exchange programs with the US government, EU, Japan and Australia to improve capacity in PA system management, environmental impact assessment, sustainable forest management, etc.; - Transferred most capacity from national level to local communities in handling natural resources management.

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.	<ul style="list-style-type: none"> - NBSAP with 98 priority actions developed; - NCSA Action Plan with 160 priority actions over a period of 10 years (2007-2016) developed; - Fishery Development Action plan (2005-08) formed; - Coral Reef and Sea grass Action Plan (2006-2015) formed; - POWPA with 103 priority actions (2008) drafted; - Biosphere Reserve Framework Policy drafted; - Agriculture Sector Strategic Development Plan (2006-2010) developed; - Cambodia National Forest Program drafted; - NEAP (2008-09) revised; - Several sector policies and protected area management plans developed such as Central Cardamom, Mondulkiri Eastern Plain Forest Area, Virachey National Park, Koh Kapik Ramsar Site etc.
3.2 Every Party to the Cartagena Protocol on Biosafety has a regulatory framework in place and functioning to implement the Protocol.	<ul style="list-style-type: none"> - Biosafety law passed in 2007. The law addressed five elements: regulatory system, administrative system, system of handling a request to release LMOs into the environment, enforcement and monitoring of impacts from LMOs and public participation, awareness and education. - A sub-decree to manage LMOs in the country in 2008-09 drafted.
3.3 Biodiversity concerns are being integrated into relevant national sectoral and cross-sectoral plans, programmes and policies.	Integrated biodiversity concerns into relevant plans and policies including: NAP, NAPA, Water Resource Policy, Land Use Planning, ASDP, NSDP, Development Agencies' annual plans, and provincial programmes.
3.4 The priorities in national biodiversity strategies and action plans are being actively implemented as a means to achieve national implementation of the Convention and as a significant contribution towards the global biodiversity agenda.	Mainstreamed biodiversity into various plans and strategies to achieve the 3 objectives of the CBD. Key strategies and action plans - NBSAP, NCSA Action Plan, POWPA, Coral Reef and Sea grass Action Plan, ASDP which related to policies and plans of development agencies and NGOs in the county.

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.	<ul style="list-style-type: none"> - All 100 NGOs and IOs dealing with nature conservation and environment conducting awareness activities registered. They have mainstreamed awareness of nature conservation into their projects and programs at national level and provincial level; - Government institutions, MOE, FiA/MAFF, FA/MAFF, and DAHP/MAFF run their awareness activities on natural conservation through media, TV, radio and leaflets. - Integrated biodiversity in primary and secondary school curriculum in 2000. At the tertiary level, only two universities offer a Master Course in Biodiversity.
4.2 Every Party to the Cartagena Protocol on Biosafety is promoting and facilitating public awareness, education and participation in support of the Protocol.	<ul style="list-style-type: none"> - Several biosafety and biotechnology youth debates organized via TV, one radio talk show, two TV roundtable discussions, one workshop for media and members of Parliament; - Developed RA and RM Guideline in the local language to assist relevant ministries assessing risks from LMOs; - Glossary in Khmer on Biotechnology developed and distributed to relevant stakeholders; - Biosafety and biotechnology awareness training manual, RA and RM training manual for training developed and mainstreamed in the curriculum for secondary school.
4.3 Indigenous and local communities are effectively involved in implementation and in the processes of the Convention at national, regional and international levels.	<ul style="list-style-type: none"> - Legal framework on access to and equitable sharing of benefits arising out of utilization of genetic resources (2009) drafted; - 751 communities participating in natural resource management (PA communities, fishery communities, and protected forest communities) registered and officially recognized. A number of communities invited to attend national and regional workshops; - Certain traditional knowledge of local communities studied and documented by NGOs and IOs.
4.4 Key actors and stakeholders, including the private sector, are engaged	<ul style="list-style-type: none"> - Several members of the private sector implemented CDM projects, including Angkor Bio

<p>in partnerships to implement the Convention and are integrating biodiversity concerns into their relevant sectoral and cross-sectoral plans, programmes and policies.</p>	<p>Cogen, T.T.Y. Cambodia Biogas, Kampot Cement Waste Heat Power Generation and Sino-Hydropower Corporation.. The projects indirectly contribute to CBD implementation;</p> <ul style="list-style-type: none"> - A few private individuals (Angelina Jolie, etc.) and companies (Ford Foundation, etc.) in the USA and Japan (Rotary Club) provided funds to PA conservation and sustainable use and tree planting; - Trash bin collection implemented in Phnom Penh by locally-based private sector company, CINTRI, which often supports environmental conservation activities such as awareness for youth, Environment Day, etc.
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2.2. Analysis of Obstacles

Resource mobilization is the main problem in developing the goals and objectives of the strategic plan of the Convention to ease in the implementation process. Institutional capacity is still weak, which is a barrier to achieving and implementing the objectives of the goals. Human capacity is another obstacle preventing them from participating in the implementing of each objective such as the capacity to undertake a sustained in-captive breeding rather than a one-time show of animal rescue. Limited funds reach communities who can perform some research and study their traditional practices of utilization of biological resources. This might involve non-economic activities made at the central and middle government line agencies, including the degree of governance in natural resource management and leadership.

3. Conclusions

3.1. Overall Assessment of the Implementation of the Convention

In view of its commitment to the Convention on Biological Diversity (CBD), Cambodia has taken a number of fundamental steps, measures and actions for implementing conservation programs and for applying concepts of awareness raising and capacity building for the sound use and conservation of biodiversity resources. The country developed and published Cambodia's National Biodiversity Strategy and Action Plans (NBSAP) in 2002. In 2009, the Law on Biosafety was enacted. Furthermore, the ministries and national agencies have integrated sectoral and cross-sectoral biodiversity concerns in their mandates, jurisdictions, and administrations through policies, strategies, and legislations. Key legislation tools, such as the Environmental Protection Law, Protected Areas Law, Forest Law, Fishery Law, Water Resource Management Law and Land Use Law. In addition, there are a number of legal documents related to biodiversity conservation and development proclaimed by the Government and relevant ministries. As a developing country dependent upon biodiversity and natural resources for development, developing and improving the comprehensive system of applicable legal documents, guidance, policies and institutional framework to implement national goals towards biodiversity and environment protection in general is necessary.

Conservation, sustainable use and equal sharing of benefits of biodiversity and related resources supporting development and community livelihoods are debatable issues among key stakeholders that need time, effort and resources to be taken into account before proceeding to the next step.

Maintaining forest coverage and improving management and conservation of protected areas and forest-protected areas, including fish sanctuaries, represent major achievements for Cambodia. Various and diversified forms of Community-based Participatory Natural Resource Conservation and Management have progressed. Many models of community participation for conservation have been implemented with positive results, showing the effectiveness of state policies in biodiversity conservation.

Despite considering those crucial achievements, efforts, capacity and resources made to implement the Convention were very limited in scope, size and participatory level. Consequently, the effect of such short-term efforts and achievements for demonstration purposes has limited the effects of conservation and sustainable use of biodiversity and fair and equitable sharing of benefits among beneficiaries.

3.2. Lessons Learnt

The important roles and functions of biodiversity conservation and ecosystem goods and services described in previous chapters are limited and not well understood by a large number of people at all levels, particularly at the level of managers, planners and policy- and decision-makers in Cambodia. The key government institutions related to CBD implementation, together with the relevant and capable stakeholders, should appreciate the value and services of these precious natural resources to enhance understanding and lift up biodiversity concerns in the development agenda.

The NBSAP is a vital strategic implementation document of Cambodia paving the way for the conservation and sustainable utilization of biodiversity. However, it does not being used and is limited in taking into account among the concerned institutions and stakeholders as a national guidebook in their planning. Furthermore, to cope with those limitations and strengthen biodiversity conservation in the future, Cambodia must reflect upon lessons learned about the CBD implementation as follows:

- Lack of human and financial resources, capacity and support for implementation of the Convention;
- Lack of communication and coordination within and between ministries and agencies at central and local levels;
- Structure, system and mechanism to monitor, inspect and evaluate law enforcement are still too weak and ad-hoc to ensure adequate programmes and actions for the relevant sectors in contributing to implement the Convention;
- Limitation to overall objectives of biodiversity conservation due to divergent integration of biodiversity and environment protection into socio-economic development programmes;
- Lack of specific relevant strategies, policies and operational systems, structure and mechanisms for fair and equal sharing of benefits of biodiversity resources;
- Lack of communication, education and public awareness raising in the implementation of the Convention;

- Limited efforts, resources and capacity in monitoring and validating data and information that can be used to prepare the policies, strategies and tools in the implementation of the Convention;
- Limitation of cooperation with the CBD Secretariat, GEF and other partners in the promotion and sharing of information and transferring updated knowledge for mutual and common understanding among CBD state members in order to obtain more information, technical and financial supports to implement the CBD.

3.3. Future priorities and capacity-building needs for the implementation of the Convention

To enable optimal implementation of the Biological Diversity Convention, Cambodia needs to develop and capacity-building:

- Raising public awareness and knowledge in implementing the relevant legislations for biodiversity conservation and the Convention and the importance of biodiversity, and improving and building capacity for government and institution management regarding biodiversity at central and local levels;
- Developing structure, systems and mechanisms to ensure that the programs and plans in relevant sectors are in line with implementation of the Convention;
- Increasing and promoting stakeholders' awareness and knowledge on the Convention working programs and plans through integration of biodiversity conservation in national, ministerial, and local plans. Priorities should be given to regional biodiversity planning, implementation of EIA for infrastructure and investment development projects with regular follow-up, and user-payment policies for commercial exploitation of biodiversity and ecological service beneficiaries;
- Mainstreaming the Convention and its programme of work from national to local levels (provincial and district/city) according to the appropriate level, time and scale;
- Enhancing the rights and capacity of local communities so that they will actively participate in biodiversity conservation and sustainable utilization;
- Establishing an ex-situ biodiversity conservation center to collect, study and preserve biodiversity and develop a monitoring programme for a biodiversity database;
- Increasing regional cooperation mechanisms and strengthening diversification and effective management of funding sources for conservation of nature and biodiversity conservation;
- Building skills and capacity and exchanging experiences and knowledge among the Parties to the Conventions.

APPENDIX I

1. Information concerning the reporting party and preparation of the national report

A. Reporting Party

Contracting Party	Kingdom of Cambodia
NATIONAL FOCAL POINT	
Full name of the institution	<i>General Department of Administration for Nature Conservation and Protection, Ministry of Environment</i>
Name and title of contact officer	<i>H.E. Chay Samith, Director General</i>
Mailing address	<i>#48, Samdech Preah Sihanouk, Tonle Bassac, Chamkarmorn, Phnom Penh, CAMBODIA</i>
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E-mail	<i>dncp_moe@yahoo.com</i>
CONTACT OFFICER FOR NATIONAL REPORT (IF DIFFERENT FROM ABOVE)	
Full name of the institution	<i>Department of International Conventions and Biodiversity (ICBD), GDANCP, MoE</i>
Name and title of contact officer	<i>Ms. Somaly CHAN, Director</i>
Mailing address	<i>#48, Samdech Preah Sihanouk, Tonle Bassac, Chamkarmorn, Phnom Penh, CAMBODIA</i>
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Fax	<i>(855) 23 721 073</i>
E-mail	<i>icbd@gdancp-moe.org</i> , <i>somalychan@hotmail.com</i>
SUBMISSION	
Signature of officer responsible for submitting national report	<i>H.E. Dr. Mok Mareth, Senior Minister, Minister for Environment</i>
Date of submission (revised)	<i>October 10, 2010</i>

B. Process of preparation of the national report

Completion of the Fourth National Report to CBD took 3 months. The work was carried out by the General Department of Administration for Nature Conservation and Protection (GDANCP) and the Technical Working Group with close cooperation and assistance from national consultants and relevant stakeholders. The work started in mid-January 2009 and ended in early April 2009. The assessment and compilation of relevant reports were carried out by the Technical Working Group of GDANCP and the consultants in order to reflect in each chapter of the entire report the specific format as required by the CBD Secretariat and Decision VIII/14. Secondly, the first draft of the report was placed for discussion during the national consultation workshop taking place on March 23, 2009. After integrating feedback from the participants of relevant agencies, NGOs and academic institutions, the second draft was made available to the National Biodiversity Steering Committee to provide comments and approve for submission to the CBD Secretariat.

2. Further Sources of Information

Other sources of information that can be checked to see the progress in conservation and sustainable biodiversity use in Cambodia beyond that available in this report, please see appendix II.

APPENDIX II

A. Further sources of information

Other sources of information that can be checked to see the progress in conservation and sustainable biodiversity use in Cambodia beyond that available in this report are:

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B. Useful Websites related to biological diversity in Cambodia:

1. Technical Working Group on Forestry and Environment: www.twgfe.org/nfp/
2. Tree Seed Program under Forest Administration: www.treeseedfa.org
3. Tonle Sap Biosphere Reserve: www.tsbr-ed.org
5. Climate Change office of Ministry of Environment: www.camclimate.org.kh/
6. Secretariat of Coastal Zone Steering Committee: www.czmcam.org/
7. NBSAP Website: www.biodiversity-kh.org
8. Cambodia BCH: www.cambodiabiosafety.org
9. Tree Seed Program, Denmark: www.SL.life.ku.dk
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APPENDIX III

1. Progress towards targets of the global strategy for plant conservation and the programme of work on protected areas

A. Progress towards Targets of the Global Strategy for Plant Conservation

Overview:

Cambodia ratified the Convention on Biological Diversity in 1995 and the National Biodiversity Strategy and Action Plan was developed and adopted in 2002. Under theme 5 of the plan (Forest and Wild Plant Resources), no priority actions relevant to the implementation of a strategy for plant conservation is identified. Therefore, the country has not implemented the strategy.

Targets of the Global Strategy for Plant Conservation

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

No national target is set.

However, there is the incorporation in the Forest Gene Conservation Strategy: 4.2.2. Species monograph.

An initial list of 284 terrestrial plant species was developed in 2004 by the Forest Administration, and a list of medicinal plants is being developed by the Ministry of Health. The lists are developed mainly to identify seed source locations for species considered for protection due to either a conservation significance or commercial or local value.

Various projects have provided additional lists of identified plants species which have not been included in the current 2,308 known species of seed plants. It is also known that some 300 plants species, mostly fruits and ornamental species, are imported. Known use of plant species include 328 species as food, 69 species as condiments, 586 species as medicine, and 410 species for other purposes (SoE, 2004).

There is a lack of coordinated effort, planning and resources to commission the action. Most activities are project based and thus lack the continued efforts necessary to consolidate the results.

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

No national target is set.

The target is included in the Forest Gene Conservation Strategy:

4.3. Assessment of species distribution and overall conservation status.

4.5. Assessment of conservation status within gene ecological zones.

A preliminary assessment of selected species was made through the forest seed source project as part of the initiative to develop a forest gene conservation strategy in 2003 using a nationally defined forest gene ecology to identify particularly important species for protection and for their gene conservation.

Twenty one priority tree species were identified for their distribution and ecology and also for their IUCN criteria.

There is lack of programmes to take the initiative forward. With limited resources, particularly from donors, efforts are mainly targeting pilot activities and overall conservation than ensuring that all information is in place before actions are taken.

Target 3: Development of models with protocols for plant conservation and sustainable use, based on research and practical experience

No national target is set.

Forest Gene Conservation Strategy: 4.7. Identification of appropriate conservation methods.

National Biodiversity Strategy and Action Plan: Priority action 5.1, development of a comprehensive national plan for the management of the forest estate, including revision and update of the present legislation regarding forest conservation.

Efforts have been made through an ecosystem approach to protect the forest landscape of both terrestrial and aquatic environments. Research is encouraged for projects to provide recommendations for sustainable use of plant species.

A rapid assessment and prioritization of protected area management (RAPPAM) methodology is being developed to identify priority areas of biological significance for protection. A tool on Integrated Assessment of Biodiversity is being tested to assist in assessing wetlands for conservation, taking into account the biodiversity, economic and livelihood perspectives.

Research is being conducted to support code and RIL (ground-based crawler tractor or rubber-tired skidder systems) implementation.

Plants are not the only elements that deserve attention. In most cases, a livelihood approach is taken into account where issues to be addressed need to include all resources, including wildlife, that are potentially under threat.

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

No national target is set.

National target involves around the different category of PAs and protected habitats to cover different ecosystems. Incorporated under activity 1.1.3, under goal 1.1 of the national programme of work on PAs (2008).

A national protected areas review was conducted in 2003 to identify linkage of the current PAs system with sectoral development and to recommend a review of the current protected areas system for inclusion of poorly represented ecosystems.

Ecosystems are maps of different conservation significance and attention has been made toward their protection (e.g., the Cardamoms, the Northern and Eastern Plains Dry Forests, the Mekong River and Major Tributaries of Sekong, Sesan and Sre Pok, the Central Lowland Semi-evergreen Forests, the Tonle Sap Inundation Zone, the North-western Mekong Delta Wetlands and the Cambodia/Laos/Vietnam Tri-border Forests [DF5]).

As most lands are allocated for specific use, it is difficult to change their status, particularly from non-conservation to conservation. Poor recognition of the long term outcomes of conservation

efforts and the need for immediate return is also a barrier. With a limited budget available, efforts have to focus on effective management of the existing system.

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

No national target is set.

It is integrated into the CMDGs, Target 9: Integrate the principles of sustainable development into county policies and programmes and reverse the loss of environmental resources.

Efforts made include identification of important habitats for plant diversity at local and national levels and prioritization of important areas in each ecosystem through zoning within PAs and enactment of legislation and regulations to ensure plant protection through implementation of effective conservation measures. There is a lack documented information knowledge needed to form a basis for actions as in target 5 above.

Target 6: At least 30 percent of production lands managed consistent with the conservation of plant diversity

No national target is set.

One of the four pillars of the Government Strategy is to promote sustainable agriculture under which there is a focus on agriculture production, and forestry, fishery and land reforms. Forestry reform policy incorporates sustainable forest management requiring the forest concession to develop a forest management plan and submit it for review.

Thirty seven economic concessions were cancelled due to lack of management plans and activities. The number of community forestry, community fisheries, community protected areas, and community based resource management developed and function for which local resource use plan incorporates conservation of target species and habitats.

There is a trend in the development of agro-industry in which the focus is on monoculture and economic return rather than the conservation of plant diversity. Poor law enforcement is one of the major constraints.

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

No national target is set.

As under target 4, a landscape approach has been taken to cover different ecosystems that depend on each other for their existence and function. Guidelines for engaging local communities in forest management have been adopted. Integrated pest management and integrated farming systems are promoted. Two forest gene conservation areas were established and 23 forest gene sources (conservation stands) identified and protected.

There is currently a lack of understanding of the threatened plants species and limited resources available to address the issues.

Target 8: 60 percent 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

No national target is set.

The target involves NBSAP's priority action 13.2: Develop ex-situ conservation capacity for endangered wild plants and cultivars, and 1.2.1: Develop and implement recovery programmes for all endangered vertebrate and vascular plant species (1.2.1).

Three Research and Development Institutes for Agriculture, Forestry and Inland Fisheries, including the forest and fishery research centres, were established.

An ex-situ conservation stand covering 11 species as a pilot action plan was established. Over 2000 rice varieties were collected and stored at IRRI. A prioritization of plants for potential use in recovery and restoration programmes was initiated.

There is limited capacity and facility for ex-situ collection and storage.

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

No national target is set.

Relevant provisions in the Government's Rectangular Strategy (2004) set priorities to improve agricultural productivity and diversification. NBSAP's strategic objectives include the development of a national database on species at risk (Objective 1.2.3, the reduction of illegal hunting and the trade of wild animals (2.1), MAFF's Action Plan (2004-08): Strengthening research on new and alternative crops and conservation of crop genetic resources and the protection of commercially important and other species as incorporated in various sectoral plans.

Many pockets of traditional farming practice remain and are under protection through the promotion of eco-tourism and securing access to communal land ownership. The Cambodia Agriculture Research and Development Institute conducts research to protect and propagate crops of indigenous origin of socio-economic importance.

Increasing pressure from land claims and agro-industry obstructs local people from practicing their tradition.

Target 10: Management plans in place for at least 100 major alien species that threaten plants, plant communities and associated habitats and ecosystems

No national target is set.

Some potentially harmful alien species were identified in a short list. Limited studies have been undertaken on the presence, distribution and impacts of pests on crops but not on their threats to other biodiversity. A few training workshops were organised to enhance awareness of the presence and potential impact of alien weeds. Communication with neighbouring country has been made for potential assistance in relevant training on assessing and controlling alien species. A national biosafety law aimed at controlling the transboundary movement of LMOs was passed.

There is limited knowledge of and capacity to explore the potential impacts of alien species.

Target 11: No species of wild flora endangered by international trade

No national target is set.

The target is incorporated in NBSAP's Strategic Objective 1.2.2: Improve the implementation of the Convention on International Trade of Endangered Species (CITES) and minimize impacts of illegal trade on wildlife, and Objective 1.2.3: Develop national database on species at risk.

A joint programme to implement the provisions of the Convention was implemented with TRAFFIC. Guidelines for law enforcement against the trade of species under CITES have been developed and implemented and regulations have been issued and enforced. A list of national species under CITES has been developed. A declaration was issued to guide farm registration and record-keeping procedures, including the requirement for a slaughtering permit from the FiA, tagging procedures, export permit provision, destination and buyer details, fees, disposal of unused CITES tags, penalties, and a basis for setting domestic export quotas. Hunters have been engaged to become rangers and alternative livelihoods are provided to others.

There is poor enforcement of the law and a lack of appropriate procedures and facilities to distinguish between farmed and wild species. The sub-decree on phyto-sanitary control adopted in 2003, and relevant strategy to address the phyto-sanitation has been developed. However, it is poorly enforced and issues related to the import of exotic plants are poorly controlled.

Target 12: 30 percent of plant-based products derived from sources that are sustainably managed

No national target is set.

Community forestry has been promoted and the Code of Practice for Sustainable Forest Management was adopted in 1999 and is currently in use. Forest concession performance was completely reviewed and forest concessions are now required to submit their management plan or face removal.

A set of tools available for Cambodia and its implementation to ensure sustainable forest management include: Legislation (2002), National Forest Policy (2006), National Code of Forest Harvesting (2000), RIL guidelines (ground-based crawler tractor or rubber-tired skidder systems), Silviculture systems prescription, Forest zoning, RIL Demonstration forest, Code and RIL training and research to support code and RIL Implementation.

Difficulty lies in the lack of a system for certification and tracking down the source of products. Silviculture is not well implemented.

A lack of post-harvest management has resulted in a significant problem as harvesting roads have made transmigration into forest areas possible. This results in further extraction of wood and non-wood forest products, causing progressive forest degradation and deforestation.

Target 13: Halting of the decline in plant resources, and associated indigenous and local knowledge, innovations and practices that support sustainable livelihoods, local food security and health care

No national target is set.

The rights of indigenous people for access to land and resources are recognised in various laws including land law, forestry law and fisheries law. Indigenous people's access to communal land has been secured. Local people are encouraged to participate in community forestry, community fisheries and community based eco-tourism. Research on local farming practices has been conducted, including research by villagers on local use of plants to support their livelihood and treat illnesses.

There is a lack of understanding of the need for conserving plant resources and associated indigenous and local knowledge. Commercial interests hold a strong influence in the remote areas where indigenous communities live.

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

No national target is set.

Various educational and training programmes have been developed and implemented for which plant diversity and conservation needs are incorporated including school curricula, informal educational programmes, newsletters, and other media. Awareness of plant based traditional medicines has been promoted.

Most of the education and awareness work is project based and there has been no assessment of impact for such activities.

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

No national target is set.

A national tree seed and forest gene nursery has been equipped with the necessary facilities, equipment and training.

Most effort is on production rather than on conservation. An insufficient number of government staff received training to work on plant conservation.

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

No national target is set.

Cambodia adhered to the International Plant Protection Convention in 1952. Cambodia also adopted the ASEAN Agreement on the Conservation of Nature and Natural Resources, the Mekong River Commission and Partnerships in Environmental Management for the Seas of East Asia.

An Open Source of Weeds Assessment in Lowland Paddy Rice Field in Cambodia is set to initiate a long-term cooperation between the institutions of Europe and Indochina involving IT& C application in agriculture through a project based on the transfer of IT& C to the extension services and farmer level. This will be followed by a sustained network for the transfer of know-how between European tropical areas (Reunion Island) and Indochina. This is meant to promote cooperation between two southern countries in the area of applied IT &C for agriculture; namely Cambodia and Lao PDR.

B. Progress towards Targets of the Programme of Work on Protected Areas

In January 2008, the Ministry of Environment had, in collaboration with other relevant government agencies and conservation NGOs active in the country, developed and approved a National Programme of Work on Protected Areas to respond to the call in the seventh conference of the Parties to the Convention on Biological Diversity. The programme follows the global goals and targets and identifies 103 priority activities that can be used by all relevant line

ministries and agencies and also NGOs partners for translating into activities under their respective mandate and programmes or projects.

The programme does not focus only on biodiversity conservation as a stand alone issue but also emphasises cross-cutting issues that involve synergistic capacity to improve conservation and sustainable use of biodiversity in the country. The law on PA provides basis for PA zoning including core, conservation, sustainable use, and community development zones. The other relevant laws and polices supporting the implementation of the programme are include:

- Forest Law (2002)
- Forest policy statement (2002)
- Fishery policy statement (2001)
- Fishery Development Action Plan 2005-2008
- Forestry and Environment Action Plan 2007-2010
- The Tonle Sap strategic plan, (in draft since 2006).

2. Goals and Targets of the Programme of Work on Protected Areas:

Goals	Target	Indicators of Progress/Constraints
<p>1.1. To establish and strengthen national and regional systems of protected areas integrated into a global network as a contribution to globally agreed goals.</p>	<p>By 2010, terrestrially^{13/} and 2012 in the marine area, a global network of comprehensive, representative and effectively managed national and regional protected area system is established as a contribution to (i) the goal of the Strategic Plan of the Convention and the World Summit on Sustainable Development of achieving a significant reduction in the rate of biodiversity loss by 2010; (ii) the Millennium Development Goals – particularly goal 7 on ensuring environmental sustainability; and (iii) the Global Strategy for Plant Conservation</p>	<p><u>Progress to date:</u></p> <ul style="list-style-type: none"> - The national PAs system was legalised through a Royal Decree issued in 1993 creating 23 PAs to be administered by the MoE; - The designations of 6 additional forest protected areas covering 1.34 million ha, under various categories of protection and administered by MAFF/FA; - Thirteen long standing fish sanctuaries covering 24,392 ha established in the Tonle Sap Lake and Tonle Sap and Mekong floodplains administered under MAFF/FiA; - The recent designations of coastal fish sanctuaries covering coral reefs, seagrass and mangrove forests but not included in the list of the national PA system; - A series of designations mostly overlapping with some of the above areas including a Biosphere Reserve and 3 Ramsar wetlands sites; - Areas identified by projects to have potential for protection but not yet formalised, some of which are being protected under sectoral arrangement with projects. Some of these also overlap with those existing under the PAs system. These include 40 IBAs and 23 forest seed sources; - A gap analysis of representation and effectiveness for national PAs published in 2006;
		<ul style="list-style-type: none"> - A strategic plan to address implementation of the findings of the gap analysis developed in 2006 provides a statement and a set of ideas

^{13/} Terrestrial includes inland water ecosystems.

Goals	Target	Indicators of Progress/Constraints
		<p>charting a pragmatic way forward to a clearly stated future for the national protected area system;</p> <p><u>Challenges:</u></p> <ul style="list-style-type: none"> - The review found some weaknesses in the system design. Transboundary protection has not been pursued until relatively recently, resulting in poor coordination with neighbouring countries. There are indications that the large size of the system is a weakness because the system is too big to be effectively managed and balanced with Cambodia's other development goals. Finally, the lack of any true marine protected areas represents a significant gap in overall system design. Areas that need to be urgently protected as identified under the review include the area to the west of Virachey National Park and contiguous with Xepian National Protected Area (Laos P.D.R.), the Prey Long forest block, floodplain areas to the north and east of the Tonle Sap Lake, the Bassac marsh area straddled by lower portions of the Mekong and Bassac Rivers, and the island of Koh Kong and surrounding marine areas. - Management of the PAs falls under two different ministries that are governed by different policies and regulations; - Prospect for further expansion or adjustment to the current system is narrow subject to territorial authority of the two ministries; - The focus of sectoral legislation is for the agency to assert its authority, thus providing no incentive for other agencies to support it.
<p>1.2. To integrate protected areas into broader land- and seascapes and sectors so as to maintain ecological</p>	<p>By 2015, all protected areas and protected area systems should be integrated into the wider land- and seascape, and relevant sectors, by applying the ecosystem approach and taking into account ecological</p>	<p><u>Progress to date:</u></p> <ul style="list-style-type: none"> - Cluster of PAs established for the Cardamom complex; - PAs managed in a broader landscape and involving at least two principle ministries and other agencies including sub-national authorities and local communities for the Cardamom complex (2 wildlife sanctuaries and 1 forest protection area), the Conservation

Goals	Target	Indicators of Progress/Constraints
structure and function.	connectivity ^{5/} and the concept, where appropriate, of ecological networks.	<p>Areas through Landscape Management (CALM) of the Northern Plain in Preah Vihear Province, the Srepok wilderness area in Mondulkiri protected forest and in Phnom Prich;</p> <ul style="list-style-type: none"> - A coastal NP was revised in 1995 to include coastal water and islands; - South West Elephant Corridor (SWEC) programme implements a three tiered approach to conservation combining ranger patrolling, community outreach, and wildlife monitoring to stop wildlife poaching and illegal logging while helping to develop income alternatives for surrounding communities; - A corridor between Preah Monivong and Kirirum national parks established; - A well-managed network of core protected areas and connecting tiger-friendly buffer zones and corridors in the focal tiger conservation landscapes selected from across the tiger's range is under assessment for establishment through collaborative work with WWF; - A biodiversity planning manual for Cambodia was developed in 2001, taking into account ecosystem approach, strategy for participation, and reporting procedure; - A review of PAs in 2003 provided recommendations for planning and management of PAs be undertaken on a landscape basis that recognises them as productive components in regional and local development strategies; - A network of key sites for conservation, both inside and outside PAs in the Northern Conservation Area in Preah Vihear province were

^{5/} The concept of connectivity may not be applicable to all Parties.

Goals	Target	Indicators of Progress/Constraints
		<p>identified and established;</p> <ul style="list-style-type: none"> - An area of 140,000 ha within a forest concession in the northern plain was designated for conservation by the government in 2002 due to its exceptionally high importance for global biodiversity along with concession management; - A network of 6 important bird areas were identified for conservation and to provide as birding sites: 1) Ang Trapeang Thmar - Sarus Crane Reserve; 2) Prek Toal Core Area - TBSR; 3) Kru Krom - Kampong Thom Grassland; 4) Stuong - Chikreng (Kg Thom Grassland); 5) Chhep - Vulture Restaurant; 6) Tmatboey - Ibis Village. <p><u>Challenges:</u></p> <ul style="list-style-type: none"> - A shift is needed from a defensive mode looking inward at the immediate challenges of protected area management, to looking beyond their boundaries and actively engaging in the planning and priority setting of development in surrounding landscapes; - Limited consideration, although there is appreciation, of the contribution of PAs to the surrounding areas and/or other development sectors and vice-versa; - Increasing problem of land claims, migration and large concessions within the landscape.
1.3. To establish and strengthen regional networks, trans-boundary protected areas (TBPAs) and	Establish and strengthen by 2010/2012 ^{6/} trans-boundary protected areas, other forms of collaboration between neighbouring protected areas across national boundaries and regional networks, to	<p><u>Progress to date:</u></p> <ul style="list-style-type: none"> - Seven potential trans-boundary protected areas identified; - Country positions on transboundary cooperation for Cambodia, Lao P.D.R. and Vietnam drafted and a transboundary PAs established to include the Virachey - Dong Am Pham - Chu Mom Ray Protected

^{6/} References to marine protected area networks to be consistent with the target in the WSSD plan of implementation.

Goals	Target	Indicators of Progress/Constraints
<p>collaboration between neighbouring protected areas across national boundaries.</p>	<p>enhance the conservation and sustainable use of biological diversity, implementing the ecosystem approach, and improving international cooperation.</p>	<p>Area Complex in partnership with the governments of Lao P.D.R. and Vietnam;</p> <ul style="list-style-type: none"> - The ADB Greater Mekong Subregion Biodiversity Conservation Corridors is being implemented. This also recognises the tri-border forests of Virachey - Dong Am Pham - Chu Mom Ray; - A Protected Area Complex was established in collaboration with WWF as a biodiversity conservation landscape representing the South-eastern Indochina Dry Evergreen Forest and a smaller extent of the Central Indochina Dry Forest ecoregion. This landscape is also a major catchment area for the Sekong and Sesan Rivers, two major tributaries to the Mekong River and the second largest watershed in the Mekong drainage; - Two existing PAs, Virachey and Bokor NPs, were designated as Asean Heritage Parks; - A Ramsar site at Stung Treng was considered for extension to connect with Lao should the latter join the Ramsar Convention and list the adjacent area as a Ramsar site; - Discussion on a trans-boundary marine conservation area between Kampot (Cambodia) and Phu Quoc Island (Vietnam) started in 2006. The work was initiated through a regional project on reversing environmental degradation in the South China Sea; - A trans-boundary protected wetland site in Takeo with Tram Chim (Plain of Reed) NP in the Mekong Delta (Vietnam) had been considered for some time; - A 1995 Mekong agreement provides framework for sustainable development while maintaining the ecosystem; - An MoU on conservation and management of Marine Turtles and their habitats of the Indian Ocean and Southeast Asia was signed by Cambodia in 2003 as part of an effort under the Convention on

Goals	Target	Indicators of Progress/Constraints
		<p>Conservation of Migratory Species;</p> <ul style="list-style-type: none"> - Cambodia adopted and is involved in the implementing of inter-governmental conventions such as the FOA Regional Code of Conduct for Responsible Fisheries; - Cambodia is among 12 Coastal States of the East Asian region that have signed on 12 December 2003, the Putrajaya Declaration of Regional Cooperation for the Sustainable Development of the Seas of East Asia and adopted the Sustainable Development Strategy For The Seas of East Asia as an effort toward regional implementation of the World Summit on Sustainable Development Requirements for the Coasts and Oceans. <p><u>Challenge:</u></p> <ul style="list-style-type: none"> - Limited capacity and funding for implementation; - Much of the trans-boundary and ecosystem approach rely on external funding and technical expertise from NGOs.
<p>1.4. To substantially improve site-based protected area planning and management.</p>	<p>All protected areas to have effective management in existence by 2012, using participatory and science-based site planning processes that incorporate clear biodiversity objectives, targets, management strategies and monitoring programmes, drawing upon existing methodologies and a long-term management plan with active stakeholder involvement.</p>	<p><u>Progress to date:</u></p> <ul style="list-style-type: none"> - PAs strategic plan or system plan has been developed and incorporated as part of the National Legal and Planning Framework; - Guidelines, strategies and manuals developed include Community Protected Area Guidelines, Small Grant Guidelines, Ecotourism Strategy, an Eco-trail Construction and Maintenance manual, a Signage Design and Specifications Manual and a Ranger-based data collection manual; - Eight PAs have management plans either already adopted or in draft form developed through a participatory approach whereby local communities and relevant government agencies and NGOs are provided with opportunities to either engage in data collection and/or analysis or simply in providing comments to the draft versions;

Goals	Target	Indicators of Progress/Constraints
		<ul style="list-style-type: none"> - Boundaries of 18 protected areas have been marked and official mapping of these protected areas has been conducted. - Three core areas of the Tonle Sap Biosphere Reserve have developed management plans through participatory process; - Two of three Ramsar sites have developed draft management plans for which local communities and relevant authorities and agencies were consulted. One of these has a management plan as part of the PA above; - Two hundred and sixty two boundary markers have been posted; - Overall management effectiveness of Virachey NP was assessed to provide recommendations for future management; - Operational support documents were developed for VNP, including Annual Operations Plans, a Park Protection Plan 2006-2008, and an Ecotourism Action Plan 2005-2007. - Individual conservation plans for each of the sites identified as part of the network of conservation areas within the CALM were developed and are integrated into a larger, landscape-level strategy; - The Cambodian Crocodile Conservation Programme has been implemented since 2001; - A species management plan for the <i>Irrawaddy</i> Dolphin was developed in 2005 and is being implemented; - A supplementary feeding and research programme for vultures has been established in response to their rapid decline across their range. <p><u>Challenges:</u></p> <ul style="list-style-type: none"> - Inadequate and non-systematic training - particularly in the field; - Poor government staff salaries, particularly that of field staff, reduces

Goals	Target	Indicators of Progress/Constraints
		<p>commitment;</p> <ul style="list-style-type: none"> - Field staff lack financial motivation and spend a good deal of time working for alternative sources of income; - Brain drain - many staff are more interesting in working for NGOs or NGO-supported projects to increase income; - Few operational resources - The GDANCP has limited funds, thus constraining staff initiative (for example, for infrastructure rehabilitation and development, interpretation, patrolling and restoration); - There are managerial challenges and disadvantages that have to be faced, and these are likely to increase in the future.
<p>1.5. To prevent and mitigate the negative impacts of key threats to protected areas.</p>	<p>By 2008^a, effective mechanisms for identifying and preventing, and/or mitigating the negative impacts of key threats to protected areas should be in place.</p>	<p><u>Progress to date:</u></p> <ul style="list-style-type: none"> - Increased the number of staff placed at PAs; - almost of PAs have zoning plans to limit and control the use of resource therein; - Patrolling systems are in place for some PAs and a number of violators to the rule of the PAs have been taken for prosecution; - In Seima Conservation Area, a biological monitoring program has also been established to detect trends not only in wildlife populations but also other key resources in the area. This will be used to inform future management; - The Wildlife Rapid Rescue Team is cooperating with the Cambodian Ministry of the Environment and the Forestry Administration; - In 2006-07, a further area of 3,606 ha of illegally-occupied lands was taken back in to protected areas; - A national awareness campaign in Cambodia aimed at reducing demand for wildlife products and educating the public on current

Goals	Target	Indicators of Progress/Constraints
		<p>laws to protect wildlife has been conducted since 2001, resulting in three new wildlife laws being passed by the government and a marked increase in locals returning captive wildlife and providing wildlife crime tips to law enforcement officials;</p> <ul style="list-style-type: none"> - At least 75 plants processing sassafras oil, a raw ingredient of the drug ecstasy, were closed down in the western Cardamom Mountains.. <p><u>Challenges:</u></p> <ul style="list-style-type: none"> - Overcoming the effects of weak law enforcement due to limited resources, limited incentives and recent interest for private investment, particularly in mining operations and hydropower development.
<p>2.1. To promote equity and benefit-sharing.</p>	<p>Establish by 2008^a mechanisms for the equitable sharing of both costs and benefits arising from the establishment and management of protected areas.</p>	<p><u>Progress to date:</u></p> <ul style="list-style-type: none"> - PA review in 2003 recommends integration of PAs management in the landscape management system and also to recognise and realise the benefits between PAs management and sectors involved in using PAs; - Economic valuation of Ream NP and wetland valuation in Stung Treng Rasmar site in 2005; - Technical Guidelines for Community Protected Area Establishment being developed as a <i>Prakas</i>. - Alternative livelihood programmes are provided for people within local communities, either through their engagement in patrolling the park, development of community based ecotourism (CBET), or environmentally friendly agricultural system such as in the SWEC project where the Green Suwana project is established; - Migration patterns and traditional land-use among indigenous communities living in and around Virachey National Park were

Goals	Target	Indicators of Progress/Constraints
		<p>studied with the executive summary published in 2006.</p> <p><u>Challenges:</u></p> <ul style="list-style-type: none"> - There are no clear national guidelines for benefit-sharing.
<p>2.2. To enhance and secure involvement of indigenous and local communities and relevant stakeholders.</p>	<p>Full and effective participation by 2008^b, of indigenous and local communities, in full respect of their rights and recognition of their responsibilities, consistent with 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</p>	<p><u>Progress to date:</u></p> <ul style="list-style-type: none"> - In 2000, a national inter-ministerial committee on consultation and conflict resolution in wildlife sanctuaries and national parks was established; - Sub-committees on consultation and conflict resolution for the management of Virachey National Park and Lomphat Wildlife Sanctuary were established for Ratanakiri and Stung Treng Provinces; - Community development plan for VNP developed for 2000-2006; - Forty six of a total 82 Community PAs were developed to become economically viable in order to encourage their involvement in protection and sustainable use of resources in defined zones within PAs; - Two hundred and sixty four Community Forestry sites were established to manage 179,020 ha of forest and 12 of them have REDD projects on trial; - Four hundred and sixty eight Community Fisheries were established and 166 Community Fish Refuges were developed, both inside and outside of PAs; - Local communities that previously committed illegal harvesting of resources from PAs are engaged as rangers and their families are also provided with alternative livelihoods; - The government agency is working with the ethnic Phnong communities in Seima to increase their livelihood security through

Goals	Target	Indicators of Progress/Constraints
		<p>better management and protection of the key forest resources on which they depend;</p> <ul style="list-style-type: none"> - An intensive mapping programme has been initiated through collaboration between the government and NGOs in order to legally delineate specific land use areas and to control and prevent further land encroachment and forest clearance; - In the SWEC, an environmental education unit has been established to teach Cambodian villagers about wildlife and forestry laws and help them manage their resources while protecting areas rich in biodiversity. This includes films, presentations, classroom exercises, interactive performances, and question-and-answer sessions. <p><u>Challenges:</u></p> <ul style="list-style-type: none"> - The challenge will be to recognise the right to participate while reinforcing the obligations and accountability that comes with it.
<p>3.1. To provide an enabling policy, and institutional and socio-economic environment for protected areas.</p>	<p>By 2008,^a 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.</p>	<p><u>Progress to date:</u></p> <ul style="list-style-type: none"> - A review of PAs in 2003 that identified and provided recommendations on how PAs can be integrated into sectoral development planning and how funding can be generated to manage PAs; - The CALM project mainstreams biodiversity conservation in relevant sectors such as tourism, forestry and agriculture within that landscape; - A tourism management strategy developed for Virachey NP includes Code of Conduct for VNP Ecotourism Rangers, Code of Conduct for Visitors to VNP, Preliminary Regulations for the VNP Ecotourism Programme, VNP Impact Management Strategy, VNP Proposed Impact Monitoring Protocol and Community Participation in the VNP Ecotourism Programme.

Goals	Target	Indicators of Progress/Constraints
		<p><u>Challenges:</u></p> <ul style="list-style-type: none"> - Management of resources in the country is a territorial issue and thus PA management under different agencies applies different approaches.
<p>3.2. To build capacity for the planning, establishment and management of protected areas.</p>	<p>By 2010, implement comprehensive capacity building programmes and initiatives to develop knowledge and skills at individual, community and institutional levels, and raise professional standards</p>	<p><u>Progress to date:</u></p> <ul style="list-style-type: none"> - Production of Khmer language field guides and training materials; - Introduction of biodiversity considerations into provincial level land use processes (CALM); - Demonstration of specific mainstreaming interventions at four key sites including community land-use tenure, community contracts and incentives for biodiversity supportive land-use practices, as well as work to mainstream biodiversity into the forestry and tourism productive sectors (CALM); - The Masters curriculum has a wide range of modules including applied research, conservation biology, natural resources management, environmental impact assessments, project design and fundraising through the FFI support to the Royal University of Phnom Penh; - A national ranger training station built at Bokor NP; - About 1,100 staff were trained between 2000 and 2006 on a wide spectrum of topics and carried out in different locations in the country and overseas. Training courses include ecotourism, first aid, global positioning system, land-use planning, law and legal procedures, natural resource management, project cycle management, participatory rural appraisal, procurement, ranger-based data collection and MIST database and wildlife survey; - On-the-job training was provided by international and national consultants. Altogether, 383 consultant person-months between 2000

Goals	Target	Indicators of Progress/Constraints
		<p>and 2006 contributed to capacity building of protected areas staff, staff at GDANCP, and at provincial environment departments;</p> <ul style="list-style-type: none"> - Training of rangers in Chhep Protected Forest and Kulen Promtep Wildlife Sanctuary. <p><u>Challenges:</u></p> <ul style="list-style-type: none"> - Trained staffs lack the necessary resources to apply their knowledge or organise sharing of their knowledge further with their peer groups.
<p>3.3. To develop, apply and transfer appropriate technologies for protected areas.</p>	<p>By 2010, substantially improve 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 Parties on technology transfer and cooperation.</p>	<p><u>Progress to date:</u></p> <ul style="list-style-type: none"> - Biodiversity values were introduced into landscape level land-use planning processes as under the CALM project. The implementation focused particularly on building the capacity of provincial departments and authorities and the integration of specific project initiatives into established provincial planning processes. <p><u>Challenges:</u></p> <ul style="list-style-type: none"> - Resources are available for demonstration but less is available for replication of the developed approach and tools.
<p>3.4. To ensure financial sustainability of protected areas and national and regional systems of protected areas.</p>	<p>By 2008, secure sufficient financial, technical and other resources to meet the costs to effectively implement and manage national and regional systems of protected areas, 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.</p>	<p><u>Progress to date:</u></p> <ul style="list-style-type: none"> - Engagement of NGOs in the conservation initiative; - An animal adoption programme was implemented at the Wildlife Rescue and Rehabilitation Centre; - Economic activities by the private sector in PAs were promoted, an example being the development of an access road to Preah Monivong NP, collection of service and entry fees for Kirirom NP, Prek Toal Core Area Biosphere Reserve and Virachery NP; - A sister park programme was implemented with Sequoia National

Goals	Target	Indicators of Progress/Constraints
		<p>Park in the US;</p> <ul style="list-style-type: none"> - A six step planning process was developed as a guideline for annual operations and budget planning for protected areas; - The Financial Procedures Manual provides a standardised approach to accounting topics and contains the policies, responsibilities, procedures and other related notes concerning bookkeeping functions; - Manuals were developed that cover budget planning at PAs level and at GDANCP; - The concept for the development of a sustainable financing strategy, "Concept for and First Step Towards the Development of a Financing Strategy for the Protected Area System of Cambodia," summarises available data on salary structure and makes recommendations about salary structure, revenue and tourism; - Accounting procedures for Virachey National Park have been produced. <p><u>Challenges:</u></p> <ul style="list-style-type: none"> - Revenue from concessions undertaken within PAs goes to the national treasury before it is reallocated back as annual budget for the government ministry so that the annual share for PAs may not reflect the annual overall budget.
<p>3.5. To strengthen communication, education and public awareness.</p>	<p>By 2008, significantly increase public awareness, understanding and appreciation of the importance and benefits of protected areas.</p>	<p><u>Progress to date:</u></p> <ul style="list-style-type: none"> - An Outreach Strategy was developed in 2003 detailing the objectives, materials, activities, key messages and target audiences for the park's information and education initiatives; - A manual for "General Environmental Education at the District and Provincial Level" was developed in 2005;

Goals	Target	Indicators of Progress/Constraints
		<ul style="list-style-type: none"> - TV and Radio broadcasted "Protecting the Environment is Protecting the Future of your Children;" - A video series was produced and broadcasted: "Morodot Daun Ta" (The Heritage of our Ancestors) consisting of three parts of 30 minutes each: (i) Virachey National Park and the Mekong River, (ii) Bokor National Park and Koh Kong, and (iii) Kulen and Tonle Sap. Videos for community development and to document project activities were produced, including some in the local Ka Vet language; - A video series of ten parts of 6 to 7 minutes each was produced titled "Life and Environment", covering the following topics: Cambodia's environmental heritage, biodiversity, ecotourism, Community Protected Areas, mangrove forests, wildlife sanctuaries, Cambodia's protected area system, forest rangers, culture and environment; - A radio debate programme, "People and Nature," was produced; - Successes and constraints related to prior efforts in environmental education were assessed and approaches were prioritised; - A collection of educational materials on natural resource management was produced; - Environmental awareness forums were held with key stakeholders; - A mobile training team was assembled, trained and equipped to extend environmental awareness in priority villages; - Review of existing information and status; National Forum & Published Environmental Education Status Report; - Provision of community environment education & awareness: theatre, radio, flipcharts & facilitation guides; - Establishment of an Information Management Unit (IMU) within the

Goals	Target	Indicators of Progress/Constraints
		<p>MoE/GDANCP to promote knowledge management and to create a culture of knowledge exchange;</p> <ul style="list-style-type: none"> - Provision of formal environmental education including a teacher's manual and practical tools for schools including flipchart & a toolkit; - Provision of an information guidebook; - Developing and testing environmental education and awareness methodologies and tools. <p><u>Challenges:</u></p> <ul style="list-style-type: none"> - Without strong enforcement and alternative livelihoods, awareness raised does not necessary translate into changed behaviour.
<p>4.1. To develop and adopt minimum standards and best practices for national and regional protected area systems.</p>	<p>By 2008, develop and adopt standards, criteria, and best practices for planning, selecting, establishing, managing and governance of national and regional systems of protected areas.</p>	<p><u>Progress to date:</u></p> <ul style="list-style-type: none"> - Adoption of FAO code of conduct for sustainable fisheries; - Zoning plans for PAs were established through adoption of the PA Law in 2008 and a sub-decree on PA zoning was developed, defining the management regime for each PA zone; - Participatory local land use planning adopted for the northern plain; - A manual for the construction and maintenance of eco-trails was produced and published together with a manual for design and specifications of park entry and directional signs. Both manuals were approved by GDANCP as a national standard; - A step-by-step guide was developed for law enforcement; - A code of conduct was developed for eco-tourism rangers. <p><u>Challenges:</u></p> <ul style="list-style-type: none"> - As in 3.3.

Goals	Target	Indicators of Progress/Constraints
<p>4.2. To evaluate and improve the effectiveness of protected areas management.</p>	<p>By 2010, parties should adopt and implement frameworks for monitoring, evaluating and reporting on protected areas management effectiveness at sites, national and regional systems, and trans-boundary protected area levels.</p>	<p><u>Progress to date:</u></p> <ul style="list-style-type: none"> - RAPPAM (Rapid Assessment and Prioritization of Protected Area Management) methodology developed by WWF. A report about the management effectiveness assessment was published containing recommendations on legal framework, management plans, boundary demarcation, inter-ministerial cooperation, cooperation with the Ministry of Defence, transboundary cooperation, management structure, cluster approach to management, coordinated approach to fundraising, training and building capacity of rangers and managers, and system design and representativeness; - The World Bank and WWF site-level management effectiveness tracking tool (Stolton et al. 2003) was also adopted; - The Long-Term Wildlife Monitoring Programme was established for Phnom Prich Wildlife Sanctuary (PPWS) and the Eastern Mondulkiri Biodiversity and Genetic Conservation Area (BGCA). <p><u>Challenges:</u></p> <ul style="list-style-type: none"> - The system currently used is not uniform and the guidelines produced are not always promoted.
<p>4.3. To assess and monitor protected area status and trends.</p>	<p>By 2010, establish national and regional systems to enable effective monitoring of protected areas, status and trends at national, regional and global scales, and to assist in evaluating progress in meeting global biodiversity targets.</p>	<p><u>Progress to date:</u></p> <ul style="list-style-type: none"> - The MIST database, which contains data on biodiversity, illegal activities, ranger performance and tourism, is used at the protected area site level and at GDANCP. <p><u>Challenges:</u></p> <ul style="list-style-type: none"> - There are limited facilities and equipment for the administration of individual protected areas to make use of the database.
<p>4.4 To ensure that scientific</p>	<p>Scientific knowledge relevant to protected areas should be further</p>	<p><u>Progress to date:</u></p> <ul style="list-style-type: none"> - Data collection standards and tools were tested and implemented,

Goals	Target	Indicators of Progress/Constraints
knowledge contributes to the establishment and effectiveness of protected areas and protected area systems.	developed as a contribution to their establishment, effectiveness, and management.	including ranger-based data collection, community-based data collection, visitor data collection, and specific monitoring programmes. <u>Challenge:</u> - Limited funding available for ground activities at the protected area level.

^a National Target 2009;

^b National Target 2010;

APPENDIX IV

“NATIONAL INDICATORS USED IN THE REPORT”

A. CMDG: Of an overall 9 goals and 106 specific targets, goal 7 on ensuring environmental sustainability articulates the following most relevant targets:

- Target 7.1: Maintaining forest coverage at the 2000 level of 60 % of total land area through 2015.
- Target 7.2: Maintaining the surface of 23 protected areas at the 1993 level of 3.3 million ha through 2015.
- Target 7.3: Maintaining the surface of 6 new forest-protected area at the present level of 1.35 million ha by 2010 and through 2015.
- Target 7.8: Increasing the surface of fish sanctuaries from 264,500 ha in 2000 to 580,800 ha in 2015.

B. Benchmark and target values for the most relevant CMDG7 indicators at key time horizons as presented in NSDP 2006-2010

Indicators	Benchmarks		Targets		
	Value	Year	2005	2010	2015
7.1. Forest coverage as a percentage of total area	60	(1)	60	60	60
7.2. Surface of protected areas (PAs) (millions of hectares)	3.3	1993	3.3	3.3	3.3
7.3. Surface of 6 new forest PAs (millions of hectares)	1.35	1996	1.35	1.35	1.35
7.4. Number of rangers in PAs	600	2001	772	987	1,200
7.5. Number of rangers in forest PAs	500	2001	500	500	500
7.6. Proportion of fishing lots allocated to local communities (percent)	56	1998	58	60	60
7.7. Proportion of community-based fisheries	264	2000	364	264	589
7.8. Surface of fish sanctuaries (thousands of hectares)	264	2000	582	581	581
7.9. Fuelwood dependency (percentage of households)	92	1993	70	61	52

(1) The benchmark is the average forest coverage in the last decade (1992-2002).

Note: Figures have been rounded.

C. Relevant targets set for the Forest Sector

- Maintaining 60% forest cover;
- Maintain forest conservation areas at 1.35 million ha by 2010;
- Reduce the household dependence on natural wood energy to 61%;
- Plant 40,000 hectares of trees for socio-economic use by 2010 (minimum 10,000 ha per year);
- Twenty percent of the nation's forests are to be managed by local communities and several hundred more sites are to be legalized over the next three years;
- The protected area system meant to protect biodiversity and endangered species is to increase by 5000 forest hectares annually;
- Community forestry developed as a sound, transparent and locally managed program of which 50,000 are made aware of the sustainable use of forest resources and the advantage of forest resources annually;
- Two hundred and fifty thousand hectares of degraded forest land planted with trees;
- Clear guidelines established for forest resource management.

D. Relevant target set for Fisheries Sectors

- At least 840 ha of coral and 9,000 ha of seagrass under sustainable management by 2016;
- Incidence of illegal activities that cause harm to coral and seagrass reduced by 50% and overall awareness increased by about 60% in order to reduce damage from human impact;
- Mangrove planting efforts with local communities continued with 45.5 hectares planted in 2008;
- A number of fisheries refuges established, including one for blood cockle, one for crab and one for *Siganus* spp fish;
- One thousand nine hundred hectares of seagrass placed under effective protection;
- Three hundred hectares each of coral reef, seagrass beds and mangroves effectively protected within the next 3 years and 7 endangered species effectively protected within the next 3 years.