



KINGDOM OF CAMBODIA
NATION RELIGION KING

NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN

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Samdech Akka Moha Sena Padei Techo HUN SEN
Prime Minister of the Kingdom of Cambodia

MESSAGE

Cambodia has one of the highest levels of forest cover in Southeast Asia and rich in biodiversity. Forest ecosystems support biodiversity and provide many services, resources and functions important for the livelihoods and wellbeing of the people in Cambodia, for wildlife, for Cambodia's economy, and for mitigating climate change. The world's agricultural systems depend upon biodiversity to sustain genetic plant and animal diversity, to provide pollination services, and to maintain irrigation services. Urban cities depend upon biodiversity to provide clean drinking water to their growing populations, while coastal communities depend upon the natural infrastructure of coral reefs, sea grass beds, and mangroves to buffer them against impacts of climate change, including sea-level rise and increased storm surges. Besides, rural communities depend upon the natural infrastructure of forests, grasslands and wetlands to buffer them against increased drought, flooding, disease and natural disasters.

While biodiversity provides fundamental goods and services upon which all life depends, it is particularly important to the most vulnerable groups of our society. In Cambodia, indigenous ethnic groups and remote rural communities depend heavily upon biodiversity for their basic necessities such as food, water, shelter, medicine and their livelihoods.

As nations begin to plan for a green growth and climate-resilient future, they will be looking for ways to find the most efficient and innovative solutions to meet both their social development needs and their biodiversity conservation goals. Protected areas represent one of the most efficient and effective strategies available for addressing the global challenges of poverty alleviation, while adapting to and mitigating climate change, and maintaining key ecosystem services. Although the upfront investments in protected areas and other conservation areas are high, the long-term ecological, social and economic dividends can be significant.

In this regard, it is my great honour and pleasure, on behalf of the Royal Government of Cambodia, to announce the official launch of the **National Biodiversity Strategy and Action Plan (NBSAP)**. The NBSAP has reflected our political will and our firm commitment to safeguard biodiversity that contributes to the country's economy and sustainable development, including poverty reduction, through the conservation and sustainable use of its biological, natural and cultural resources and other ecosystem services.

The NBSAP will guide line ministries and assist non-governmental organizations and development partners in developing concrete and appropriate measures and actions to strengthen effectiveness of

biodiversity in contributing to the National Millennium Development Goal, National Sustainable Development Strategy, the Strategic Plan on Green Growth, and the Cambodia Climate Change Strategic Plan.

Taking this opportunity, I would like to express my sincere thanks and appreciation to the Ministry of Environment, the National Council for Sustainable Development and its line departments, academies, development partners, non-governmental organizations, and those who have contributed to making this NBSAP updated.

Moreover, our ability to strengthen biodiversity and its contribution to national development processes will be enhanced by active collaboration between line ministries and all relevant stakeholders that are direct or indirect responsible for managing and supporting an effective and coherent biodiversity conservation and sustainable use of biodiversity and its components in Cambodia. The National Council for Sustainable Development and its Secretariat have a very important role to play in facilitating partnerships with various stakeholders, and monitoring the implementation of this strategic and action plan.

Once again, I urge all stakeholders from the Government, private sector, academia institutions, national and international non-governmental organizations and development partners to continue their close cooperation with the Ministry of Environment and the National Council for Sustainable Development for the effective implementation of this updated NBSAP, which would contribute to the development of Cambodia towards a green, climate-resilient, sustainable society and equitable sharing of benefits.

Phnom Penh, *February 05, 2016*



HUN SEN

PREFACE

On behalf of the National Council for Sustainable Development and the Ministry of Environment, I would like to express my profound respect and sincere gratitude to **Samdech Akka Moha Sena Padei Techo HUN SEN**, Prime Minister of the Kingdom of Cambodia, for his full support and strong commitment to strengthen the contribution of biodiversity conservation and sustainable development. The National Biodiversity Strategy and Action Plan is the comprehensive strategic document for biodiversity conservation and management in Cambodia and represents an important milestone for the future under the charismatic leadership of **Samdech Akka Moha Sena Padei Techo HUN SEN**, Prime Minister of the Kingdom of Cambodia.

I would like to express my deep gratitude to **Samdech Akka Moha Sena Padei Techo HUN SEN**, Prime Minister of the Kingdom of Cambodia, and appreciation to Excellencies, ladies and gentlemen from line departments, academies, NGOs, the private sector, and development partners for the good cooperation and support in the preparation and completion of the NBSAP updated.

The globally and regionally significant biodiversity values of Cambodia's rich natural resources are an essential part of our country's *natural capital*. Few places on Earth demonstrate so dramatically the fundamental link between people and nature: biodiversity supports Cambodians ecologically, economically, culturally and spiritually. For many poor forest-dependent communities, biodiversity represents food security and livelihoods, crucial components of their well-being and participation in society.

Article 6 of the UN Convention on Biological Diversity (UN-CBD) demands the preparation of National Biodiversity Strategy and Action Plan (NBSAP) by each signatory country and to ensure that this strategy is mainstreamed into the planning and activities of all those sectors whose activities can have an impact in both positive and negative on biodiversity. As a party to the Convention and in fulfilment of its obligation, Cambodia had developed its NBSAP in 2002 and has used it as the principal instruments for implementing the Convention at the national and sub national levels. While the Global Biodiversity Strategic Plan 2011-2020 has been adopted by COP-10 in Nagoya, parties are required to revise and update their NBSAP to reflect with this new international framework. Cambodia, under support from Global Environmental Facility through UNEP has processed of updating Cambodian NBSAP to use, protect and manage biodiversity for sustainable development in Cambodia. This document serves as a roadmap for supporting the environmental component on country's sustainable development.

The development of the NBSAP is based on a broad and inclusive consultation process to ensure consensus, strategic cohesion and ownership of the Plan by relevant stakeholders. Much emphasis is placed on building institutional capacity and knowledge to strengthen conservation management and

enforcement, expand community livelihood opportunities, and support sustainable uses of biodiversity. Collaboration at unprecedented levels will be required with other line Ministries, with the private sector, with conservation NGOs and development partners to safeguard a biodiversity conservation and sustainable management.

Mobilization of funding resources for the implementation of specific programmes and projects in priority biodiversity conservation and action plan will be critical to achieve the goals and objectives of the NBSAP.

I would like to take this opportunity to express my deep appreciation to Department of International Convention and Biodiversity currently name as Department of Biodiversity, line departments and agencies, development partners and experts for their valuable inputs, assistance and active participation in the updating process of the NBSAP in a timely and effective manner.

Phnom Penh, *February 04, 2016*



Say Samal

**Minister of Environment, and
Chairman of National Council for Sustainable Development**

ACKNOWLEDGEMENT

The National Biodiversity Strategy and Action Plan (NBSAP) was developed under the overall coordination of the General Directorate of Administration for Nature Conservation and Protection of the Ministry of Environment, and the General Secretariat of the National Council for Sustainable Development. It has been updated from the 2002 NBSAP to align with the global Strategic Plan for Biodiversity 2011–2020 and emerging issues of national significance. This updated NBSAP is the result of efforts and commitments made by various government institutions, academics, stakeholders, biodiversity specialists, conservation partners and non-governmental agencies.

The General Secretariat of the National Council for Sustainable Development (NCSD)/Ministry of Environment expresses its most sincere thanks and appreciation to **H.E Say Samal**, Minister of the Environment and Chairman of the National Council for Sustainable Development, for his brilliant and visionary leadership and initiatives on nationwide conservation and protection of natural resources, especially biological diversity, which is part of the Royal Government's commitments to the Convention on Biological Diversity, and for his constant encouragement and support towards the successful development and updating of this strategic plan that will serve as the legal document for biodiversity management and conservation in Cambodia. Special thanks are conveyed to **H.E. Dr. Mok Mareth**, former Minister of Environment and former Chairman, and to members of National Biodiversity Steering Committee (NBSC)¹ for their guidance and advice. In particular, thanks to the Department of Biodiversity's staff (Department of International Conventions and Biodiversity) for their valuable inputs and hard work in facilitating, coordinating and engaging all the relevant stakeholders involved in the updating NBSAP process.

We would like to express our deep thanks for their support and encouragement to: **H.E Chay Samith**, Delegate of the Royal Government of Cambodia in charge of the General Directorate of Administration for Nature Conservation and Protection, **H. E. Dr. Tin Ponlok**, Secretary General of the National Council for Sustainable Development, and **H.E Ouk Seiha**, Chairwoman of the multi-sectorial Technical Working Group on NBSAP Updating (TWG-NBSAP). We also recognize the important work and significant support of the members of the TWG-NBSAP.

We would like to express our sincere gratitude to the consultants **Prof. Jo Mulongoy** for drafting and editing the strategic plan, **Mr. Jady Smith**, **Mr. Ou Ratanak**, and **Mrs. Ly Vichuta** for their inputs, and assisting with data collection and compilation. Particular thanks to key staff of Department of Biodiversity for their commitments and contributions to the whole preparation and updating of the NBSAP, especially **Mr. Meng Monyrak**, **Mrs. Ken Bopreang**, **Mr. Seng Rathea**, and **Mr. Yourk Sothearith** for coordinating and facilitating the process of stocktaking and technical inputs from relevant stakeholders. There has also been direct support in providing information on ground activities, best practices, case studies, and biodiversity data from biodiversity specialists, academia, and conservation partners including **Mr. Neang Thy**, **Mr. Khou Eanghourt**, **Mr. Chhang Phourin**, **Mr. Tan Setha** and **Mr. Uy Ching**, the Royal University of Phnom Penh, Fauna and Flora International, the Wildlife Conservation Society, the World Wildlife Fund, and Birdlife

¹ *National Biodiversity Steering Committee has been invalidated by Subdecree N^o 59 dated 18 May 2015 and merged into National Council for Sustainable Development*

International. Without the regular and effective involvement of these people, this document could not have been comprehensive and produced in time.

We acknowledge with thanks all the contributors and stakeholders from relevant ministries, international organizations, non-governmental organizations, local authorities and communities for their participation and technical input in the formal and informal consultation processes, National Consultation Workshops, and meetings toward the preparation and updating of this NBSAP.

We would like to convey our thanks to the Global Environment Facility (GEF) through the United Nations Environment Programme (UNEP) and the USAID funded Harvest Program (**Mr. Matt Maltby**) for financial and technical supports towards the revision and updating of the NBSAP. Without the great support of many partners it would have been difficult to complete the revision of the Cambodia's National Biodiversity Strategy and Action Plan.

We would also like to thank the members of the Secretariat of the NBSC and all staffs of Department of Biodiversity for their commitments, patience, hard and active work that led to the successful updating of the NBSAP. Finally, I would like to express my heartfelt thanks to all the experts for their valuable time and efforts in providing useful ideas and feedback during the preparation and updating process of National Biodiversity Strategy and Action Plan to support Cambodia's commitment to implement the three pillar objectives of the UN Convention on Biological Diversity.

Phnom Penh, 26 January 2016



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LIST OF ABBREVIATIONS

ABS	Access and Benefits Sharing
ASAP	Asian Species Action Partnership
BCH	Biosafety Clearing House
CBD	Convention on Biological Diversity
CBEA	Cambodia Biodiversity Enabling Activity
CBNRM	Community-based natural resource management
CCCSP	Cambodia Climate Change Strategic Plan 2014 – 2023
CCD	Climate Change Department
CCTT	Climate Change Technical Team
CEPA	Communication, Education and Public Awareness
CHM	Clearing-House Mechanism
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CMDG	Cambodia Millennium Development Goals
DEEC	Department of Early Education and Care
EIA	Environmental Impact Assessment
EFCMU	Extension of the Forest Crime Monitoring Unit
EMS	Environmental Management Systems
FA	Forestry Administration
FiA	Fisheries Administration
FLEG	Forest Law Enforcement and Governance
GDM	Green Development Mechanism
GDANCP	General Directorate of Administration for Nature Conservation and Protection
GHG	Greenhouse gas
GMO	Genetically Modified Organisms
GSSD	General Secretariat for Sustainable Development
IBA	Important Bird Areas
IBSC	Interministerial Biodiversity Steering Committee
ICBD	International Conventions and Biodiversity Department
IMSCEE	Inter-ministerial Steering Committee on Environmental Education
IPM	Integrated Pest Management
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Areas
LDCF	Least Developed Countries Fund
LMAP	Land Management and Administration Project
LMO	Living Modified Organism (resulting from modern biotechnology)
MAFF	Ministry of Agriculture, Forestry and Fisheries
MCFA	Ministry of Culture and Fine Arts
MCR	Ministry of Cults and Religion
MEA	Multilateral Environmental Agreement
MEF	Ministry of Economy and Finance
MIH	Ministry of Industry and Handicraft
MIME	Ministry of Industry, Mining and Energy, <i>which is now MME</i>
MLMUPC	Ministry of Land Management Urban Planning and Construction
MME	Ministry of Mine and Energy
MOC	Ministry of Commerce

MOE	Ministry of Environment
MOEYS	Ministry of Education, Youth and Sport
MOH	Ministry of Health
MOI	Ministry of Interior
MOINF	Ministry of Information
MOLVT	Ministry of Labor and Vocational Training
MOP	Ministry of Planning
MOSVY	Ministry of Social Affairs, Veteran and Youth Rehabilitation
MOT	Ministry of Tourism
MOWRAM	Ministry of Water Resource and Meteorology
MPWT	Ministry of Public Works and Transport
MRD	Ministry of Rural Development
MOWA	Ministry of Women's Affairs
NCCC	National Climate Change Committee
NCDM	National Committee for Disaster Management
NCS	National Council for Sustainable Development
NFP	National Forest Programme 2010 - 2029
NPASSMF	National Protected Area System Strategic Management Framework
NSDP	National Strategic Development Plan
NSDS	National Sustainable Development Strategy
PES	Payment for Ecosystem Services
PLUP	Participatory Land Use Planning
PRSP	Poverty Reduction Strategy Paper
REDD	Reducing Emissions from Deforestation and Forest Degradation
RGC	Royal Government of Cambodia
RUA	Royal University of Agriculture
RUPP	Royal University of Phnom Penh
SCCF	Special Climate Change Fund
SEA	Strategic Environmental Assessment
TK	Traditional Knowledge
TSA	Tonle Sap Authority
TWG	Technical Working Group
UNFCCC	United Nations Framework Convention on Climate Change

EXECUTIVE SUMMARY

Background

Cambodia relies predominantly on its rich biodiversity and other natural resources for its socio-economic development and for most people's food, livelihoods and well-being. In the past decades, high population growth and the increasing economic demands of this growing population have often led to the conversion of natural forests to agriculture, to land degradation and pollution caused by unsustainable agriculture and industries; they have led to habitat fragmentation from public works and urbanization; to the overharvesting and overexploitation of resources particularly in forests, freshwaters and marine and coastal areas. These pressures on biodiversity and its associated ecosystem services are often exacerbated by the impact of climate change and more frequent natural disasters.

Cambodia has taken a number of measures to reduce biodiversity loss, in particular the designation of a wide network of protected areas. However, limited financial resources and capacities in general, combined with poor awareness of the value and vulnerability of ecosystems (of which the natural capital is a part) have not allowed for an effective control of the drivers of biodiversity loss. This, of course, has detrimental consequences for the country's sustainable development.

In 1995, Cambodia acceded to the Convention on Biological Diversity (CBD). As part of its fulfillment of the obligations under this Convention, Cambodia adopted its National Biodiversity Strategy and Action Plan (NBSAP) in 2002, aiming to achieve "equitable economic prosperity and improved quality of life through sustainable use, protection and management of biological resources". The 2002 Strategy emphasizes capacity-building, community involvement and intersectional cooperation.

Twelve years into the adoption of its NBSAP, Cambodia has noted progress in each of the 17 themes, under which 81 strategic objectives and associated indicators were identified, as well as 98 priority actions. Nevertheless, the overall impact of the NBSAP has been limited by inadequate human, financial and institutional capacities, combined with insufficient knowledge and awareness of the value of biodiversity, and an inadequate integration of biodiversity into policies and programmes dealing with sustainable development and poverty reduction in the country.

In decision X/2 (para (c)) adopted at its 10th meeting in 2010, the CBD Conference of the Parties urged Parties to review and, as appropriate, update and revise their NBSAPs in line with the Strategic Plan for Biodiversity 2011-2020 adopted at that meeting, and with the guidance outlined in its decision IX/8. The Aichi Biodiversity Target 17 reiterated this request in stating that "by 2015, each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan."

Cambodia initiated its review process in July 2012 and completed it in December 2015 under the coordination of the General Directorate of Administration for Nature Conservation and Protection (GDANCP), the General Secretariat of National Council for Sustainable Development (NCSD), and the Ministry of Environment (MOE). In order to ensure a truly participatory approach in the review process that would lead to the full ownership of the updated NBSAP and an effective engagement in the implementation of the NBSAP, an inter-ministerial technical working group was invited to participate actively in the consultations. This group consisted of representatives of 9 ministries and from other government entities, local communities and indigenous ethnic minorities, the civil society and non-governmental organizations (NGOs) each having a role and responsibilities in environmental management in Cambodia.

An assessment of the implementation of the 2002 NBSAP and a Biodiversity Status Report were carried out to take stock of the achievements derived from the implementation of the NBSAP, and to identify obstacles, opportunities, as well as the country's weaknesses and strengths in the implementation of the NBSAP. These findings constitute important elements to be taken into consideration in updating the NBSAP. In addition, laws, strategies and plans relating to biodiversity and sustainable development adopted by Cambodia since 2002 were reviewed so as to ensure harmony, coherence, complementarity and synergy between the updated NBSAP and all these approaches, strategies and plans, and to align with the national development goals and priorities.

Vision and mission

Cambodia's vision for biodiversity is that, through this updated NBSAP and in support of the National Strategic Development Plan, *by 2050, Cambodia's biodiversity and its ecosystem services are valued, conserved, restored where necessary, wisely used and managed so as to ensure equitable economic prosperity and improved quality of life for all in the country.* The roadmap or mission for achieving this vision consists of *using, protecting and managing biodiversity for sustainable development in Cambodia.* This implies that biodiversity issues and values are mainstreamed into national development and sectoral policies, plans and programmes; that biodiversity, our natural capital, is protected by reducing the various direct and indirect pressures causing its loss or degradation, that it is used wisely so as to enhance the benefits derived from it to the people of Cambodia, particularly in rural areas; and that an enabling environment for the effective and efficient implementation of this mission is strengthened.

Framework strategic objectives and key actions

Cambodia adopted the following four overall strategic objectives for the realization of its NBSAP's vision and mission:

Strategic objective A: Identify, inventory, monitor and enhance awareness about genetic resources, species, habitats or ecosystems and related ecosystem services that are important for sustainable development and poverty eradication in Cambodia, as a priority for conservation and sustainable use;

Strategic objective B: Identify and describe the direct and indirect factors and processes that are negatively impacting Cambodia's priority biodiversity components; and apply, as appropriate, preventive and corrective measures;

Strategic objective C: Maintain or strengthen measures that have a positive impact on biodiversity and thus enhance the benefits to all in Cambodia from biodiversity and associated ecosystem services, for an equitable economic prosperity and improved quality of life;

Strategic objective D: Strengthen the enabling environment for the implementation of the strategy.

Thirty-seven generic actions were identified for the achievement of the above overall strategic objectives with the respective responsible Ministries, and other participating Ministries and agencies identified.

Through these strategic objectives and key actions, Cambodia decided to:

- (a) Adopt a step-by-step approach, taking into account the limited financial and human resources available, focusing initially on components of biodiversity that are important for sustainable development and poverty reduction, and those that are currently in danger of disappearance or irreversible degradation, or that could be subject to high risks in the near future. Knowledge about these priority components of biodiversity needs to be generated, compiled and included in education curricula. It needs to be disseminated in the media and taken into consideration in the government's discussions on laws, budgets, programmes and strategies, and it needs to be integrated into wider development programmes and strategies and in all the sectors;
- (b) Not only focus measures on the state of biodiversity, such as protected areas and programmes targeted at particular threatened or vulnerable species, or control direct drivers of biodiversity loss, but also focus on addressing the underlying causes of biodiversity loss. It will be possible to take the most appropriate measures to avert loss or degradation of biodiversity only when adequate information on the pressures and their impacts is available. Other important focus areas include: participatory planning; the involvement of all groups of stakeholders including local communities and indigenous ethnic minorities in the spirit of decentralization to the lowest appropriate level for greater efficiency, effectiveness and equity engrained in the Rectangular Strategy; adaptive, effective and equitable management; and the use of the ecosystem approach and ecosystem or landscape-based approaches, biodiversity-inclusive strategic environmental assessments and environmental impact assessments, and guidelines for the sustainable use of biodiversity, such as the Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity or the FAO Technical Guidelines for Responsible Fisheries, will characterize all the measures taken for the

protection of biological resources, the recovery of threatened species, restoration of degraded ecosystems important for people's lives, and sustainable agriculture, aquaculture, fisheries, forestry, landscape management, public works and industrial development;

- (c) Highlight, as often as possible, success stories from measures taken, emphasizing in particular the supply of essential services, including services related to water, health, food security, climate change adaptation, resistance and resilience to land degradation or natural disasters and, in general, services related to livelihoods and the well-being of all in Cambodia. In doing so, awareness about the benefits from measures taken will be increased and will support biodiversity conservation and sustainable use;
- (d) Explore incentives put forward in various other strategies such as the National Green Growth Roadmap adopted in 2009 and the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ratified in 2015). These positive incentives will sustain conservation and sustainable use initiatives by contributing to the change in attitudes and behaviors of people towards biodiversity and its associated ecosystem services;
- (e) Consider sustainable financing of the NBSAP as one of the priorities, so as to address the lack of financial resources, which is one of the key constraints identified during the implementation of the 2002 NBSAP;
- (f) Address the needs for enhanced financial, human, institutional capacities as cutting across many strategies, plans and sectors in a coordinated manner for efficiency. In this perspective and in line with the recommendations from the National Capacity Self-Assessment, Cambodia intends to (i) mainstream biodiversity considerations in the on-the-ground implementation of all the relevant policies, strategies, plans and programmes already adopted, and more specifically by integrating biodiversity into key economic development sectors, into development planning, policy and legal reforms beyond environment; and (ii) address biodiversity, due to its complexity and wide scope, using interdisciplinary, cross-sectoral and multi-scale approaches.

These strategic objectives and choices are in line with the strategic goals of the Aichi Biodiversity Targets and support the development goals adopted by the Royal Government of Cambodia in the Rectangular Strategy for Growth, Employment, Equity and Efficiency in Cambodia. These strategic objectives and choices are also in line with the provisions in the National Strategic Development Plan 2009-2013 and the National Green Growth Roadmap 2013-2030. The implementation of these strategic objectives is expected to meet most of the environmental quality objectives proposed in the National Sustainable Development Strategy (2009), such as productive land resources, rich forest resources, high quality ground- and surface water resources, rich fish resources, functional wetlands, sustainable marine- and coastal environment, rich biodiversity, limited influence on the climate, efficient use of natural resources, limited waste generation, limited impact from natural disasters, and clean air.

Implementation of the 2002 NBSAP: lessons learned and outcomes

The 2002 National Biodiversity Strategy and Action Plan proposed a series of strategic objectives and priority actions that were addressed under 17 themes corresponding to important sectors in Cambodia. Overall, there has been good progress in the implementation of the 2002 NBSAP, but that has been limited mainly by insufficient knowledge of the status, trends and future dynamic of biodiversity components and ecosystem services; limited quantitative knowledge of the value of biodiversity in Cambodia and of the various anthropogenic pressures; by the fact that most of the research activities were externally driven; and insufficient financial resources. These and many other constraints encountered during the implementation of the 2002 NBSAP are addressed in the updated NBSAP.

Status of biodiversity in Cambodia

The national biodiversity status assessment was undertaken to describe the status and trends of Cambodia's biodiversity. However, due to the time and resources available, only an overview was possible. The assessment highlighted significant gaps in data and coordination, as well as the strength for

future assessments such as the RUPP Masters in Conservation, Centre for Biodiversity Conservation and the Cambodian Journal of Natural History, with the support of the national clearing-house mechanism.

No systematic assessment of plant and animal genetic resources was carried out before or after the adoption of the NBSAP in 2002. There is now a positive trend toward an increased understanding of genetic diversity and the importance for conservation, but there is still limited use for domestic and commercial plants and animals. Recently, DNA was used for crocodile and elephant research.

The recent inventory in Cambodia indicates a diversity of 162 mammal species across both terrestrial and marine systems, 601 bird species with 7 on the new global Evolutionally Distinct and Globally Endangered (EDGE) list, 1357 fish species across both fresh and salt water systems, 173 reptile species, 72 amphibian species, 671 invertebrates, and 3113 plant species. The observed trend in diminishing fish species diversity is a result of unsustainable harvest; and this drop in fish species diversity is likely to become exacerbated by the increased damming of the Mekong and its tributaries. Regarding species diversity, the general trend shows an increasing understanding of species diversity, where the most significant gaps in knowledge center around amphibian and plant species. Ongoing studies also identify potential extinctions. In terms of ecosystem diversity, the overall trend indicates a shift toward an increased human use of ecosystems; that is increasing agricultural, commercial and extractive use. The Ministry of Environment has started to highlight ecosystems and their services, but more work is needed especially regarding vulnerable ecosystems.

National actions for implementing the overall objectives of the NBSAP: thematic approach and national biodiversity targets

Thematic approach

Similarly to the 2002 NBSAP, a sectoral approach was used to identify the priority actions required for achieving the vision, mission and overall strategic objectives of this updated NBSAP under the following themes: the 17 themes in the 2002 NBSAP and the new themes on (i) mining, (ii) access and benefit-sharing, (iii) customary sustainable use and traditional knowledge, (iv) manufacturing industries, (v) resource mobilization, (vi) landscape and seascape management and (vii) clearing-house mechanism for technical and scientific cooperation. The 24 themes were regrouped under (i) Protection of biodiversity: themes 1 to 8 (Group 1); (ii) Sustainable use of biodiversity: themes 9 to 16 (Group 2); and (iii) Enabling environment: themes 17 to 24 (Group 3).

Each theme is introduced with an account of: the issues taken into consideration in the 2002 NBSAP, a brief overview of the results of the actions identified in that NBSAP, followed by a list of current key issues based essentially on the findings in the Fifth National Report, the assessment of the implementation of the 2002 NBSAP, and the Biodiversity Status Report. Additional sources of issues include national reports and communications prepared under the other Rio conventions and other biodiversity-related multilateral environmental agreements (MEAs), and various reports on the implementation of relevant national strategies and plans, such as the report on the Cambodia Millennium Development Goals and reports submitted to funding agencies.

The overall strategic objectives and key actions were used as checklists to develop strategic objectives and identify key actions under these thematic strategic objectives. The overall strategic objectives and key actions will also serve as checklists whenever a new ecosystem (e.g., urban ecosystem) or a specific landscape/seascape (e.g., the socio-ecological production landscapes and seascapes under the Satoyama Initiative) is found important for inclusion as a new theme in the NBSAP. A list of leading and participating ministries and agencies is provided along with each action. Complementarities and possible synergies with actions from other themes and possible links to the Cambodia Biodiversity Targets are highlighted to ensure efficiency during the implementation of each action and avoid unnecessary duplications.

Theme 1: Protected area system

Cambodia's protected area system (currently 26% of the country's land-which is beyond the 17% terrestrial coverage of the Aichi biodiversity target) has a great potential to become a major contributor to the country's economy and sustainable development, including poverty reduction, through the conservation and sustainable use of its biological, natural and cultural resources and other ecosystem services. However, Cambodia's protected area system is under a lot of pressure. The majority of the

designated protected areas and conservation areas are ineffective and there are obstacles to the establishment of new protected areas and conservation areas where they are required.

Under this theme, the goals of the strategic objectives and key actions are to (i) generate information on species ranges, status and trends; on the value, role, status and functioning of protected areas under MOE, and of conservation areas under MAFF, and their network, and compile information in user-friendly databases; (ii) ensure that Cambodia implements its biodiversity conservation commitments under the MEAs (in particular the CBD, the United Nations Framework Convention on Climate Change, the United Nations Convention to Combat Desertification, the World Heritage Convention and the Ramsar Convention on Wetlands). These commitments are reiterated in the plan of action on protected areas in this NBSAP, and its targets in the Cambodia Millennium Development Goals, the National Forest Programme Strategy and other strategic documents; (iii) implement well-coordinated measures for the effective protection of natural habitats and vulnerable ecosystems, including in particular coral reefs, Important Bird Areas (IBAs) and Key Biodiversity Areas (KBAs), while deriving environmental and socioeconomic benefits; the protection of areas that are naturally resilient to climate change and could thus serve as climate refugia; the protection and recovery of threatened species; and the sustainable use of biological resources within protected areas and conservation areas; and (iv) implement the 2008 Protected Area Law and related laws.

The success in implementing the strategic objectives and key actions under this theme and all the following themes depends greatly on the enabling conditions and how the country will strengthen its capability and engagement.

Theme 2: Threatened species

The strategic objectives and key actions under this theme will focus on the need to (i) identify species of fauna and flora that are threatened, and on improving knowledge about their status and trends, as well as the threats and socioeconomic consequences of losing these species, (ii) describe the status and trends of species vulnerability in the face of climate change. They will also provide some guidance on ways and means to improve the status of threatened species, including through the establishment of *in-situ* conservation facilities (see theme 1); rescue, recovery and reintroduction programmes; the rehabilitation and restoration of degraded habitats; and the prevention and control of invasive alien species.

Theme 3: Ex-situ conservation

The strategic objectives and key actions under this theme were put forward to develop and strengthen *ex-situ* conservation facilities, such as herbariums, and botanical and zoological gardens also devoted to research and training, in complementarity with *in-situ* conservation measures under the previous themes.

Theme 4: Sustainable mining

Mining is a sector with great economic potential in Cambodia. When managed effectively and properly, it can significantly contribute to poverty reduction and assist in meeting the country's development goals. However, currently many mining operations are destroying natural ecosystems and are creating water pollution that is having severe impacts on downstream watercourses and the surrounding communities. The strategic objectives and key actions under this theme were put forward to develop mining into a sustainable sector, one that is keeping in line with the mining law and the 2030 vision of the National Sustainable Development Strategy (NSDS). Based on the NSDS 2030 vision, mining should be a sector that exploits minerals without destroying nearby human settlements and landscapes, and without causing serious health and environmental impacts. It should be a sector that economizes the scarce mineral resources and promotes the recycling of metals. Strategically, the ecological and socioeconomic impact of mineral resource exploration, extraction and processing on the status and trends of biodiversity components and functions will be assessed; awareness about this impact will be enhanced; preventive and corrective measures, including ecosystem restoration, will be developed and applied, as appropriate; and the contribution of mining resources to biodiversity conservation, poverty reduction, sustainable development and the well-being of all in Cambodia will be increased.

Theme 5: Environmental security

The presence of land mines does not allow for the establishment of legal conservation programmes in those insecure mined zones. In addition, natural disasters (in particular floods) cause serious damage to infrastructure and ecosystems, especially agro-ecosystems. They disrupt social and economic activities.

Strategic objectives and key actions under this theme will allow the gathering of relevant information and data, on the basis of which preventive, proactive and corrective measures will be designed and applied.

Theme 6: Sustainable land-use planning

The key to successful projects and programmes is planning. The strategic objectives and key actions under this theme include (i) the inventory of ongoing land-use planning activities, (ii) an assessment of their effectiveness, and (iii) the development of a national land-use master plan, and provincial and community-based land-use plans based essentially on the identification of areas where land-use planning is needed to ensure conservation of biodiversity, the sustainable use of its components, and contribution to sustainable development and poverty eradication. The experiences accumulated in the country and elsewhere will provide a basis for the development of guidelines for land-use planning, building on the ecosystem approach and similar approaches, so as to optimize the use of the resources found in the country and their social, environmental and economic benefits.

Theme 7: Sustainable water resources

Water resources are an essential component of the nation's environment and natural resource base. A long dry season and pollution from various sources limit the amount and quality of water available for human consumption, agriculture and other uses, and aquatic life. This theme is about managing waters in a sustainable manner, in line with the 2007 Law on Water Resources Management of the Kingdom of Cambodia and related sub-decrees. This theme is also in harmony with the NSDS 2030 vision regarding sustainable supply of water, by applying measures that will maintain water resources quality and quantity suitable for human consumption, and for use in agriculture, livestock and industries, and by reducing the effects of flooding and droughts on water supply and quality through a combination of preventive and adaptation measures.

Theme 8: Biodiversity and climate change

Cambodia is among the countries most vulnerable to climate change in Southeast Asia, owing to its high dependency on climate-sensitive sectors such as agriculture, water resources, forestry, fisheries and tourism; all of which form the foundation of its economic growth and support the livelihoods of a great majority of its population. Climate change is one of the most important drivers of biodiversity loss in the country; for this reason biodiversity conservation and sustainable use can contribute to climate change adaptation and mitigation. Strategic objectives and key actions under this theme aim to (i) assess the present and projected impact of climate change and climate change mitigation or adaptation measures on genetic resources, species, ecosystems and related ecosystem services, and on sectors depending primarily on biodiversity in particular agriculture, fisheries and livestock. Measures taken include the creation, expansion and restoration of effectively managed protected areas (see Theme 1 above); (ii) assess and document the role of biodiversity in climate change mitigation and adaptation measures, and strengthen biodiversity conservation measures that have a positive impact on climate change mitigation and adaptation; and (iii) minimize the anthropogenic pressures (such as pollution, exploitation and sedimentation) on ecosystems that are vulnerable to climate change, so as to maintain their integrity, functioning and resilience.

Theme 9: Sustainable forestry

Cambodia has one of the highest levels of forest cover in Southeast Asia. Forest ecosystems support biodiversity and provide countless services, resources and functions that are important for the livelihoods and wellbeing of the people in Cambodia, as well as for wildlife, for Cambodia's economy, and for mitigating climate change. Sustainable forest management characterizes the management of socioecological production landscapes in the country. There is a general concern over the human impact on forest health and on the natural processes of forest growth and regeneration; human activities of particular concern include illegal logging activities and inappropriate forest sub-product collection, including land clearing for agriculture and ownership. Under this theme, the strategic objectives and key actions are about (i) identifying, making inventory, monitoring and enhancing awareness about forest genetic resources, species, ecosystems and related ecosystem services that are important for sustainable development and poverty eradication in Cambodia; (ii) assessing the direct and indirect factors and processes that are negatively impacting Cambodia's forest resources and forest functions; and applying, as appropriate, preventive and corrective measures, taking into account the 2002 Law on Forestry; and (iii) strengthening measures that have a positive impact on forest biodiversity and that enhance the

benefits from forest resources and, in general, forest ecosystems, for all in Cambodia, in line with the NSDS 2030 vision for forests.

Theme 10: Sustainable freshwater fisheries and aquaculture

Fisheries play a significant role in supplying Cambodians with food, as well as in supporting the national economy. Fisheries, however, are subject to a significant amount of anthropogenic pressure that is leading to a decline in fish stocks and in the size of fish caught. The strategic objectives and key actions under this theme are about (i) identifying, taking inventory, monitoring and enhancing awareness about freshwater resources including fish varieties used in aquaculture; (ii) developing and implementing management plans containing preventive and corrective measures to address the major direct and indirect factors and processes that are impacting Cambodia's freshwater fisheries and aquaculture negatively, while enforcing the 2006 Law on Fisheries, developing post-harvest fish processing, and promoting national and export markets for harvested and processed fish; and (iii) maintaining or strengthening measures that have a positive impact on freshwater fisheries and aquaculture, so as to enhance the benefits to all in Cambodia.

Theme 11: Sustainable coastal and marine resources management

The coastal and marine area of Cambodia is ecologically and biologically rich, but under a lot of pressure. Strategically, key actions under this theme aim to (i) monitor and gather information for awareness-raising on coastal and marine resources; and (ii) develop management plans containing preventive and corrective measures to control identified direct and indirect factors and processes that are negatively impacting Cambodia's coastal and marine resources, and measures that will sustain benefits from the effective management of coastal and marine resources.

Theme 12: Sustainable animal wildlife resources management

Cambodia is host to a great diversity of animal life of significant importance in the lives of the people and for the functioning of ecosystems. Reports indicate that Cambodia is losing its unique and valuable wildlife genetic pool. The strategic objectives and key actions under this theme include (i) identifying, taking inventory, monitoring and enhancing awareness about animal wildlife resources; (ii) strengthening taxonomic and ecological work including on invasive alien animal species and (iii) applying preventive and corrective measures based on identified direct and indirect factors and processes that are negatively impacting Cambodia's animal wildlife resources.

Theme 13: Sustainable agriculture and animal production

Cambodia's economy is largely based on agriculture; with livestock production on an increase. In order to respond to the high and ever-increasing food demands, while avoiding further conversion of forestland to agriculture, the country needs to take environmentally friendly measures to increase agricultural productivity and efficiency, food processing and marketing. This needs to be done in line with the laws, strategies and plans adopted since 2002 relating to agriculture and animal production, and more specifically to the unmet 2015 targets contained in the 2009 NSDS. It is therefore necessary, under this theme, to strategically (i) identify, inventory, monitor and enhance awareness about agricultural biodiversity, including the animal component; (ii) apply preventive and corrective measures by addressing the direct and indirect factors and processes that are negatively impacting Cambodia's agricultural biodiversity, as well as its agricultural and animal production. In order to achieve this, the agricultural sector needs to be broadened to thereby attract more quality investments in agri-business and improve agricultural trade linkages, land reform, agricultural diversification and agro-processing; and (iii) strengthen measures that have a positive impact on agriculture and animal production, and thus ensure food security for all, particularly for the rural community.

Theme 14: Sustainable Energy Resources Management

Over 84% of Cambodian households meet their energy needs through fuelwood, which accounts for approximately 70% of the total national energy demand. The domestic use of fuelwood and charcoal commonly requires heavy forest logging, which generates indoor/outdoor air pollution and creates severe environmental problems. Energy supply in Cambodia also relies heavily on imported fuels. The country is exploring new sources of energy, including hydropower, offshore and onshore oil and gas, and renewable energy to respond to the increasing energy demand. Under this theme, the following key strategic actions have been identified to (i) assess the energy needs, and launch inventory and monitoring programmes for

energy biomass, (ii) enhance awareness about the contribution of biodiversity to the country's energy needs, and (iii) identify and apply ways and means to increase this contribution in a sustainable way, while reducing the impacts of energy production and consumption on biodiversity components, as well as on local communities and indigenous ethnic minorities.

Theme 15: Access and Benefit-Sharing

Cambodia signed the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity in 2012, and translated it into Khmer language. The country became Party in April 2015. Under this theme, the key actions are articulated around the strategic objectives of developing and implementing national access and benefits-sharing (ABS) policy and legislation, and strengthening relevant communication, education and public awareness programmes.

Theme 14: Customary sustainable use and traditional knowledge

For centuries, indigenous peoples and local communities have accumulated substantial knowledge relevant to sustainable resource use and management, and to the conservation of biodiversity in their traditional territories. They have been able to adapt this knowledge to changes in environmental, social, economic and political conditions, as needed, and within the ecosystem limits. Indigenous peoples and local communities are therefore well placed to adapt to changing conditions such as climate change, and to contribute to strengthening the resilience of the social and ecological systems, as well as the generation of new knowledge. The strategic objectives and key actions under this theme aim to (i) ensure that biodiversity customary sustainable use practices and traditional knowledge are valued, respected, protected and considered as useful and necessary for the implementation of the NBSAP; (ii) support and strengthen community-based initiatives that contribute to the conservation and sustainable use of biodiversity; and (iii) ensure that traditional knowledge and customary sustainable use of biodiversity are applied with the active involvement and effective participation of relevant indigenous ethnic minorities and local communities.

Theme 17: Industry, Technology and Services

This theme consists of three sub-themes: (i) Sustainable manufacturing industry management, (ii) Biotechnology and biosafety, and (iii) Sustainable tourism.

- (a) Strategic objectives and key actions for the *manufacturing industry* are about (i) assessing the impact of manufacturing industries on components of biodiversity and related ecosystem services that are important for sustainable development and poverty reduction in Cambodia; and (ii) preventing and, as needed, reducing possible negative impacts of manufacturing industries on Cambodia's important biodiversity components, taking into account the products' life cycles and possible restoration measures;
- (b) Strategic objectives and key actions for *biotechnology and biosafety* were articulated around the National Action Plan on Biosafety and Biotechnology developed in 2008 under the CBD, in the context of the Cartagena Protocol on Biosafety and its Strategic Plan, having in mind that these activities have to contribute to the conservation and sustainable use of biodiversity, sustainable development and poverty reduction in Cambodia;
- (c) Strategic objectives and key actions for *tourism* aim to (i) gather biodiversity information of relevance to tourism development, including taking inventory of nature based-tourism sites; (ii) prevent tourism activities from impacting biodiversity negatively and, as needed, apply corrective measures where tourism has a negative impact on Cambodia's important biodiversity components, and (iii) strengthen measures relating to tourism that have a positive impact on biodiversity and thus enhance the benefits to all in Cambodia from biodiversity and associated ecosystem services.

Theme 18: Resource mobilization

This theme is about strategic ways and means to mobilize resources needed to advance the conservation of biodiversity and the sustainable use of its components, so as to achieve sustainable development, poverty reduction and the well-being of the people in Cambodia. Resource mobilization includes the building or strengthening of human capacities, mobilization of financial resources from diverse sources including GEF, the strengthening and enhanced coordination of institutions, acquisition and use of new

technologies, introduction of positive economic incentives, enhanced engagement of the business sector and other stakeholders, and equitable sharing of benefits from the utilization of genetic resources. Building on various ongoing initiatives such as the implementation of recommendations from the National Capacity Self-Assessment (NCSA) report or the development of a biodiversity strategy for resource mobilization under the CBD, resource mobilization is essential for enabling the implementation of all the actions identified in the NBSAP.

Theme 19: Community participation

Community participation implies the regular involvement of members of the communities in natural resources planning, decision- and policy-making, implementation, monitoring and reporting processes through multi-stakeholder consultations. More specifically, the success in implementing conservation and sustainable use of biological resources and ecosystem services will require the effective participation of local communities and indigenous ethnic minorities who depend directly on biodiversity. The strategic objective under this theme is about putting in place ways and means to enhance effective and efficient community participation in natural resource management including by building environmental awareness, understanding and empowerment, particularly in rural communities, and by ensuring that legal and institutional frameworks support communities' rights to use and protect their resources.

Theme 20: Awareness, education, and research coordination and development

This theme is another critical element of the enabling cluster and as such it constitutes a key component of every theme. Increasing public awareness and the understanding of the importance of biodiversity, as well as acquiring expertise and know-how are essential elements in guaranteeing the effectiveness of the measures to achieve the conservation and sustainable use of the natural capital sustaining life and human well-being in Cambodia. To be efficient, awareness and education activities have to be supported by adequate scientific research and documentation. For efficiency and enhanced synergy, and in the framework of the ecosystem approach or similar approaches, research being carried out by various bodies within the government, by knowledge institutions and non-governmental organisations needs coordination to take full advantage of complementarities and synergies.

Theme 21: Legislation and institutional structure

Since 2002, Cambodia has passed several new laws and sub-decrees and ratified international and regional agreements of great relevance to biodiversity. The strategic objectives and key actions under this theme focus on (i) promoting an effective, coherent and synergistic implementation of policies and legislations relating to biodiversity. This will be achieved through the support of an effective national clearing-house mechanism and through the strengthening of the National Biodiversity Steering Committee and other interministerial structures established in accordance with the various laws and policies that govern directly or indirectly the conservation and sustainable use of biological resources and ecosystems; (ii) strengthening existing national and regional institutions addressing biodiversity issues through financial support, capacity building and public awareness programmes, so as to ensure an effective enforcement of the laws and guarantee mutual reinforcement and a more efficient use of the available resources; and (iii) establishing and supporting new institutions such as for the implementation of the Nagoya Protocol, and the acquisition and adaptation of technology of relevance to biodiversity conservation and sustainable use.

Theme 22: Quality of life and poverty reduction

Cambodia has been addressing poverty reduction and improvement of the quality of life both at the policy and macro-economic levels and at the level of direct interventions focused on the poorest populations in rural areas. The strategies adopted are typically social and economic responses; however, they need to be developed to take biodiversity considerations into account. Under this theme, only the role of biodiversity is considered. Biodiversity is essential for human well-being through ecosystem provisioning, regulating, cultural and supporting services. The strategic objectives and key actions under this theme focus on (i) enhancing the contribution of biodiversity conservation, the sustainable use of its components and the fair and equitable sharing of benefits arising from the utilisation of genetic resources to poverty reduction and the Cambodia Millennium/Sustainable Development Goals; (ii) strengthening the enabling environment for the implementation of biodiversity actions that will enhance the quality of life for all in Cambodia and contribute to poverty reduction; and (iii) ensuring that the social and infrastructural changes being made to improve the lives of people in Cambodia and economic growth have no detrimental impacts in the long

term on biodiversity and the rural communities. Actions considered under all the themes of this strategy will contribute to the achievement of poverty reduction and to the maintenance of a high quality of life in Cambodia.

Theme 23: Landscape and seascape management and coordination

The ecosystem approach, under the CBD, is the primary framework for the management of biodiversity. Since the definition of ‘ecosystem approach’ does not specify any particular spatial unit or scale, some organizations have put forward other approaches in line with the ecosystem approach, such as the landscape approach, that are more familiar to people working on the ground. The Interministerial Technical Working Group decided to include this theme in the national biodiversity strategy to ensure that the complexity of biodiversity management, the interactions among habitats within landscapes/seascapes and the many interests from various stakeholders are taken into consideration and are well coordinated for efficiency and synergistic conservation and sustainable use of biodiversity components. An illustration of the objectives and actions planned under this theme can be found in the management of socio-ecological production landscapes within the Satoyama initiative.

Theme 24: Clearing-house mechanism for technical and scientific cooperation, knowledge sharing and information exchange

Limited relevant information for policy and decision-making, the difficult accessibility when information is available, and the limited capability of the existing national clearing-house mechanism have led to the development of strategic objectives and key actions that would (i) improve access to and generate information, including in Khmer language; (ii) improve the use of available information and knowledge; and (iii) increase availability of financial, technical and human resources for the clearing-house mechanism.

Cambodia Biodiversity 2015-2020 Targets

Cambodia’s updated NBSAP consists of 498 key actions identified to achieve 78 strategic objectives under 24 themes. It is necessary to implement these actions to realize the vision of this NBSAP. With a view to streamlining the NBSAP implementation, the Interministerial Technical Working Group defined 20 specific and time-bound targets, some of which are also measurable, to be achieved before or by 2020. Specific actions, essentially drawn from the key actions under the NBSAP themes, are listed as well as indicators of progress towards the achievement of each target. Many of the actions have already been adopted as part of strategies and plans for sustainable development and various sectoral plans and programmes. In addition, linkages between targets are highlighted so that implementation can be as efficient as possible.

The Cambodia Biodiversity 2015-2020 Targets can therefore be seen as a platform that will promote coherence, coordination, cooperation, co-evolution and synergy while maximizing resource use and efficiency in implementing the key actions. The targets will facilitate, in particular, cooperation and creation of concrete collaborative programmes between different Ministries and their Departments, different actors within and across economic sectors, and among organizations at the national, regional and international levels.

Cambodia Biodiversity 2015-2020 Targets are:

- Target 1 (Aichi Target 1): By 2020, every Cambodian is conscious about the environmental, economic, health, social and cultural value of the services derived from ecosystems, and integrates this knowledge in the way they deal with these ecosystems and resources;
- Target 2 (Aichi Target 20): By 2020, at the latest, the national budget allocation for biodiversity conservation and sustainable use (including NBSAP implementation) has increased by 20% through the development and implementation of a resource mobilization strategy;
- Target 3 (Aichi Target 2): By 2020, at the latest, biodiversity values have been integrated into national and sub-national development and poverty reduction strategies and planning processes;
- Target 4 (Aichi Target 6): By 2020, freshwater fisheries and aquaculture are managed sustainably by addressing their constraints, and by reducing and preventing their possible negative impact on fish stocks and on aquatic threatened species and vulnerable ecosystems;

- Target 5 (Aichi Target 7): By 2020 the majority of areas under agriculture, animal production, aquaculture and forestry are managed sustainably;
- Target 6 (Aichi Target 14): By 2020, 10% of the protected areas, conservation areas, agro-ecosystems and forest ecosystems including mangroves, that have been under a lot of pressures in recent years are in an advanced state of restoration and are providing enhanced services, particularly to women, elders and children in local communities and indigenous ethnic minority groups;
- Target 7 (Aichi Target 4): By 2020, the Government, the private sector and other stakeholders have taken steps to reduce the negative impacts on ecosystems and their services caused by unsustainable production and consumption activities;
- Target 8 (Aichi Target 11): In 2020, at the latest, existing protected areas and conservation areas, including community-based natural resource management areas, have management plans and have started effective implementation.

By 2020,

- (i) The coverage of marine and coastal protected areas and freshwater protected areas has at least doubled as compared to the 2010 levels;
- (ii) Currently the unprotected areas of particular importance for biodiversity and ecosystem services that are under a lot of pressures from human activities are identified and integrated in the protected area system; and
- (iii) Protected areas and conservation areas have been valued, are part of a well-connected protected area system and have been integrated in national sustainable development goals and national green growth strategies, plans and programmes;

By 2029, protected forest covers 3.0 million hectares, in line with the objectives of the National Forest Programme 2010-2029;

- Target 9 (Aichi Target 3): By 2020, Payment for Ecosystem Services (PES) is used throughout the country as an incentive for the conservation and sustainable use of biodiversity;
- Target 10 (Aichi Target 12): By 2020, all species of fauna and flora threatened at the national level have been identified and their status has been improved significantly as a result of applying measures to address their respective threats;
- Target 11 (Aichi Target 15): By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks have been enhanced through the conservation and restoration of degraded ecosystems, focusing in particular on degraded forests, protected areas and conservation areas, thereby contributing to climate change mitigation and adaptation and to combating desertification;
- Target 12 (Aichi Target 5): By 2020, the rate of loss of natural forests, coral reefs and other natural habitats is at least halved; and habitat degradation and fragmentation, pollution, overharvesting, introduction of invasive alien species and their impacts are significantly reduced;
- Target 13 (Aichi Target 16): By 2015, Cambodia has designated a national focal point and one or more competent national authorities for the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS), and established a functional ABS Clearing-House as part of the clearing-house mechanism;
By 2020, Cambodia has developed and is enforcing a legislation and national policies on access to genetic resources and the fair and equitable sharing of benefits arising from their utilization;
- Target 14 (Aichi Target 17): By 2015, the National Biodiversity Strategy and Action Plan (NBSAP) have been updated and adopted, and have commenced to be implemented effectively;
- Target 15 (Aichi Target 10): By 2020, anthropogenic pressures (pollution, exploitation, sedimentation...) on coral reefs and vulnerable ecosystems impacted by climate change have been significantly reduced;

- Target 16 (Aichi Target 8): By 2020, pollutant pressures on terrestrial and aquatic ecosystems are substantially reduced to levels that are not detrimental to ecosystem function and biodiversity;
- Target 17 (Aichi Target 18): By 2020, the traditional knowledge, innovations and practices of indigenous ethnic minorities and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are:
 - (a) respected, subject to national legislation and relevant international obligations, and
 - (b) fully integrated and reflected in the implementation of the Convention and the NBSAP, with the full and effective participation of these communities at all relevant levels;
- Target 18 (Aichi Target 9): By 2020, major invasive alien species (IAS) and their pathways have been identified and prioritized, and prioritized IAS and pathways are controlled;
- Target 19 (Aichi Target 19): By 2020, an interoperable and user-friendly information system containing data and information on biodiversity (including its associated ecosystem services) values, functions, status and trends, and threats, and the consequences of its loss has been established and maintained in the responsible institutions for wide sharing among stakeholders;
- Target 20 (Aichi Target 13): By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals, as well as the genetic diversity of their wild relatives is protected and conserved in-situ and ex-situ.

Monitoring, evaluation and reporting

Monitoring and evaluation are critical components of the NBSAP and are useful in reporting on implementation progress and the outcomes of measures taken. In addition, monitoring and evaluation allow an adaptive management capability to be mainstreamed in the strategy and ensure the flexible nature that characterizes effective and efficient NBSAPs. While monitoring should be a continuous process, so that it can detect unexpected changes requiring urgent attention, reporting can be done annually and, necessarily, in response to the obligations already agreed upon by Cambodia, such as the submission of national reports under the MEAs or obligations vis-a-vis a funding agency. Agreed sets of indicators and baselines, and a common timetable for reporting, building on ongoing initiatives in the relevant ministries and sectors, are essential for promoting coordinated monitoring and evaluation of the NBSAP implementation.

Monitoring, evaluation and reporting require the establishment and strengthening of relevant institutional and technological capacities, and adequate human and financial resources.

Support mechanisms for implementation

According to Aichi Biodiversity Target 17, updated NBSAPs have to be adopted as a policy instrument, by the government as a whole and for all the sectors, and their implementation should start effectively and in a participatory manner by 2015.

Ministry of Environment and the National Biodiversity Steering Committee²

As a starting point in the implementation of the NBSAP, MOE will mandate and support the National Biodiversity Steering Committee (NBSC), serving as the steering committee for the NBSAP, to work on clarifying ministerial jurisdictions and the roles and responsibilities of various institutional actors. This exercise will identify ways and means to reduce responsibility overlaps, while promoting coordination, collaboration and synergy in an ecosystem approach or landscape / seascape perspective. The NBSC will describe, in concrete details, its strategy for promoting the engagement of stakeholders, including local communities and indigenous ethnic minorities, civil society and non-governmental organisations, and for its coordinating, monitoring, reviewing and reporting roles.

The MOE and line Ministries have a facilitating and implementing role. Strategically, MOE, as the coordinator of the NBSAP, will develop and implement a *communication and outreach strategy* to raise

² *National Biodiversity Steering Committee has been invalidated by Subdecree N^o 59 dated 18 May 2015 and merged into National Council for Sustainable Development*

awareness and preparedness about the NBSAP, and to promote wide participation and enhance the participation of all groups of stakeholders, including by emphasizing the win-win situations in which such participation would result.

The MOE will also provide the *clearing-house mechanism*, hosted in the Ministry, with additional resources to enhance the mobilization and storage of relevant data from all sources, including data generated under the Rio Conventions, biodiversity-related conventions, and sectors that use components of biodiversity or impact biodiversity. Accessibility will be made as user-friendly as needed to encourage a wide use of the clearing-house mechanism and to catalyze improved well-informed decision-making. As a prerequisite, the clearing-house mechanism should be made sufficiently interactive and interoperable with other databases in the country. It should be easily accessible to stakeholders outside of the environment sector to input and manage their own data. The international community and international investors increasingly require transparent and accurate information.

In order to achieve the targets and implement the NBSAP, many actions will have to be carried out at the local level. The development of *Local Biodiversity Strategies and Action Plans* and more specific site relevant targets will be encouraged and supported.

Group 3 themes in this NBSAP consist of strategies and actions that are meant to enhance and maintain favorable conditions to enable the implementation of the NBSAP and the achievement of the targets. Awareness-raising and resource mobilization were identified as priorities. Limited financial resources were found to be one of the most critical obstacles to the implementation of the 2002 NBSAP. The *mobilization of financial resources* is thus essential for operationalizing the updated NBSAP and achieving the associated targets. A diversified source of financing is recommended including in particular a strong engagement of the business sector. As a matter of urgency, Cambodia will develop, as soon as the NBSAP is approved, its biodiversity portfolio for GEF6 building on its experience with GEF5. Not only the ten GEF6 programmes will be considered, but also the biodiversity focal area set-aside funds (FAS) for implementing enabling activities and GEF funds under the other focal areas.

I. INTRODUCTION

Cambodia is predominantly dependent on its rich biodiversity and other natural resources for its socio-economic development. However, various factors exert increasing pressures on these resources. These factors include, as noted in the National Sustainable Development Strategy (2009): high population growth and increasing economic demands; land degradation; habitat fragmentation from public works; overexploitation of resources in particular in forests, freshwaters and marine and coastal areas; pollution from unsustainable agriculture and industries; and natural disasters. Following the adoption of the Convention on Biological Diversity (CBD) in 1992, the world community has increased efforts to reduce the loss of genetic resources, species of fauna and flora, and natural ecosystems.

The Parties to the Convention on Biological Diversity (CBD) recognize that National Biodiversity Strategies and Action Plans (NBSAPs) are the principal instruments for implementing the Convention at the national level. Cambodia acceded to the Convention in September 1995 and adopted its NBSAP in 2002 in response to Article 6 of the Convention. The long term goal of the Strategy, as described in its vision, is to achieve *"equitable economic prosperity and improved quality of life through sustainable use, protection and management of biological resources"* by using, protecting and managing biodiversity for sustainable development in Cambodia.

The 2002 Strategy provided Cambodia with a framework for action at all levels so as to enhance the country's ability to conserve biodiversity, use its biological resources sustainably, ensure the productivity, diversity and integrity of its natural systems and, as a result, its ability to reduce poverty and improve the quality of life of all Cambodians. The 2002 Strategy emphasized capacity building, community involvement and intersectional cooperation. It also described how Cambodia could contribute to international efforts to implement the Convention.

Twelve years after the adoption of its NBSAP, Cambodia has only partly implemented its strategic goals, objectives and priority actions. With the adoption of the Strategic Plan for Biodiversity 2011-2020 and its Aichi Biodiversity Targets by the world community in 2010 and in response to a request of the CBD Conference of the Parties in decision X/2¹, Cambodia undertook the revision of its NBSAP to have an updated version in place by 2015 at the latest. It is important to note that in 2012, the United Nations reaffirmed the importance of biodiversity and ecosystem services for sustainable development and recognized, through the Rio+20 Conference and the General Assembly, that the Strategic Plan for Biodiversity 2011-2020 represents a universally agreed framework for action on biodiversity and a foundation for sustainable development for all stakeholders.

The updating of the NBSAPs is referenced in several decisions of the CBD Conference of the Parties but decisions IX/8 and X/2 are the main decisions providing guidance for NBSAP process, substance, components, support systems, and monitoring and review systems. The main points to note are that:

- (a) The updated NBSAP should be in line with the Strategic Plan for Biodiversity 2011-2020 and include not only the usual objectives for reducing the direct pressures on biodiversity and promoting sustainable use, improving the status of biodiversity by safeguarding ecosystems, species and genetic diversity, and regarding the ways and means for enhancing implementation, but also objectives and targets relating to (i) addressing underlying causes of biodiversity loss and (ii) enhancing the benefits to all from biodiversity and ecosystem services;
- (b) National targets should be integrated into the NBSAPs to be adopted as policy instruments and integrated into national development and poverty reduction policies and strategies;
- (c) The updated NBSAPs should take into account the ecosystem approach and the value of biodiversity components; identify priority actions at the national or regional level; identify national and regional targets and associated indicators; and include plans for resource mobilization at the national, regional and international levels.

The updated NBSAPs should also build on the achievements of the 2002 NBSAP, take into account the constraints encountered during the implementation of the strategy and the various strategies and plans (listed in Annex 1) relating to biodiversity and sustainable development adopted by Cambodia since 2002. To ensure harmony, coherence, complementarity and synergy with all these approaches, strategies and plans and that they align with the national development goals and priorities, the updated NBSAP drew on the documents listed in Annex 1.

Box: Process used for updating the National Biodiversity Strategy and Action Plan

The process for updating the National Biodiversity Strategy and Action Plan included a national consultation workshop, experts meetings, a public forum, and sub-national consultation meetings. A Technical Working Group consisting of representatives of 9 ministries was established to work with the International Conventions and Biodiversity Department (ICBD), a body of the General Department of Administration for Nature Conservation (GDANCP) and Protection, within the MOE. There were more than 15 technical working group meetings to review drafts and discuss the revisions of the NBSAP.

More specifically:

- (a) The national and subnational stakeholder consultations were held on 4 September 2012, 24 March 2014 and 4 September 2014 to ensure that all biodiversity issues were included and all sectoral plans taken into consideration;
- (b) The Technical Working Group's meetings were organized as follows:
 - (i) Held on 24 July, 6 August and 29-30 August 2012, the first three meetings of the Technical Working Group considered the national biodiversity targets and related indicators. These meetings identified five more themes for inclusion in the NBSAP;
 - (ii) The fourth and fifth meetings held on 18 December 2013 and 2 January 2014 respectively reviewed and approved the Fifth National Report to the Convention on Biological Diversity before sending it to CBD Secretariat;
 - (iii) The sixth to the tenth meetings, organized on 14 January, 6 February, 3 March, 24 July and 15 August 2014, assessed the implementation of the 2002 NBSAP in light of the national biodiversity status report, and considered the vision, mission, key issues, strategic objectives, key and priority actions of the updated NBSAP;
 - (iv) The eleventh to fifteenth formal and informal meetings had been organized subsequently in late 2014 and beginning of 2015 to review and discuss the identified key priority actions and ensure that they align with sectoral and national development plans and strategies;
 - (v) In addition to the formal technical working group meeting, there were a few information meetings among multi-sectoral expert groups;
- (c) An expert meeting was held on 28 October 2014 to review the final technical draft NBSAP and NBSR, focusing on its content and formatting, as well as on the trends in genetic, species, and ecosystem diversities;
- (d) The Inception workshop was organized on 4 September 2012 to announce and call for the cooperation and involvement of all relevant stakeholders, including the indigenous and local community, academies, and the private sector in the implementation of this project, and to take into account their inputs for updating the NBSAP and NBSR;
- (e) The first consultation workshop was held on 24 March 2014, with the participation of government institutions, national and international organizations, and other stakeholders. The workshop discussed and endorsed the key elements of the NBSAP, including the national targets and biodiversity indicators. The second meeting was a national workshop held on 04 September 2014 for a thorough and in-depth discussion of the key elements of the updated NBSAP, including the national biodiversity status report; the NBSAP vision, mission, strategic objectives and priority actions; the national targets, the actions required for achieving the targets, indicators of progress towards the achievement of the targets, and the roles in and responsibilities for implementing the targets and the NBSAP; enabling conditions; as well as monitoring, evaluation and reporting.

The National Biodiversity Steering Committee (NBSC) has been established to provide guidance, to provide an overview and to make decisions on the overall project implementation and adoption of the revised NBSAP and NBSR. This committee is composed of 17 members, including the Minister of Environment as chair, members from 14 relevant institutions and 3 representative governors from three sub national regions: lowland, mountain, and marine areas. There were three National Biodiversity Steering Committee meetings held on 1 November 2012, 7 July 2014, and 4 March 2015 to review additional adoptions in the updating of the NBSAP and NBSR.

II. OVERALL STRATEGY OF THE UPDATED NBSAP AND NATIONAL TARGETS

Vision

By 2050, Cambodia's biodiversity and its ecosystem services are valued, conserved, restored where necessary, wisely used and managed, so as to ensure equitable economic prosperity and improved quality of life for all in the country.

Mission

To use, protect and manage biodiversity for sustainable development in Cambodia. To ensure this, biodiversity issues and values are mainstreamed in national development and sectoral policies, plans and programmes; biodiversity, our natural capital, is protected by reducing the various direct and indirect pressures causing its loss or degradation, and is used wisely so as to enhance the benefits from it to the people of Cambodia, particularly in rural areas; and the enabling environment for effective and efficient implementation of this mission is strengthened.

Overall strategic objectives

In order to achieve the mission and vision of this Strategy, Cambodia adopted the following framework strategic objectives:

- a. Identify, inventory, monitor and enhance awareness about genetic resources, species, habitats or ecosystems and related ecosystem services that are important for sustainable development and poverty eradication in Cambodia as a priority for conservation and sustainable use;
- b. Identify and describe the direct and indirect factors and processes that are negatively impacting Cambodia's priority biodiversity components; and apply, as appropriate, preventive and corrective measures;
- c. Maintain or strengthen measures that have a positive impact on biodiversity and thus enhance the benefits to all in Cambodia from biodiversity and associated ecosystem services, for an equitable economic prosperity and improved quality of life;
- d. Strengthen the enabling environment for the implementation of the strategy.

These strategic objectives will be considered under each of the themes (see below) identified as areas where implementation activities will be focused. They are in line with the four values that the Royal Government of Cambodia (RGC) retained to guide actions identified in many development strategies, such as the Strategic Planning Framework 2010-2019 for Fisheries²: Understanding (assessment of status and trend of, and threats to, biodiversity and associated ecosystem services), Protecting, Growing (addressing causes of biodiversity loss, and enhancement of benefits) and Supporting (enhancement of the enabling conditions).

Rationales and key generic actions under the overall strategic objectives

Strategic objective A: Identify, inventory, monitor and enhance awareness about genetic resources, species, habitats or ecosystems and related ecosystem services that are important for sustainable development and poverty eradication in Cambodia, as a priority for conservation and sustainable use.

Rationale

Cambodia is blessed with an abundance of natural riches³, with new species being discovered frequently⁴. The majority of the population relies directly on these natural resources for their food, livelihoods and well-being. As such, Cambodia has taken a number of conservation measures to safeguard this natural capital that is otherwise subject to various pressures, including habitat damage/loss (which is considered as the most direct and critical threat to biodiversity in Cambodia), climate change, pollution, unsustainable use of natural resources. However, the implementation of these conservation measures has proven to be a real challenge.

Due to limited resources, Cambodia has needed to adopt a step-by-step approach focusing first on the components of biodiversity that are important for sustainable development and poverty reduction, and then on those that are currently in danger of disappearance or degradation, or could be subject to high risks in the near future. Priority components of biodiversity must therefore be identified. Criteria for

identifying important components of biodiversity can be based on Annex I to the Convention on Biological Diversity and on criteria for ecologically and biologically significant areas adopted by the CBD Conference of the Parties in 2010. Their importance, including their biological/ecological, cultural, spiritual and socioeconomic values, must be described and their status monitored regularly.

Table 1 in the 2002 NBSAP, which presents examples of services and goods provided by ecosystems in Cambodia, can be used as a starting point for listing the value of ecosystems found in Cambodia. To the list it is necessary to add dryland, savannahs, marine and urban ecosystems and possibly mountains and islands. These ecosystems need to be mapped and their value assessed using e.g. TEEB guidelines. It is also useful to refer to UNEP/CBD/COP/12/4 (from page 31).

As noted in the Fifth National Report, the concept of ecosystem services and other biodiversity values is not fully understood in Cambodia. That being said, people are gradually becoming aware of the consequences of not managing the environment sustainably. Awareness about these components and their value needs to be raised among the people and decision-makers. This knowledge needs to be included in education curricula, it needs to be disseminated in the media and taken into consideration in the government's discussions on laws, budgets, programmes and strategies, and it needs to be integrated into the wider development programmes and strategies, and in all the sectors.

Adequate monitoring followed by regular reporting and a wide dissemination of information on the status and trends of priority biodiversity components will allow decision-makers at all levels to adopt and implement adaptive management programmes, and the government to develop adequate policy responses. People are more disposed to protect the things that they know, and even more so when they know the importance of what it is they are to protect. Regular reporting will also contribute to enhancing public awareness and participation.

Table 1: Key actions and roles of the Ministries for Strategic Objective A

Key action	Responsible Ministries and other participating Ministries
<p>1.1. Assess the functioning, role, value/importance for sustainable development and poverty eradication, status and trends of biodiversity and its components in Cambodia.</p> <p>Information on the status and trends of, and threats to, biodiversity and the related ecosystem services combined with information on the contribution of biodiversity components to sustainable development and poverty eradication will inform about those components of biodiversity that require priority attention for protection, sustainable use measures and funding.</p> <p>This study requires indicators and can provide the baseline data needed as reference when evaluating progress and should also include an assessment of the consequences of ecosystem degradation and biodiversity loss in general, e.g. loss of ecosystem resilience.</p> <p>As a prerequisite, it is necessary to define methodologies, build human capacity and mobilize the financial resources needed.</p>	<p>MOE, MAFF and GSSD</p> <p>MLMUPC, MOT, MRD, MEF, MOEYS, MME, MOC, MOH, MOP, MOWRAM, MOWA, NCDM and TSA</p>
<p>1.2. Establish a list of the priority components of biodiversity and ecosystem services including their ecological/environmental and socioeconomic values; in other words their provisioning, regulation, cultural or spiritual, and / or supporting values.</p>	<p>MOE, MAFF and GSSD</p> <p>MLMUPC, MOT, MRD, MEF, MOEYS, MME, MOC, MOH, MOP, MOWRAM, MOWA, NCDM and TSA</p>
<p>1.3. Monitor and report regularly on the status of these environmentally/ecologically, socially (including health) and economically important components of biodiversity.</p>	<p>MOE and GSSD</p> <p>MAFF, MLMUPC, MOT, MRD, MEF, MOEYS, MME, MOP, NCDM and TSA</p>

<p>1.4. Organize data and information collected, including the associated scientific, traditional knowledge and information from other sources, in user-friendly and widely accessible databases for dissemination and use in awareness-raising, as well as education programmes and for decision-making.</p>	<p>MOE and GSSD MAFF, MLMUPC, MOT, MRD, MEF, MOEYS, MME, MOC, MOH, MOP, MOWRAM, MOWA, NCDM and TSA</p>
<p>1.5. Raise awareness about the priority components of biodiversity, including their associated ecosystem services and their values, and promote engagement of the different sectors, through various types of publications, education programmes and the media.</p> <p>As noted in decision X/32.2 g of the CBD Conference of the Parties, the sectors should include <i>inter alia</i>, energy, the financial sector, forestry, wildlife management, fisheries, water supply, agriculture, disaster prevention, health, and climate change.</p>	<p>MOE/GSSD, MAFF and MOEYS MOT, MRD, MEF, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MOWA, NCDM, NFP and TSA</p>

Implementation of this strategic objective and the identified actions will contribute to (i) the implementation of Aichi Biodiversity Target 18 and Cambodia Biodiversity Target 17, both on traditional knowledge, innovations and practices of indigenous and local communities; and Aichi Biodiversity Target 19 on knowledge, the science base and technologies relating to biodiversity, as well as Cambodia Biodiversity Target 19 on an information system containing data and information on biodiversity, and (ii) the achievement of the other Aichi biodiversity targets and other Cambodia biodiversity targets.

Strategic objective B: Identify and describe the direct and indirect factors and processes that are negatively impacting Cambodia's priority biodiversity components; and apply, as appropriate, preventive and corrective measures.

Rationale

Since the adoption of the 2002 NBSAP, there has been a lot of progress in terms of the conservation of biodiversity in Cambodia. However, there are still a lot of constraints in the implementation of the strategy, also the intensity of the pressures on biodiversity is high even and increasing in some cases.

As noted in the 3rd edition of the Global Biodiversity Outlook, one of the main reasons for the failure to slow biodiversity loss between 2002 and 2010 is that measures taken tended to focus only on the state of biodiversity, such as protected areas and programmes targeted at particular species, or on addressing the direct pressures of biodiversity loss. These direct pressures consist of land-use change, habitat fragmentation, land degradation and degradation of habitats used by migratory species; climate change; introduction and spread of invasive alien species; unsustainable exploitation of natural resources, including illegal trade in endangered species of wild fauna and flora, overexploitation, overharvesting, and overgrazing; pollution with wastes, pesticides and fertilizers; and natural disasters. As noted in the National Sustainable Development Strategy (2009), biodiversity loss and other environmental problems hinder Cambodia's progress toward sustainable development:

- (a) Land-use, which is already a complicated issue, difficult to manage and control in some provinces and cities, is compounded by issues of land tenure;
- (b) Degradation of forests and the loss of biodiversity due to illegal logging, land clearing and hunting of rare/endangered species are causing, not only environmental problems, but also creating adverse impacts on the socioeconomic development, especially in local communities;
- (c) A large number of Cambodians, especially in rural and remote areas are experiencing scarcity of water for domestic uses and irrigation; and
- (d) Economic sectors like mining, industry, energy, water supply and tourism development are facing many environmental problems requiring urgent and effective solutions in order to ensure long-term sustainable development.

The 3rd edition of the Global Biodiversity Outlook also indicated that underlying causes of biodiversity had not been addressed in a meaningful manner. It was thus strongly recommended to use every

opportunity to prevent underlying pressures from inevitably leading to pressures that impact biodiversity directly. A literature survey indicates that indirect causes of biodiversity loss include:

- (e) Causes from socioeconomic and cultural environment, such as poverty often linked to demographic growth and unsustainable consumption, production, economic demand, markets and trade; lack of awareness and knowledge including ignorance of impact of new technologies; inadequate gender considerations, and non-valorization of traditional knowledge;
- (f) Weaknesses in policy and legal response consisting essentially of limited political will, despite the fact that the Royal Government of Cambodia (RGC) outlined four main objectives in the Rectangular Strategy Phase II, of which the fourth is to ensure environmental sustainability through sustainable management of natural resources, inadequate national compliance with multilateral environmental agreements, inadequate sector integration or weak appropriation/ownership of the NBSAP by major stakeholders, inadequate and obsolete legislation, and weak enforcement; and
- (g) Weakness in institutional response, generally resulting from lack of or poor planning, weak co-ordination structures, insufficient participation, and inadequate funding of biodiversity.

Improving knowledge on the value of biodiversity, and the causes and consequences of biodiversity loss as well as a change of behavior by all stakeholders in favor of biodiversity conservation are fundamental to addressing indirect causes of biodiversity loss.

Strategic objective B recognizes that the most appropriate measures to avert loss or degradation of biodiversity can be taken when adequate information on pressures and their impacts is available.

Table 2: Key actions and roles of the Ministries for Strategic Objective B

Key action	Responsible Ministries and other participating Ministries
2.1 Investigate the direct pressures causing the loss or degradation of biodiversity and related ecosystem services, and regularly monitor their impacts	MOE, MAFF and GSSD MOT, MRD, MEF, MOEYS, MME, MOWRAM, MLMUPC and TSA
2.2 Keeping in mind the ecosystem approach and requirements for sustainable development, put in place or strengthen measures that will control, or whenever possible, stop the direct pressures and reduce their impact on biodiversity, particularly in natural habitats and vulnerable ecosystems	MOE, MAFF and GSSD MOT, MRD, MEF, MOEYS, MAFF, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MOWA, NCDM, NFP, TSA and NCDM
2.3 Carry out research showing and assessing the cause-effect relationship between underlying factors and biodiversity loss and degradation, and use the results to develop and implement plans and programmes that will reduce the negative impact of underlying factors on Cambodia's natural capital	MOE, MAFF and GSSD MOT, MRD, MEF, MOEYS, MAFF, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MOWA, NCDM, NFP and TSA
2.4 Regularly assess and improve, as needed, the effectiveness of measures taken to address direct and indirect causes of the loss and degradation of biodiversity and associated ecosystem services, bearing in mind the principles of adaptive management	MOE, MAFF and GSSD MOT, MRD, MEF, MOEYS, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MCFA, MOWA, NCDM and TSA
2.5 Promote a planning process that is participatory, ensuring in particular the involvement of local communities and indigenous ethnic minorities, that uses biodiversity-inclusive strategic environmental	MOE, MAFF and GSSD MOT, MRD, MEF, MOEYS, MCFA, MCRA, MIH, MLMUPC, MME,

assessments and environmental impact assessments, and that takes into account the ecosystem approach as well as the guidelines for the sustainable use of biodiversity and similar guidelines, particularly for agriculture, aquaculture, fisheries, forestry, landscape management, public works and industrial development	MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MOWA, NCDM and TSA
2.6 Bearing in mind the current coverage of the protected area system in Cambodia, complete the ecological representativeness of the system by creating protected areas in forests, fresh waters and marine and coastal areas, and focus on ensuring effective and equitable management of all protected areas and conservation areas, connectivity, and integration of the protected area system into the wider landscape and seascape	MOE, MAFF and GSSD MOT, MRD, MEF, MOEYS, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MCFA, MOWA, NCDM and TSA
2.7 Restore or rehabilitate degraded ecosystems and recover threatened species and genetic resources, for the benefit of all in Cambodia, in particular members of the local communities and indigenous ethnic minorities who rely directly on local biodiversity and ecosystem services for their livelihoods and well-being	MOE, MAFF and GSSD MOT, MRD, MEF, MOEYS, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MCFA, MOWA, NCDM and TSA
2.8 Integrate biodiversity and its ecosystem services into wider national and subnational development strategies and plans	MOE, MAFF, MOT, MRD, MOI, and GSSD MOEYS, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOINF, MOP, MOWRAM, MPWT, MOWA, NCDM and TSA
2.9 Enhance awareness about direct and indirect causes of biodiversity loss and degradation, their environmental and socioeconomic consequences, and measures taken or to be taken by decision-makers at all levels, in the government, local communities and indigenous ethnic minorities, the private sector, and all the economic sectors relying on or impacting the natural capital	MOE, MAFF, MOEYS and GSSD MOT, MRD, MEF, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MOWA, NCDM and TSA
2.10 Put in place and promote the use of incentive measures favorable to the conservation and sustainable use of biodiversity, and effective law enforcement mechanisms	MOE, MAFF and GSSD MOT, MRD, MEF, MOEYS, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MOWA, NCDM and TSA
2.11 Mobilize human and financial resources needed for the implementation of these actions and empower the relevant institutions	MOE, MEF, MAFF and GSSD MOT, MRD, MOEYS, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MOWA, NCDM and TSA

Key actions 2.6 (on Cambodia protected area system taking into account the urgent need to protect and recover threatened species) and 2.7 (on restoration of degraded ecosystems and recovery of threatened species) are in line with the key potential actions identified in the 4th edition of the Global Biodiversity Outlook that could accelerate progress towards the achievements of the strategic goals of the Aichi Biodiversity Targets, if more widely applied. With regard to ecosystem restoration, it is important to recall a conclusion from the Economics of Ecosystem and Biodiversity (TEEB) Initiative that investments in maintenance and conservation are almost always cheaper than trying to restore damaged ecosystems. Nevertheless, the social benefits that flow from restoration of ecosystems providing essential services (for

example wetlands, coral reefs, rivers, forests and mountain areas, and “water towers”) can be several times higher than the costs.

Implementation of this Strategic Objective B directly covers the implementation of Aichi Biodiversity Targets 1 to 15 and contributes to the implementation of Sustainable Development Goals (SDG) 13, 14 and 15.

Strategic objective C: Maintain or strengthen measures that have a positive impact on biodiversity and thus enhance the benefits to all in Cambodia from biodiversity and associated ecosystem services for an equitable economic prosperity and improved quality of life.

Rationale

Under strategic objective A, components of biodiversity important for sustainable development and poverty reduction in Cambodia will be described and their value assessed. Under this strategic objective C, measures put forward under the strategic objective B above are promoted so as to strengthen and enhance the benefits from these measures in a sustainable way. The focus will be on the supply of essential services, including services related to water, health, food security, climate change adaptation, resistance and resilience to land degradation or natural disasters and, in general, services related to livelihoods and the well-being of all in Cambodia. The specific needs of women, local communities and indigenous ethnic minorities, elderly persons, children, and the poor and vulnerable will be taken into account.

The realization of the benefits from measures taken will act as incentives for biodiversity conservation and sustainable use. It is expected that public engagement combined with appropriate pricing, fiscal policies such as a green tax, adjustment of national rules and frameworks for markets and economic activities and other mechanisms to reflect the real value of biodiversity could facilitate the creation of powerful incentives (including the removal of perverse subsidies) that would not only reverse patterns of destruction resulting from biodiversity under-valuation, but that would also strengthen the short and long-term gains one can derive from conservation and sustainable use of biodiversity.

The short, medium and long-term interventions put forward in the National Green Growth Roadmap adopted by Cambodia in 2009 provide an overall guidance for enhancing benefits from biodiversity in the country. As embodied in the Roadmap’s goal, the Green Growth initiatives “foster sustainability of economic growth by enhancing sustainable consumption and production, by greening markets and businesses, by creating favorable climate for the establishment of sustainable infrastructure that, in turn, can enable the population to enjoy increased access to crucial goods and services and to ensure equal access to resources for both women and men”.

Implementation of the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization, as well as the utilization of associated traditional knowledge and implementation of related legislations, when in place, will provide guarantees for improving the livelihoods of local people as knowledge-holders and contribute to the cost of conserving biodiversity. Cambodia signed the Protocol on 1 February 2012 and became Party on 19 April 2015. The Protocol entered into force in October 2014.

Table 3: Key actions and roles of the Ministries for Strategic objective C

Key action	Responsible Ministries and other participating Ministries
3.1 Assess the level of functioning of ecosystems associated with essential services, including services related to water, health, food security, climate change adaptation, resistance and resilience to climate change, land degradation or natural disasters and, in general, services related to livelihoods and the well-being of all in Cambodia	MOE, MAFF, MOT and GSSD MRD, MEF, MOEYS, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MOWA, NCDM and TSA
3.2 Improve or maintain at favourable levels the status and functioning of biologically, ecologically and socioeconomically important ecosystems, species and genetic diversity by developing and implementing appropriate management plans and positive incentives	MOE, MAFF, MOT and GSSD MRD, MEF, MOEYS, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MOWA, NCDM and TSA
3.3 Develop and implement a biodiversity economic valuation ⁵ and accounting programme to generate information that will allow the integration of biodiversity into national accounting and trading of biodiversity components, and thus realize the contribution of biodiversity to the national budget	MOE, MAFF and GSSD MOT, MRD, MEF, MOEYS, MME, MOC, MOH, MLMUPC, MOI, MOP, MOWRAM, MPWT, MOWA and TSA
3.4 Mainstream biodiversity into key development sectors, including into relevant national and local policies and programmes, public and private sector decision-making, development planning, land-use planning, sustainable use and management of natural resources and poverty alleviation plans, climate resilience plans, and formal and informal education system	MOE, MAFF, MOEYS and GSSD MOT, MRD, MEF, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MOWA, NCDM and TSA
3.5 Raise awareness, understanding and ownership of all stakeholders, in particular in the private sector and among members of the local communities and indigenous ethnic minorities, regarding the value of biodiversity and the contribution of its conservation and sustainable use to livelihoods and well-being, building on mechanisms existing in the country	MOE, MAFF, MOEYS and GSSD MOT, MRD, MEF, MME, MOC, MOH, MOINF, MOP, MOWRAM, MOWA and TSA
3.6 Develop and implement, in harmony with international and regional agreements to which Cambodia is party, an incentive system of subsidies, taxes and regulations that encourages the conservation and sustainable use of biodiversity and environmentally responsible behaviour, and eliminates, phases out or reforms harmful subsidies on, for instance, fossil fuels and agriculture	MOE, MAFF, MEF and GSSD MOT, MRD, MOEYS, MME, MOC, MLMUPC, MOH, MOI, MOP, MOWRAM, MOWA, MCFA, NCDM, TSA
3.7 Develop and implement a scheme for innovative resource mobilization, including in particular and in line with the Green Growth Roadmap: (i) payment for ecosystem services to pay for biodiversity activities; (ii) green tax and budget reform; and (iii) swap of debts schemes with international investors	MOE, MAFF, MEF and GSSD MOT, MRD, MOEYS, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MOWA, NCDM and TSA

This Strategic Objective C is in line with Aichi Biodiversity Strategic Goal D on enhancing the benefits to all from biodiversity and ecosystem services.

Strategic objective D: Strengthen the enabling environment for the implementation of the strategy

Rationale

Implementation of the NBSAP objectives depends on various needs that have to be fulfilled to pave the way for the actions that will directly result in the conservation and sustainable use of biodiversity and lead to the ultimate goal of ensuring equitable economic prosperity and improved quality of life for all in Cambodia. These needs are usually associated with the indirect drivers of change in biodiversity; namely, the human population, economic activity, technology and socio-political and cultural factors.

In 2013, Cambodia's population was estimated to be 15.2 million, with an annual growth rate of 1.7% and a density of 82.74 persons per square kilometer in 2011. As stated in the Fifth National Report under the Convention on Biological Diversity, Cambodia was ranked 138 of 187 countries in the UNDP's Human Development Index in 2013. However, the country's poverty rate declined to 20% in 2012 with a GDP per capita that increased from USD \$760 in 2008 to almost USD \$1,000 in 2012, making Cambodia the 15th fastest growing economy in the world in the past ten years, 5th among developing countries achieving the Millennium Development Goals, and 1st in improving social indicators in the Asia Pacific region. In any case, the rapid population growth is one factor that is viewed as a possible obstacle to green growth. The unsustainable use of natural resources increases with demographic growth and increased demand for biodiversity resources used in production. Migration and urbanization associated to the high demographic trend also exacerbate the pressures on ecosystems. Population increase is among the drivers of pressure on biodiversity, and is something that cannot be reversed rapidly. It requires long-term strategies and policies from the government aiming at bringing consumption of biological resources and the use of various ecosystem goods and services within safe ecological limits. Awareness-raising and capacity-building are ways used to help populations achieve some sustainability in their use of natural resources; they become more conscious of the value of biodiversity, of associated traditional knowledge, and of the impacts of anthropogenic activities.

Over the last decades, Cambodia has experienced rapid economic growth resulting in significant poverty reduction. Despite the global downturn, the Cambodian economy remains in good shape, driven by continuous and increasing investments in the garment industry, agriculture, construction and tourism. The economy is underpinned by political stability, active private sector participation, reform efforts, increased official development aid and sustained foreign direct investment. Exploitable oil deposits were recently found underneath Cambodia's territorial waters, representing a potential revenue stream for the government, if commercial extraction becomes feasible. Opportunities for mining bauxite, gold, iron and gems are also attracting investors. However, economic growth in Cambodia is happening largely at the expense of the environment, with extensive overexploitation of Cambodia's fisheries and forests that are now disappearing at a rapid rate owing to the compound negative impacts on water retention and soils, and resulting in the loss of habitats for many species of animals and plants, as well as in CO₂ emissions. In addition, the poverty level in Cambodia is still high and posing, with demographic imbalance, a daunting challenge to long-term economic development. The major economic challenge for Cambodia over the next decade will be fashioning an economic environment that will have a significantly reduced impact on biodiversity and in which the private sector can create enough jobs to handle Cambodia's demographic imbalance.

In the past decades, the Government of Cambodia has developed policies, strategies, plans and programmes that provide a supportive enabling environment for the conservation and sustainable use of biodiversity (see Annex 1) both at the national level and, essentially through the Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin, at the regional level. Through this updated NBSAP, Cambodia intends to further mainstream biodiversity considerations in the implementation on the ground of all these relevant policies, strategies, plans and programmes and more specifically by integrating biodiversity into key economic development sectors, into development planning, policy and legal reforms, strategic environmental assessment (SEA), environmental impact assessment (EIA), land-use planning, sustainable use and management of natural resources, poverty alleviation plans, climate resilience plans, education systems and economic mechanisms such as public-private partnerships, market-based certification, voluntary best practices, economic valuation, payment for ecosystem services, and biodiversity offsets. Mainstreaming makes sense, as biodiversity touches upon almost all economic sectors, and, as such, conservation and sustainable use of biodiversity cannot be achieved only through environmental policies.

Table 4: Key actions for strengthening the enabling environment and roles of the Ministries under Strategic Objectives D

Key action	Responsible Ministries and other participating Ministries
<i>Human capacities</i>	
4.1 Building on previous and ongoing capacity needs assessments, identify the human capacities needed for the implementation of the NBSAP; assess the existing capacities; develop and implement plans, using a participatory approach, to fill the capacity gaps by supporting both formal and informal education programmes tailored for different levels of the society and relevant sectors, by making use of regional cooperation, South-South and North-South cooperation, and by mobilizing the required financial resources (See theme 20 for more details).	MOE, MOEYS, MEF, MAFF and GSSD MOT, MRD, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MOWA, MCFA, NCDM and TSA
4.2 Encourage and support, including through the provision of guidance and resources, provincial and local authorities so that they can develop and implement local biodiversity strategies and related action plans.	MOE, MAFF and GSSD MOT, MRD, MEF, MOEYS, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MOWA, NCDM and TSA
<i>Institutional and legislative capacities</i>	
4.3 Building on previous and ongoing capacity needs assessments, identify institutions that need to be strengthened and review relevant national legislation and policies relating to biodiversity and its associated ecosystem services; develop and implement plans to strengthen existing institutions, including inter-agency bodies; enforce relevant laws <i>inter alia</i> through training programmes for the relevant authorities and enforce the provision of the equipment/resources needed; promote incentives that will support implementation of the NBSAP, and mobilize the required financial resources (See themes 15 and 21 for more details).	MOE and GSSD MAFF, MOT, MRD, MEF, MOEYS, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MOWA, NCDM and TSA
<i>Technological capacities</i>	
4.4 Building on previous and ongoing capacity needs assessments, identify technologies needed for the conservation and sustainable use of biodiversity and associated ecosystem services; bearing in mind the gaps in technology, develop and implement plans to acquire and/or adapt and validate the needed technologies in line with national and international legislation or as part of the Nagoya Protocol, and mobilize the required financial resources (See theme 17 for more details)	MOE, MOEYS, MAFF and GSSD MOT, MRD, MEF, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MOWA, NCDM and TSA
<i>Financial sustainability</i>	
4.5 Bearing in mind that lack of financial resources was a major obstacle to the implementation of the 2002 NBSAP, assess the financial needs for implementing the updated NBSAP; and develop and implement a strategy for enhancing the effectiveness in using existing financial resources and for resource mobilization from diverse sources, including national and international sources, taking into account the existing range of conventional and innovative funding instruments, so as to ensure financial sustainability (See theme 18 for more details).	MOE, MAFF, MEF and GSSD MOT, MRD, MOEYS, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MOWA, NCDM, NFP and TSA
4.6 Ensure, through participatory planning and enhanced coordination, synergies among biodiversity projects and programmes under different	MOE and GSSD

Ministries, and establish strategic partnerships with the finance and business sectors.	MAFF, MOT, MRD, MEF, MOEYS, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MOWA, NCDM and TSA
<i>Participation and diversification of governance</i>	
4.7 Bearing in mind that biodiversity and its ecosystem services constitutes our natural capital and is the basis of life on Earth, also that its management, conservation and sustainable use involves everybody, encourage the participation of all stakeholders, including local communities, indigenous ethnic minorities and the private sector, in the planning, deciding on measures to be taken for the conservation and sustainable use of biodiversity, and implementing them.	MOE, MAFF, MOT and GSSD MRD, MEF, MOEYS, MLMUPC, MME, MOC, MOH, MOP, MOWRAM, MOWA, TSA
4.8 In line with the ecosystem approach and the Rectangular Strategy, ensure that management is decentralized to the lowest appropriate level for greater efficiency, effectiveness and equity (See theme 19 for more details).	MOE MAFF, MOI and GSSD MOT, MRD, MEF, MOEYS, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, , MOINF, MOP, MOWRAM, MPWT, MOWA, NCDM and TSA
<i>Coordination and cooperation among stakeholders at the sub-national, national, regional and global levels</i>	
4.9 Bearing in mind that implementation of the NBSAP is a collaborative effort calling on all stakeholders, enhance a synergistic and coherent implementation of and reporting on biodiversity-related programmes initiated under different national strategies and plans, and regional and international agreements, making efficient use of the clearing-house mechanism for technical and scientific cooperation, and avoiding a piecemeal approach to the conservation and sustainable use of biodiversity (See theme 23 for more details).	MOE, MAFF and GSSD MOT, MRD, MEF, MOEYS, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MCFA, MPWT, MOWA, NCDM and TSA
<i>Education, public awareness and research development and coordination</i>	
4.10 Further integrate biodiversity, in particular its valuation and ways and means to conserve it and use it sustainably, in the national education and research system, as well as in public awareness programmes, and promote environmental awareness and formal and non-formal environmental education curriculums and programmes, while improving the knowledge base at the national and local level.	MOE, MAFF, MOEYS and GSSD MOT, MRD, MEF, , MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MOWA, NCDM and TSA
4.11 Enhance coordination and synergies for efficient use of resources in implementing education, public awareness and research programmes dealing with biodiversity (See theme 20 for more details).	MOE, MAFF and GSSD MOT, MRD, MEF, MOEYS, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MOWA, NCDM and TSA
4.12 Establish and strengthen key research institutions, such as biodiversity centers, ecotourism centers, biodiversity training and livelihood centers, botanical gardens, gene banks, refuge centers, information centers.	MOE and GSSD MAFF, MOT, MRD, MEF, MOEYS, MAFF, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MOWA, NCDM, NFP and TSA

4.13 Enhance mechanisms for the management, dissemination, targeted communication and exchange of scientific data and knowledge, including traditional knowledge, about biodiversity and related ecosystem services, making effective use of the clearing-house mechanism (See theme 24 for additional details).	MOE, MAFF and GSSD MOT, MRD, MEF, MOEYS, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MOWA, NCDM and TSA
<i>Socioeconomic development, quality of life and poverty reduction</i>	
4.14 Foster studies that enhance the contribution of biodiversity conservation and sustainable use to socioeconomic development, poverty reduction and improved quality of life; and disseminate the results widely, particularly to decision and policy-makers.	MOE, MAFF and GSSD MOT, MRD, MEF, MOEYS, MCFA, MCRA, MIH, MLMUPC, MME, MOC, MOH, MOI, MOINF, MOP, MOWRAM, MPWT, MOWA, NCDM and TSA

This Strategic Objective D encompasses Aichi Biodiversity Targets 16 to 20 and sustains the development goals adopted by the Royal Government of Cambodia in the Rectangular Strategy for Growth, Employment, Equity and Efficiency in Cambodia. Implementation of this Strategic Objective also supports the Sustainable Development Goal 17 (Strengthen the means of implementation and revitalize the global partnership for sustainable development).

The above overall strategic objectives will be implemented under each of the 24 themes identified by the Technical Working Group (TWG) as areas of focus for the National Biodiversity Strategy and Action Plan (NBSAP), areas in which Cambodia has been mainstreaming biodiversity. Implementation of these strategic objectives is expected to meet most of the environmental quality objectives proposed in the National Sustainable Development Strategy (2009), i.e. productive land resources, rich forest resources, high quality ground- and surface water resources, rich fish resources, functional wetlands, sustainable marine- and coastal environment, rich biodiversity, limited influence on the climate, efficient use of natural resources and limited waste generation and limited impact from natural disasters, and clean air. They will also be used as a check list whenever a new ecosystem (e.g. urban ecosystem) or a specific landscape/seascape (the socio-ecological production landscapes and seascapes under the Satoyama Initiative) is found important for integration in the NBSAP.

Principles governing the strategy

Effective implementation of the NBSAP will be guided by principles and approaches underpinning the way Cambodia is promoting sustainable development, so as to reach the strategic objectives and achieve the vision of this NBSAP. These principles are basically the same as the ones listed in the 2002 NBSAP. They were revised in light of the Rectangular Strategy 2009-2013 and its decentralization and de-concentration policy, the National Strategic Development Plan (NSDP) (2006-2010), the National Green Growth Roadmap 2013-2030, and other strategies listed in Annex 1 of this NBSAP. The principles are:

1. Our natural capital consisting of biodiversity, its ecosystem services and other natural resources underpins our country's economy, society, cultures and individual well-being. The values of the benefits we can derive from biodiversity are, however, often overlooked or poorly understood. They are yet to be fully taken into account in day-to-day decisions by all citizens and through economic signals in markets, and to be reflected adequately in the accounts of our society.
2. Awareness of the value of biodiversity, its status and trend, the threats posed to its maintenance and proper functioning is a prerequisite for achieving conservation and sustainability in the use of natural resources.
3. All the people of Cambodia depend on biodiversity and thus have a responsibility to ensure that biodiversity is conserved and used in a sustainable manner for the well-being of both present and future generations.
4. The ecosystem approach is the primary framework for any decision and activity dealing with biodiversity and its associated ecosystem services. This approach consists of managing land, water and living resources in ways that promote conservation and sustainable use of biodiversity components and the sharing of benefits from the utilization of genetic resources. The approach is consistent with the spiritual and cultural values, as well as customary practices of local communities, the indigenous ethnic minorities and their traditional knowledge, innovations and practices.
5. In accordance with the Rectangular Strategy and Principle 2 of the ecosystem approach, the management of biodiversity should be decentralized to the lowest appropriate level for greater efficiency, effectiveness and equity. Therefore, provincial and local authorities should be involved, wherever possible, in the planning and managing of biodiversity.
6. Bearing in mind the potential gains from the management of biodiversity, there is usually a need to understand and manage ecosystems in an economic context (Ecosystem approach Principle 4) and thus to:
7. Reduce those market distortions that adversely affect biodiversity;
8. Align incentives to promote biodiversity conservation and sustainable use;
9. Internalize costs and benefits in the given ecosystem to the extent feasible.
10. Most problems of biodiversity management are complex and should involve all relevant sectors of society. They require the participation of all the stakeholders,⁶ including local communities and indigenous ethnic minorities; cooperation among different ministerial departments and line ministries; between public and private organizations; governmental, non-governmental and intergovernmental organizations, as appropriate.
11. The conservation of biodiversity and the sustainable use of its components require local, national (including within and between ministries, between the public and private sectors) and global co-operation and the sharing of knowledge, costs and benefits.
12. In order to succeed in slowing down biodiversity loss, indirect drivers must be tackled, where possible, together with direct pressures, so as to break the link between the indirect and direct drivers of biodiversity loss and thus prevent underlying pressures from inevitably leading to pressures impacting biodiversity directly.
13. For a sustainable life, in harmony with nature and other people, one should not take more from nature than nature's ability to regenerate those products, and the use of natural resources must be shared among people in a reasonable and equitable way. The extraction of natural resources must be done in a nondestructive manner and by transparent means, in order to care for the future of our motherland.
14. Long term development depends on the ecosystems' capacity to deliver goods and services.
15. Systems with a diversity of components are generally more resilient to perturbations or disturbances than systems with few components.

16. Development decisions must reflect ecological, economic, social, cultural and spiritual values of local populations.
17. Healthy, evolving ecosystems and the maintenance of natural processes are prerequisites for the in situ conservation of biodiversity and the sustainable use of biological resources.
18. Ex situ measures may be required to support the conservation of some species and populations and are essential to ensuring the sustainable use of many agricultural, forest and aquatic resources.
19. The knowledge, innovations and practices of indigenous ethnic minorities and local communities relevant for the conservation and sustainable use of biological diversity should be respected; their use and maintenance be subject to their prior informed consent or approval and carried out with the support and involvement of these communities; and the benefits arising from the utilization of such knowledge, innovations and practices should be shared equitably.
20. The conservation of biodiversity and the sustainable use of biological resources will be carried out using the best knowledge available and approaches refined as new knowledge is gained.
21. Biodiversity-inclusive strategic environmental assessment and environmental impact assessment will ensure that development projects are respectful of biodiversity and its ecosystem services.
22. The nature of biodiversity is complex and its scope wide. Consequently, there is a need to use interdisciplinary, cross-sectoral and multi-scale approaches in addressing it.⁷

III. RATIONALE FOR THE OVERALL STRATEGIC OBJECTIVES

3.1 Assessment of the implementation of the 2002 National Biodiversity Strategy and Action Plan

The 2002 National Biodiversity Strategy and Action Plan proposed a series of strategic objectives and priority actions that were addressed under 17 themes corresponding to important sectors in Cambodia.

Under the first theme, *Protection of Natural Resources*, significant progress has been observed, with 26% of the national land and inland waters becoming designated as protected areas and conservation areas. In addition, important legal and policy documents have been approved, including the 2014 Strategic Framework for National Protected Area System Strategic Management Plan; the 2008 Protected Area Law, the 2006 Law on Fisheries and the 2002 Law on Forestry. However, generally speaking, the effectiveness of the management of protected areas and conservation areas has been limited due to outdated plans or the absence of plans altogether, as well as a lack of PAs zoning and boundary demarcation. In addition, a critical weakness of the protected area system has been that conservation activities, especially research projects carried out by NGOs, were essentially funded and somehow driven externally.

Regarding the *Animal Wildlife Resources* theme, a sub decree was promulgated on the List of Cambodia's national animals and tree species. In addition, the following were published: the 2003 Phyto-sanitary control and other relevant MAFF notifications for protecting some animal species. Little progress was observed in the implementation of the national monitoring program on invasive alien species, but a 10-year national strategic and action plan on invasive species was developed.

Under the *Freshwater Fisheries and Aquaculture* theme, the framework of the 10-year Strategic Plan 2009-2018, the first three-year-rolling on Fishery Sector Development Action Plan 2009-2011, 468 community fisheries, 8 fish sanctuaries, 13 State and 267 private hatcheries operated with 15,000 families engaged in small-scale aquaculture were developed. Furthermore, aquaculture activities were expanded and more actions were taken to enhance illegal fishing control⁸. The inland fish exploitation increased by 10.6% in 2013 compared to the previous year and its growth was around 39% compared to the period between 2008 and 2012. Similarly, marine fish exploitation increased by 11% and its growth was around 50% compared to 2008-2012. Aquaculture of fish, prawn, crocodile, and fingerling stock hatchery continue to develop actively⁹.

Regarding the *Coastal and Marine Resources* theme, the Cambodian government created an integrated coastal zone management system in the coastal area to protect the environment and manage the use of natural resources for sustainable economic development. The government undertook building up the capacity for fish breeding, giant prawn hatchling technique and promoted aquaculture activities through stocking of key species, which was contributing to family income.

Under the *Forest and Wild Plan Resources* theme, the Forest Resource Management and Conservation Programme included the development of sustainable forest management plans, management systems for production forests outside of community forests, biodiversity management plans in protected forests, the conservation of genetic resources from forests and the establishment of seed sources for planting programs, multi-purpose tree plantations, local forest product development and market promotion, the expansion of timber processing and the use of more efficient technologies, and forest certification¹⁰.

Regarding the *Agriculture and Animal Production* theme, the MAFF continued to strengthen agricultural extension services for better cultivation techniques and effective practices, plant protection, the use and maintenance of agricultural machinery, postharvest and storage technology.

Work under the *Energy Resources* theme includes an energy efficiency program for households, and the promotion of fuelwood and multipurpose tree plantations. Progress under this theme has been limited due to a lack of financial support for implementation.

Good progress has been made under the *Mineral Resources* theme, through the application of the 1999 sub-decree on environmental impact assessment for hydropower and other energy development prepared by the MME and all the development projects on energy, hydropower and mine exploration. The MME cooperated with the Ministry of Environment in conducting the environmental impact assessment to ensure the sustainability of development projects related to community environment¹¹.

Regarding the *Industry, Technology and Services* theme, Cambodia signed the Cartagena Protocol on Biosafety in 2003, and adopted its biosafety law in 2007. The National Ecotourism Policy and Strategic Plan (2010) was developed prioritizing the following regions: Northeast Region, Tonle Sap Multiple Use Area, Coastal and Cardamom Mountain Region¹².

Progress on the *Environmental Security* theme is limited. However, this did not prevent the adoption of the Natural Resource and Environmental Protection Law and the Biosafety Law. Both laws contribute to the prevention of any cause and damage to genetic resources and to biodiversity in general, including causes or damage from modern biotechnology. The Ministry of Water Resources and Meteorology (MOWRAM) has implemented the Law on Water Resources and houses a meteorology station.

In terms of *Land-use planning*, various institutional capacity building programmes were carried out on land-use planning, including participatory land-use planning, the establishment of the national base map, and the Master Plan for the national spatial data infrastructure.

Work on the *Water Resource* theme is in progress. The principle of integrated water resource management requires coordinated multi-sectoral water use planning. There is also a need to conserve and maintain biodiversity and its ecosystems, maintain, and construct 141 irrigation system projects; improve its service quality; minimize the impacts of its developments and operations on the environment and surrounding communities; collaborate and participate in the management of the Mekong basin, considering the management of water resources, the sustain biodiversity aquatic and fish life.

In terms of *Climate Change and Biodiversity*, the following were developed: the 2006 national adaptation programme of action on climate change, the 1999 first national communication on climate change, and the 2007 second national communication to the UNFCCC and Cambodia climate change strategic plan (2014-2023). In addition, 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 emissions related to climate change¹³.

In terms of *Community Participation*, MOE and MAFF have been promoting and encouraging the participation of local community members and ethnic groups in events on the conservation and protection of natural resources. MOE and MAFF are also encouraging the locals living in and around the protected areas and protected forests to create CPAs, CFs, Community Fisheries Networks, Community based Ecotourism Networks, and a Network of Participatory Land-use planning.

In terms of *Awareness, Education, Research Coordination and Development*, there has been good progress since MOE has a long standing awareness programme on biodiversity, climate change, and biosafety through debating on climate change, biosafety, biodiversity and related issues. MAFF also regularly conducted debates on animal production, fisheries and forestry protection; while provincial authorities undertook various forms of awareness-raising and trainings on biodiversity conservation at various locations using both formal and informal forms.

Work on the *Legislation and Institutional Structure* theme has progressed well. Cambodia passed several new laws and signed bilateral and multiple agreements, such as the Biosafety Protocol.

Good progress has been noted under the *Quality of Life and Poverty Reduction* theme, with the implementation of community-based natural resource management programs in forestry, fishery, protected areas and participatory land-use planning. The National Information Center was created to cover indigenous practices in the mountainous highlands and plains, sustainable livelihoods and climate change mitigation and adaptation. The Ministry of Planning (MOP) developed a commune database that provides sets of valuable information related to socio-economic trends that are useful for the Cambodia poverty assessment.

Overall, good progress has been made in the implementation of the 2002 NBSAP, but with many limitations due to insufficient financial resources and the fact that most of the research activities were externally driven. These and many other constraints encountered during the implementation of the 2002 NBSAP should be addressed in the updated NBSAP.

3.2 Status of biodiversity as a result of the implementation of the 2002 NBSAP

The 2002 NBSAP provided a starting point to enhance biodiversity understanding and management of Cambodia's biodiversity. As below there may have been some areas of positive improvement and progress as a result of implementation but far more is needed before a real understanding of Cambodia's Biodiversity status can be made. It is difficult to make any direct correlation between the NBSAP and Biodiversity Status. This section seeks to identify some of the current knowledge around from Cambodia's 2001 and 2016 National Biodiversity Status Reports.

In response to commitments under the Convention on Biological Diversity (CBD), a National Biodiversity Status Report (NBSR) was developed in 2001 to provide a context through stocktaking and assessment of Cambodia's Biodiversity. This, the first, NBSR for Cambodia was captured the areas of biodiversity values; plant and animal genetic resources, species diversity; ecosystem diversity; and ecosystem diversity including agricultural, aquatic, forest, and coastal diversities. The NBSR has been slightly modified and updated in 2015-2016, and below this data has been summarized.

GENETIC DIVERSITY: The first NBSR (2001) provided a very broad overview of genetic diversity in Cambodia and highlighted the potential significance of genetics in agricultural diversity for domestic plants and animals and also wild relatives of some domesticated plants and animals. There was limited in-situ and ex-situ works on genetic diversity in 2001 and while this is still low there are some areas of improvement. However, based on updated information in NBSR 2016, there is a positive trend toward increased understanding of genetic diversity and the importance for conservation, although domestic and commercial plants and animals are still limited used. The initial status of plant genetic diversity was derived from the FAO Status of Plant Genetic Resources (2000). In-situ conservation was considered non-existent and the only known ex-situ resources were 2557 accessions of local rice germplasm held by the International Rice Research Institute in the Phillipines. The updated status was drawn from the CARDI report *Conservation and Utilization of Plant Genetic Resources for Food and Agriculture in Cambodia* (2011), showed that there were now ex-situ resources in country has increased including, 3313 accessions (ex-situ at CADRI) and Kbal Koh Vegetable Research Station and has some in-situ conservation. There are also plans for herbaria and botanical gardens (links with Kew gardens). The first status of animal genetic diversity drew on the FAO Domestic Animal Diversity Information System (1998) and Domestic Livestock report by Maclean (1998), highlighted the presence of 4 Cattle species, 3 Pigs, Buffalo, Horse, Goat, Chicken, Duck, Goose, and Turkey. Wild relatives were also identified including: wild cattle, water buffalo, boar and the Red Jungle Fowl, the wild chicken. The *'Environmental Animal Health Monitoring Initiative'* (RUA/FAO 2011), was referred to in the update and has reinforced some of the previous status information for domestic animals. In regards to conservation, DNA Sampling of 69 crocodiles in captivity to identify the pure Fish-eating Hill Crocodile (*C. siamensis*) crocodiles has had positive results: 34 Siamese, 32 Hybrid with Estuarine, and 3 Hybrid with Cuban. Fecal DNA studies of wild elephants have been used to estimate a population 400-600 elephants in Cambodia. The most positive trend is the innovative use of DNA for crocodile and elephant research, but need more research on commercial animals and wild relatives.

SPECIES DIVERSITY: Initial status findings provided a very broad overview of species diversity in Cambodia with some chapters directly from relevant specialists. There were few actual species list available to compare with, therefore a significant increases in species knowledge, with increased capacity and research provided a more comprehensive species list. While more is known about species in Cambodia, new species are still being found and there are significant gaps in invertebrate and plant species knowledge: the table below shows more comprehensive species lists have been compiled.

Plant Diversity: The first NBSR (2001) can't provide record of Cambodia plant species due to there was no enough evidence of scientific study and research have been conducted. Although, there were 2308 seed plant has been known in NBSR (2001). In regards to the current status Forestry Administration staff worked to compile a more thorough list of known plant species for Cambodia. Some data on plants through a Forestry Administration and Korean project is still being processed, but may provide a significant increase in documented plant species for Cambodia. Little is known about the status of plant species while Siamese Rosewood and other luxury timbers have been heavily targeted and are likely to be in decline. The current update status shown a positive trend toward increasing the plant knowledge and there are 3113 plant species currently listed for Cambodia.

Invertebrate Diversity: The original section on invertebrates of NBSR (2001) focused on aquatic macro-invertebrates. This provided some understanding of some of the major freshwater macro-aquatic invertebrate families but further highlighted the lack of invertebrate data for Cambodia. The current status of invertebrates while still weak is an improvement on the past although a range of work from national and international in-country specialists have been reviewed. The current status is trended toward an increasing understanding of invertebrate species, however this is the most significant gap area for species. There are 671 invertebrates currently listed for Cambodia.

Amphibian and Reptile Diversity: Amphibian and reptile were not well study and lack of capacity to conduct scientific research on its classification have lead to unknown nor record list of theses Cambodian species, therefore the NBSR (2001) is only able to record 28 reptiles in the commercial list. With ongoing support, the research on Amphibians and Reptiles has been ably continued by the Ministry of Environment staff, including the identification of several species new to science and/or Cambodia, . the trend for reptile and amphibian species understanding is positive and has also been assisted by Fisheries staff work on sea turtles. In regards to amphibians a guide has been developed and a reptile guide is currently underway. Optimistically, there is also a trend toward the release of key reptile species back into the wild. As part of the Cambodia Crocodile Conservation Project, Phnom Tamao Wildlife and Rescue Centre and Fauna Flora International have released Fish-eating Hill Crocodiles (*Crocodylus siamensis*), while the Fisheries Administration have worked with Conservation International to release Cantor's softshell turtle, (*Pelochelys cantorii*) and with the Wildlife Conservation Society have released the Southern River Terrapin (*Batagur affinis*) back to the wild. With this significant improvement of knowledge and government efforts with cooperation from national and international organization, there are 72 amphibians and 173 reptiles currently listed for Cambodia.

Fish Diversity: A non-technical section on fish, which sought to give an overview of knowledge on fish species status in Cambodia for the 2001 NBSR. There was no delineation made between freshwater and marine species but it was noted that more data was available for freshwater fish species. The Fisheries Administration has worked with World Fish and IFReDI in developing a comprehensive fish species list for Cambodia. The first version of NBSR (2001) was able to record 486 freshwater fish and 357 marine species in Cambodia. There are growing concerns that the trend in reducing fish species diversity is a sign of unsustainable harvest and potentially a tipping point for the fishery. Furthermore, there is a trend toward increased damming of the upstream Mekong and its tributaries, which could further impact fish species diversity as stream flows and migration routes are altered. As highlighted in Cambodia's Fifth National Report to the Convention on Biological Diversity, the Government has taken quite strong action, by removing the previous fishing concessions on the Tonle Sap Lake while also promoting aquaculture and community fisheries. This is a positive trend showing the Government's commitment on biodiversity conservation for sustainable use and has acknowledged the significance of the fishery to the people and is acting to better manage the resource. Therefore based on scientific research and specialist, fish diversity in Cambodia, across both fresh and salt water systems are recorded in 1357 species.

Bird Diversity: The first NBSR section on birds was developed by staff from the Wildlife Conservation Society. The current NBSR section on birds has been linked to "The Birds of Cambodia: An Annotated Checklist" (Goes 2013), which is a significant biodiversity resource for Cambodia. Protection of breeding colonies and nests has been part of the successful approach to conservation used at Prek Toal and in the northern plains, but has not worked in other sites. The recent decision to abolish all fishing concessions within the Tonle Sap could also undermine over ten years of successful conservation efforts through unrestricted access to flooded forest areas formerly protected for commercial fishing had led to increased disturbance and resurgence of egg and chick collection. In addition to these setbacks, bird conservation actions must increasingly encounter new challenges. Rapid development has shifted threats from local and species-focused issues to those associated with landscape-level changes. The latter come in various forms (e.g., grassland conversion to rice cultivation; the leasing of large forest areas for commercial plantations; and the construction of hydroelectric dams), but invariably create large-scale threats to habitats and the wildlife those habitats support. Birds seem to be the most well researched of the species lists, but even recently a new species was identified in Phnom Penh. There are 601 bird species currently listed for Cambodia, with 7 on the new global Evolutionally Distinct and Globally Endangered (EDGE) list, while NBSR (2001) presented only around 500 bird has been recorded.

Mammal Diversity: The first NBSR (2001) separated terrestrial and marine mammals, and the report noted only around 100 mammals were recorded. This section was a mix between providing a basic

understanding of mammals, while also providing some information of their status at the time. The previous mammal data, which includes the now questionable K'Ting Vor, place greater importance on setting an agreed national mammal list. New mammal species are still being uncovered in Cambodia, and Fauna Flora International staff helped to highlight some of the specialist work on bats, for which 72 species have now been identified, which is more than the total for mammals in 2001. There have been significant mammal finds since 2001, which seem likely to continue, but with fewer new mammal species expected. In 2008, a Wildlife Conservation Society survey of the Seima Protected Forest identified previously unknown and internationally significant populations of black-shanked doucs and yellow-cheeked crested gibbons. While there has been important mammal research it has not been systematically collected and has not been effectively shared among relevant stakeholders. The decline in Dugong and River Dolphins are concerning indicators for marine mammals in Cambodia. There is a need for classification standards and national discussions around the mammal list including potential extinctions such as Kouprey. The current status of mammal diversity in Cambodia, across both terrestrial and marine systems includes 162 species.

No.	Species	Data Collected		Overall % 2016
		2001	2016	
1	Plants	2308	3113	50.5%
2	Invertebrates	no record	671	11%
3	Amphibians	no record	72	1%
4	Reptiles	28 for commercial	173	3%
5	Fishes	843	1357	22%
6	Birds	around 500	601	10%
7	Mammals	Around 100	162	2.5%
	Total		6149	

ECOSYSTEM SUMMARY: The 2001 NBSR provided a broad overview of ecosystem diversity, but due to lack of data there was more emphasis on the theory than actual status of agricultural, wetland, forest, and coastal ecosystems. In the absence of hard data, the previous status report developed the initial concepts of ecosystem services. The improving national land-use mapping greatly assists an overview of ecosystems but this is limited due to the lack of agreed definitions, and limited research. The Ministry of Environment has started to highlight ecosystems and their services, but this is still as a major gap area. Furthermore, within the ecosystems there are smaller habitats such as Karst areas of high biodiversity potential, but these are vulnerable to disturbance. As a generalized statement, the overall trend in ecosystems has seen a shift toward more human use of ecosystems: increasing agricultural, commercial and extractive use.

The National Biodiversity Status reports seek to identify the status and current trends for Cambodia's Biodiversity. With the time and resources available only an overview is possible but from the data collected it is clear that there is now growing understanding of Cambodia's biodiversity, but still significant gaps in data and coordination. There are some individuals that mostly through their own passion have greatly helped to provide a clearer picture of Cambodia's diversity. New programs such as the RUPP Masters in Conservation, Centre for Biodiversity Conservation and the Cambodian Journal of Natural History are very positive developments. This data needs to be better consolidated and shared within Government in support of biodiversity management; the Clearing House Mechanism and National Biodiversity Status Report Update should help with this.

There is difficulty in stating biodiversity trends as the current and previous data-sets for species numbers provide some broad ideas about what might be happening rather than specific trends. Overall, while data is still deficient there is a positive trend in greater understanding of species, but how they function

together as part of an ecosystem and their services is poorly known. As stated in Cambodia's Fifth National Report to the CBD, *all habitats are being negatively impacted* and as such there may also be negative impact on ecosystem services, the diversity of species and genetic diversity. More strategic, consolidating and collaborative, rather than ad-hoc and isolated, research, and actions are needed for Cambodia's biodiversity status to be better understood.

In conclusion, the NBSR (2016) update has highlighted some progress, which may be related to actions proposed in the previous NBSAP (2002). In regards to genetic diversity there can be seen to be a significant increase in Cambodia's ownership and understanding in plant genetic diversity, and with the support of international partners modern use of DNA is assisting in animal genetic diversity conservation efforts. As per the table above there is a positive trend toward increased species numbers across all sectors, even surpassing some of the estimates made in the 2001 NBSR. Significantly, species information is also being more widely shared through the Government's Biodiversity Clearing House Mechanism. The ecosystem summary showed that this sector needs more support but increased ecosystem services attention and more landscape-based activities are hoped to support increased ecosystem understanding. Overall, there has been some progress and through this NBSAP the Royal Government of Cambodia hopes to continue to strengthen biodiversity understanding and management.

IV. NATIONAL ACTIONS FOR IMPLEMENTING THE OVERALL OBJECTIVES OF THE NBSAP: THEMATIC APPROACH

The 2002 NBSAP used a sectoral approach to identify the priority actions required for achieving the vision, mission and strategic objectives of the strategy. Seventeen themes were identified according to the sectors in which the Cambodian society is involved. The 2009 National Sustainable Development Strategy partly used a similar approach while considering the strategic areas for sustainable development in Cambodia. However, even if the sectoral approach was selected as a practical way to develop and implement the NBSAP, it was recognized that biodiversity, being cross-sectoral, would have many areas of overlap among the themes, and that these overlaps were to be considered more as complementary rather than as reasons for unnecessary duplication in implementation. In this updated NBSAP, opportunities for synergies in implementation of the various themes have been highlighted.

The fifth National Report submitted in 2014 under the Convention on Biological Diversity summarizes some of the key activities achieved in implementing Cambodia's 2002 NBSAP. Both reports conclude that, overall, the 2002 NBSAP has only partially been implemented. In addition, an assessment of the implementation of the priority actions contained in the 2002 NBSAP was carried out in the framework of the review, as was the updating of the NBSAP, as reported in Section 3.1 above.

GROUP 1: PROTECTION OF BIODIVERSITY (Themes 1 to 8)

Theme 1: Protected Area System

1. Background

Under this theme, the 2002 NBSAP lists a number of issues in relation to the protection of biodiversity. There are 11 strategic objectives and related indicators, as well as 11 priority actions. The assessment of the achievement of these priority actions indicates that:

- (a) Each of the issues identified in 2002 has been addressed and each of the strategic objectives and priority actions has been undertaken.
- (b) Progress was recognized in the establishment of Community Protected Areas, the demarcation of some protected areas and the conservation or restoration of biologically important habitats/ecosystems/landscapes, especially mangroves, coral reefs and sea grass. Four Ramsar sites have been designated, as well as the Tonle Sap Biosphere reserve and a number of Important Bird Areas. Community Protected Areas, Fisheries and Forestry have been increasingly promoted.
- (c) The country has also adopted a number of laws and established goals and plans of relevance to the Protected Area System. These include the following (see Annex 1 for a more detailed list):
 - (i) The 2008 Protected Area Law, which defines the framework of management, conservation and development of protected areas under the administration of MOE, and which is also relevant to conservation areas under MAFF;
 - (ii) The National Strategic Development Plan, and its Update 2009-2013. In Chapter IV (Key Policy Priorities and Actions: 2009-2013), the Plan contains policy priorities that support the establishment of protected areas and protected forests with the objectives, among others, to conserve biodiversity, improve the livelihoods of people living in rural areas and contribute to economic growth;
 - (iii) Chapters 4, 5 and 6 in the 2006 Law on Fisheries present approaches to protect and conserve fisheries in inland and marine waters, in general, and more specifically in inundated forests and mangrove forests;
 - (iv) Article 23 of the 2007 Law on Water Resources Management of the Kingdom of Cambodia states that when a watershed is degraded by human activities or natural causes, the MOWRAM has the authority to declare it a protected "water use" zone;
 - (v) The 2002 Forestry Law, which defines the framework for management, harvesting, use, development and conservation of the forests in the Kingdom of Cambodia. The objective of this law is to ensure sustainable management of these forests for their

social, economic and environmental benefit, including conservation of biological diversity and cultural heritage. The management of forests are under the general jurisdiction of the Ministry of Agriculture, Forestry and Fisheries (MAFF). The areas of Forest Protection and all kinds of wildlife species are under the management, research and conservation of the Forestry Administration, except for fish and animal that breed in water;

- (d) MOE and MAFF have collaborated with development partners and natural resource management and environmental NGOs to support conservation efforts in protected areas and other conservation areas;
- (e) While terrestrial protected areas have reached about 26% of the country's land area and 8 fish sanctuaries have been established, no national marine protected area has yet been officially designated. However the MOE has plans to conduct a feasibility study on the establishment of marine protected areas in Koh Rong and the coastal areas around Sihanouk Ville. There is, moreover, the need to (i) develop or update management plans and ensure implementation of those plans for effectiveness in protected areas and other conservation areas; (ii) integrate those areas into wider landscapes and seascapes; and (iii) ensure the contributions of each of those areas to the national economy and the well-being of all, especially local communities and indigenous ethnic minorities;
- (f) Cambodia has seven ecoregions that occur entirely or partly within its borders including: (i) Tonle Sap freshwater swamp forests, (ii) Tonle Sap-Mekong peat swamp forests, (iii) Central Indochina dry forests, (iv) Cardamom Mountains rain forests, (v) Indochina mangroves, (vi) Southeastern Indochina dry evergreen forests, and (vii) Southern Annamites montane rain forests. Based on the August 2014 WDPA data, each of these ecoregions has been afforded between 20% and 62% protection status, except the Tonle Sap-Mekong peat swamp forests, of which only 0.6% is protected. More than 90% of those swamp forests have been converted to scrub or degraded forests. Intensive agriculture and the alteration of the hydrodynamics of the river systems in the region have altered the natural river fluctuations, adversely affecting the remaining native vegetation. Protection of this ecoregion has to be extended. In addition, most Important Bird Areas (IBA) are covered by protected areas, although the following IBA sites are in critical condition due to agricultural expansion and intensification, human intrusions and disturbances, energy production and mining, overexploitation of some species and, in particular, wood harvesting and collection of non-timber products: Kampong Trach, Lomphat, Sesan River, Stung / Chi Kreng / Kampong Svay and Western Siem Pang. Only 0.2% of the Gulf of Thailand, a large marine ecosystem is protected, and there is a need to expand protection as a matter of priority.
- (g) Despite the conservation measures taken, many species continue to be threatened and climate change has already started to cause species range shifts, often across national borders;
- (h) Limited financial resources and local/national expertise were identified as the primary causes of limited implementation of the 2002 NBSAP objectives relating to protected areas. A lack of awareness of the values of protected areas and conservation areas, including of their potential as sources of revenue, has also limited the allocation of budgets, human resources and equipment to the implementation of recommended actions.

Currently, the network of 23 protected areas, under the management of the Ministry of Environment (MOE) through its General Directorate of Administration for Nature Conservation and Protection (GDANCP), 6 protected forests and 8 fish sanctuaries, under the management of the Ministry of Agriculture, Forestry and Fisheries (MAFF) through the Forest Administration (FA) and Fisheries Administration (FiA) respectively covers about 26% of the country's land area.

Cambodia's protected area system is under considerable pressure. There are obstacles to the establishment of new protected areas and conservation areas, and some of the designated protected areas and conservation areas are ineffective, particularly because of the lack of management plans, as well as shortages in skilled staff and insufficient budget allocations.

In accordance with chapter V of the 2008 Protected Area Law, the GDANCP started work in 2013 on the national strategic management plan expected to guide the development of action plans for individual

protected areas and other conservation areas. As a first step, the GDANCP developed a framework that contained, among other elements, guiding principles and links to other government priorities. One of the objectives of the framework is to allow coherence in the implementation of sectoral policies and plans, bearing in mind the diversity in the ecological types and governance of individual protected areas and other conservation areas.

In August and September 2013, representatives of the different departments of the Ministry of the Environment and the Ministry of Agriculture, Forestry and Fisheries, and representatives of local communities and of partner international and non-governmental organizations participated in drafting the strategic framework that was adopted by the National Biodiversity Steering Committee (NBSC) on 18 February 2014. In addition to considerations regarding the development and implementation of protected area and other conservation area management plans, the strategic framework also incorporates aspects that contribute to making protected areas and other conservation areas in Cambodia a comprehensive system that is fully resilient to present and future pressures, including in particular, climate change, and that may ensure an effective and efficient protection of the country's natural capital and its provision of ecosystem services. This framework is the basis of the strategic objectives and key actions, which are identified, in this updated NBSAP.

2. Issues

The following key issues were identified for consideration in this updated NBSAP:

Regarding knowledge base

- (a) Limited information to support decision-making, including on climate change, its present and future impacts and experience with climate change ecosystem-based mitigation;
- (b) Climate change according to the 2007 assessment report of the Intergovernmental Panel on Climate Change is one of the principal threats to biodiversity and the functioning of protected areas and conservation areas;
- (c) Lack of research and monitoring capacity to provide regular assessment of status and trends of biodiversity and to follow up on threatened species and trends in the level of threats.

In relation to progress in implementing plans:

- (a) Limited or ineffective programmes on raising awareness about the role and importance of protected areas and other conservation areas as well as their functions;
- (b) Field management and patrolling problems associated with insufficient resources and rangers;
- (c) Unclear or incomplete zoning and boundary demarcations;
- (d) Increasing pressures on protected areas and other conservation areas as a result of increasing population, global trading that often leads to overharvesting of natural resources (e.g., in term of high-priced timber species and non-timber forest products), road-building, unmanaged tourism, urbanization, other infrastructure development, and expansion in forestry, agriculture (shifting agriculture, land encroachment) and fisheries;
- (e) Illegal activities such as illegal logging, fishing, hunting and harvesting of flooded forests; wildlife poaching and ill-conceived expansion in some cases of large-scale agro-industrial land encouraged by the country's land concession policies;
- (f) Conflicts with local populations.

Regarding the enabling environment

- (a) Weak legal underpinnings (e.g., uncertainties in land tenure), institutional frameworks and law enforcement;
- (b) Lack of planning (management plans);
- (c) Limited participation, cooperation and coordination with local communities and relevant stakeholders, including in sectors other than biodiversity;
- (d) Social and political constraints;

- (e) Lack of financial resources for effective management of protected areas, for the recovery and protection of threatened species, and for establishing and maintaining *ex-situ* conservation facilities;
- (f) Lack of adequate technical expertise and human resources.

These issues are essentially the same as those recorded in 2002, although most of them have begun to be addressed, especially after the adoption of the 2008 Protected Area Law that provides some guidance on requirements. The Government has also recently adopted the National Protected Area System Strategic Management Framework (NPASSMF), which contains guidance on managing protected areas and other conservation areas as a system rather than as single separate areas that must “survive” on their own. The NPASSMF precedes the development of the national strategic management plan that is stipulated in chapter V of the 2008 Protected Area Law and links to other government priorities. The Framework was developed to enhance coherence in the implementation of sectoral policies and plans of relevance to the conservation of biodiversity. The national strategic management plan is expected to guide the development of action plans for individual protected areas and conservation areas in the country.

3. Strategic objectives

The following strategic objectives were adopted to address the identified issues:

- (a) **Strategic Objective 1: Strengthen the knowledge of the national protected area system for decision-making** by conducting assessments, enhancing understanding, organizing and disseminating information, and raising awareness of the functions, roles, values and requirements of species *in-situ* conservation, protected areas and/or other conservation areas throughout Cambodia;
- (b) **Strategic objective 2:** Accelerate the implementation of Cambodia’s obligations in compliance with Aichi Biodiversity Target 11 and other relevant targets of the Strategic Plan for Biodiversity 2011-2020 as they have been translated in this National Biodiversity Strategy and Action Plan¹⁴. Particular efforts should be made to achieve those goals that are lagging behind in the implementation of the programme of work on protected areas adopted under the Convention on Biological Diversity and relevant commitments made in the country’s plan of action on protected areas. Implementation of this strategic objective will take into account the Sustainable Development Goals that the country will adopt and other conventions ratified by Cambodia, including, in particular, the United Nations Framework Convention on Climate Change, the World Heritage Convention and the Ramsar Convention on Wetlands;
- (c) **Strategic objective 3:** Strengthen the enabling environment through diversified governance, enhanced participation, increased coordination and cooperation among stakeholders at the national, regional and global levels, and enhanced human, institutional, technological and sustainable financial capacities.

Implementation of actions under this theme on the “Protected Area System” will be in coordination with, and strengthened by actions under other themes addressing landscape and seascape planning and management, and will be guided by the ecosystem approach (themes under Group 1 on “Protection of Biodiversity”) and the principles for the sustainable use of natural resources (themes under Group 2 on “Sustainable use of Biodiversity”). The Protected Area System theme will also respond to the requirement for the protection of natural habitats and the protection and recovery of threatened species. It will also be particularly relevant to ecosystem restoration activities. Actions relating to the strengthening of the enabling environment for the Protected Area System are described in detail under the themes in Group 3 on “Enabling environment”. Each of the actions listed in Table 5 is required, as well, for the achievement of Cambodia Biodiversity Target 8 and is relevant to the implementation of many other targets, particularly those concerned with enhanced management of biological resources and conservation of ecosystems under anthropogenic pressures.

Table 5: Key actions and relevant ministries as well as agencies responsible for their implementation under the theme on “Protected Area System”

Strategic objectives	Key actions	Coordinating and participating ministries and agencies
<p>Strategic objective 1:</p> <p>Strengthen the knowledge of the national protected area system for decision-making by conducting assessments, enhancing understanding, organizing and disseminating information and raising awareness of the functions, roles, values and requirements of species <i>in-situ</i> conservation, protected areas and/or conservation areas throughout Cambodia.</p>	<p>1.1 Conduct assessments on important aspects of protected areas and conservation areas, including their coverage and location; the ecological gaps in their representativeness; their values and importance; their connectivity and integration into wider landscapes and seascapes; their governance systems, whether management is governed by plans that have been adopted, the effectiveness and equity of their management; their capacity requirements, threats and barriers to their effective management; their environmental and biodiversity policy environment and the sustainability of their finances. In particular, conduct economic evaluations and assessments of resources for the potential development of revenue-based activities within protected areas, including ecotourism development in protected areas and buffer zone management with community benefits.</p> <p>1.2 Enhance understanding and organize into user-friendly databases the information on the functions, roles, values and requirements of protected areas and other conservation areas, considered individually and as a system in Cambodia.</p> <p>1.3 Ensure that information of relevance to decision-making is widely accessible and that it raises awareness.</p>	<p>MOE, MAFF, TSA, GSSD</p>
<p>Strategic objective 2:</p> <p>Accelerate the implementation of Cambodia’s obligations in compliance with Aichi Biodiversity Target 11 and other relevant targets of the Strategic Plan for Biodiversity 2011-2020 as they have been translated in this National Biodiversity Strategy and Action Plan. Particular efforts should be made to achieve those goals that are lagging behind in the implementation of the programme of work on protected areas adopted under the Convention on Biological Diversity and relevant commitments made in the country’s plan of action on protected areas. Implementation of this strategic objective will take into account the Sustainable Development Goals</p>	<p><i>Bearing in mind</i> the need to:</p> <p>(a) Achieve conservation of biodiversity and ecosystem services within the national protected area system, rehabilitation of degraded protected areas and other conservation areas or degraded zones within those areas, prevention and suppression of illegal activities and invasive alien species, and sustainable use of natural resources and ecosystem services within individual protected areas and other conservation areas in line with Article 16.1 of the 2008 Protected Area Law and other relevant laws, including, in particular, the Forestry Law and the Fisheries Law; and</p> <p>(b) Enhance the contributions of protected areas and conservation areas, considered individually or as a system, to the implementation of Cambodia’s sustainable development goals, especially, poverty reduction and eradication.</p>	<p>MOE, MAFF, GSSD</p>

<p>that the country will adopt and other conventions ratified by Cambodia, including in particular the United Nations Framework Convention on Climate Change, the World Heritage Convention and the Ramsar Convention on Wetlands.</p>	<p>It is essential to develop and implement an action plan for each protected area, each conservation area, and the entire network of protected areas and other conservation areas in Cambodia that will include, <i>inter alia</i>, ways and means to:</p>
<p>2.1 Maintain and, as required, rehabilitate existing protected areas, other conservation areas and the entire national protected area system;</p>	<p>MOE, GSSD, MAFF</p>
<p>2.2 Identify and create new protected areas and/or other new conservation areas, including:</p> <ul style="list-style-type: none"> (i) Areas of particular national, regional or global importance for biodiversity and the delivery of ecosystem services, with a particular focus on areas that are naturally resilient to climate change and that can serve as refugia to species that will be misplaced by climate change in the future; (ii) Areas that are considered to be part of the country's natural and cultural heritage; and (iii) Ecologically representative areas. <p>In particular, identify and designate new protected areas within wetlands, and marine and coastal habitats.</p> <p>While the creation of new protected areas and other conservation areas shall be considered only when the gap analysis has clearly demonstrated a critical need, enhancement of management effectiveness and efficiency (action 2.3) is among the priority actions.</p>	
<p>2.3 Enhance management effectiveness and efficiency and, in particular, strengthen the on-going management of designated protected areas by developing and enforcing management policies, guidelines and plans, and ensure that protected areas implement a Conservation Assured approach.</p>	<p>MOE, GSSD MAFF, MRD, MLMUPC and MOI</p>
<p>2.4 Ensure equity in decision-making processes and benefit sharing with special attention to the most vulnerable group.</p>	<p>MOE, GSSD and MAFF</p>
<p>2.5 Ensure connectivity among protected areas through corridors and/or stepping stones, bearing in mind the ecosystem approach</p>	<p>MOE, GSSD, MAFF and TSA</p>
<p>2.6 Integrate protected areas into wider landscapes and seascapes, and strengthen and create transboundary protected areas, also bearing in mind climate change</p>	

	<p>2.7 Integrate protected areas and other conservation areas within sector strategies and policies and wider plans and programmes, including Reducing Emissions from Deforestation and Forest Degradation "plus" (REDD+), other payments for ecosystem services (PES), environmental impact assessments (EIA), and strategies or policies for nature-based tourism, forestry, fisheries, agriculture, energy, transportation, climate change, green economy and Cambodia's sustainable development goals.</p> <p>As a matter of priority, integrate the management of the Tonle Sap Biosphere Core Zones with the management of the whole Tonle Sap Biosphere Reserve, using the ecosystem approach and the principles for sustainable use of biological diversity. Incorporate management of biosphere reserves, community fisheries management, boundary demarcation, commercial fisheries management, wildlife and fisheries monitoring, land security, cross-institutional communication and coordination, field staff and community training program, environmental education and awareness, and local governance. The inviolate core zone in the Mondulkiri Protected Forest needs to be clearly demarcated.</p> <p>2.8 Implement additional specific provisions from relevant regional and international agreements.</p> <p>3.1 Enhance participation and diversity governance</p> <p>3.2 Increase coordination and cooperation among stakeholders at the national, regional and global levels</p> <p>3.3 Enhance human capacities. As a matter of priority, conduct training programs targeted for park rangers, technical staff, protected areas directors, local communities, indigenous ethnic minorities and other stakeholders</p> <p>3.4 Enhance institutional and legislative capacities, and strengthen and interconnect protected area law enforcement efforts at the local, regional and national levels.</p> <p>3.5 Review and amend legislations related to natural resources management to ensure the list of protected species mirrors the IUCN Red List threat categories.</p> <p>3.6 Enhance technological capacities, as well as the mechanisms for technology acquisition, adaptation and transfer.</p>	<p>MOE, GSSD, MAFF and CNMC</p>
<p>Strategic objective 3:</p> <p>Strengthen the enabling environment through diversified governance, enhanced participation, increased coordination and cooperation among stakeholders at the national, regional and global levels, and enhanced human, institutional, technological and sustainable financial capacities.</p>		<p>MOE, GSSD, MAFF and TSA</p> <p>MOE, GSSD, MAFF</p> <p>MOE, GSSD, MAFF</p> <p>MOE, GSSD, MAFF</p> <p>MOE, GSSD, MAFF</p> <p>MOE, GSSD, MAFF</p> <p>MOE, GSSD, MAFF</p>

	<p>3.7 Enhance flora and fauna research within protected areas.</p> <p>3.8 Research and support the establishment and management of new community protected areas.</p> <p>3.9 Enhance the participation of local communities and local authorities in the planning, design and management of the country's protected area system.</p> <p>3.10 Enhance sustainable financing capacities.</p>	<p>MOE, GSSD, MAFF</p> <p>MOE, GSSD, MAFF</p> <p>MOE, GSSD, MAFF</p> <p>MOE, GSSD</p>
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Theme 2: Threatened Species

1. Background

The 2002 NBSAP identified three strategic objectives and four priority actions that are on-going under theme 2 on threatened species. MOE and MAFF are collaborating with development partners and environmental NGOs on a range of relevant biodiversity related programmes, including “endangered species action plans”, the establishment of a Southern Cardamom Biodiversity (elephant) Corridor, “Mekong Giant Catfish and Dolphin protection programmes,” “Development of Elephant Conservation Action Plan,” “Cambodia Crocodile Conservation Action Plan,” and “Tiger Action Plan: Monitoring of Tigers and their Prey”. The implementation of the strategic objectives under this theme has only been partial because of limited government capacity and resources, financial resources, trained plant and animal taxonomists, technical support and awareness-raising programmes.

2. Issues

The following issues have been identified as the most critical:

- (a) Lack of qualified plant and animal taxonomists;
- (b) Absence of comprehensive data covering all groups of animals and plants;
- (c) Insufficient support from decision-makers and inadequate financial resources; and
- (d) Methodological difficulties including, especially, data acquisition and management.

3. Strategic objectives

The following strategic objectives were adopted to address these issues:

- (a) **Strategic objective 1:** Improve the knowledge of the threatened species status and trends;
- (b) **Strategic objective 2:** Identify and describe the direct and indirect factors threatening species and ways and means to address species’ threatened status; and
- (c) **Strategic objective 3:** Strengthen the enabling environment for addressing threatened species.

Several actions described under the other themes, including Theme 1 on “protected areas system and *in-situ* conservation”, Theme 3 on “*ex-situ* conservation” and Theme 6 on “land-use planning and management of biological resources”, will contribute to the protection and recovery of threatened species. The actions that are highlighted in Table 6 are required to meet the Cambodia Biodiversity Target in which all species of threatened fauna and flora will have to be identified and their status improved significantly by 2020. These actions will contribute to the achievement of Target 4 regarding aquatic threatened species as well.

Table 6: Key actions and relevant ministries as well as agencies responsible for their implementation under the theme on “Threatened Species”

Strategic Objectives	Key Actions	Coordinating and participating ministries and agencies
<p>Strategic Objective 1: Improve the knowledge of the threatened species status and trends.</p>	<p>1.1 Assess the current status of biodiversity at the genetic, species/ population/ community, and ecosystem/habitat levels, especially in protected areas and protected forest, Important Bird Areas (IBA) and Key Biodiversity Areas (KBA), and apply IUCN Red List criteria to produce a national red lists.</p> <p>1.2 Conduct basic and applied research for better understanding and improved knowledge of the status, trends and dynamics of the components of biodiversity and organize that information into databases and through the national clearing-house mechanism.</p> <p>1.3 Assess ecological and socioeconomic consequences of the loss of species.</p> <p>1.4 Build and strengthen technical capacities of taxonomists and para-taxonomists associated with plant and animal taxonomy.</p>	<p>MAFF, GSSD, MOE</p> <p>MAFF and MOE, GSSD</p> <p>MAFF, GSSD, and MOE</p> <p>GSSD, MAFF, MOE, MOEYS</p>
<p>Strategic objective 2: Identify and describe the direct and indirect factors threatening species and ways and means to address species' threatened status.</p>	<p>2.1 Conduct research on drivers of, essentially pressures on, the components of biodiversity, including invasive alien species, habitat fragmentation and degradation, overexploitation, pollution, climate change and natural disasters. Consider in particular the status and evolution of species vulnerability in the face of climate change.</p> <p>2.2 Develop and implement plans and programmes for the recovery of threatened species and their reintroduction. A particular emphasis should be on critically endangered vertebrates among the Asian Species Action Partnership species in Cambodia.</p> <p>2.3 Develop and implement programmes for the prevention of the introduction and establishment of invasive alien species threatening other species and for the control of their spread as well as their eradication.</p>	<p>MAFF, MOE, GSSD</p> <p>GSSD, MAFF and MOE</p> <p>GSSD, MAFF and MOE</p>

	<p>2.4 Rehabilitate and restore degraded ecosystems/habitats for the recovery and reestablishment of threatened species.</p> <p>2.5 Establish <i>ex situ</i> conservation facilities including zoos, botanical gardens, germplasm conservation facilities and DNA Gene-banks.</p>	<p>GSSD, MAFF and MOE</p> <p>GSSD, MAFF and MOE, GSSD</p>
<p>Strategic objective 3: Strengthen the enabling environment for addressing threatened species.</p>	<p>3.1 Develop programmes for monitoring threatened species.</p> <p>3.2 Strengthen cooperation for technology transfer (e.g. on biogeographical mapping technologies, population distribution, biotechnology), including access to traditional knowledge and resources.</p> <p>3.3 Integrate threatened species issues in training programmes for staff and in education curriculums and enhance public awareness of threatened species.</p> <p>3.4 Develop practical plans for mobilizing financial resources and expertise on threatened species.</p> <p>3.5 Ensure protected areas supporting threatened species are effectively managed and resourced.</p> <p>3.6 Strengthen law enforcement and practices that are favourable to threatened species.</p>	<p>MAFF, MOE, GSSD and MOP</p> <p>MAFF and MOE, GSSD</p> <p>MAFF and MOE, GSSD</p> <p>MAFF and MOE, GSSD</p> <p>MOE and MAFF, GSSD</p> <p>MAFF, MOE, TSA, GSSD</p>

Theme 3: *Ex situ* Conservation

1. Background

Under this theme, the 2002 NBSAP had three strategic objectives and four priority actions. MoE and MAFF had a leading role in these actions: they identified and collected plant species and cultivars requiring protection, they established a National Botanical Garden and a general herbarium, and they strengthened capacity in wildlife husbandry techniques for use in the Phnom Tamao Wildlife Rescue Centre, other *ex-situ* conservation areas and private zoological parks.

Following the adoption of the 2002 NBSAP, the Phnom Tamao Zoological Park and Wildlife Rescue Centre and private zoos, as well as the Cambodian herbarium of the Royal University of Phnom Penh were established in the country. MOE and MAFF continued conserving existing plant genetic resources in gene banks, greenhouses and on-farm, as well as the collection of insect species infesting crops. These *ex-situ* collections were established not only to conserve species and their genetic heritage in a suitable environment, but also to contribute to public awareness of the importance of biodiversity and to raise funds for conservation projects. They also provide material for scientific research.

The establishment of a national herbarium is underway, but ongoing *ex situ* conservation activities require additional financial and human resources.

2. Issues

The primary factors identified as delaying the achievement of the objectives under this theme include: the lack of adequate infrastructure and qualified staff, insufficient funds, scientific data and research finding evidence.

3. Strategic objectives

The following objectives have been identified to address these issues:

- (a) **Strategic Objective 1:** Develop and strengthen *ex situ* conservation areas and facilities. It is stated in the preamble of the CBD text that the fundamental requirement for the conservation of biological diversity is the *in-situ* conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings. Since *ex-situ* conservation measures and facilities complement *in-situ* conservation, this theme is complementary to Theme 1 on protected area and *in-situ* conservation, and the actions that are listed in Table 7 will contribute to the achievement of Cambodia Biodiversity Targets 1, 5, 10, 19 and 20;
- (b) **Strategic Objective 2:** Recover species and populations. Reintroduction of captive-bred species to re-establish populations of endangered or rare plants and animals in the original habitat is necessary;
- (c) **Strategic Objective 3:** Building capacity for the establishment and maintenance of the National Botanical Garden, National Herbarium, Aquarium, and other *ex-situ* conservation areas.

Table 7: Key actions and relevant ministries as well as agencies responsible for their implementation under the theme on “Ex-situ Conservation”

Strategic Objectives	Key Actions	Coordinating and participating ministries and agencies
<p>Strategic Objective 1: Develop and strengthen <i>ex situ</i> conservation areas and facilities.</p>	1.1 Establish a National Botanical Garden and related facilities for research and training on plants, animals and related pests.	MAFF, MOE, GSSD
	1.2 Establish a national herbarium and related facilities for research and training on plants	MAFF, MOE, GSSD
	1.3 Strengthen the management of Phnom Tamao Zoological Park and Wildlife Rescue Centre and establish related facilities for research and training.	MAFF, MOE, GSSD
	1.4 Identify and collect plant species and cultivars requiring protection for <i>ex-situ</i> conservation, reproduction and propagation	MAFF, MOE, GSSD
	1.5 Adopt measures and establish facilities for the recovery and rehabilitation of threatened plant and animal species in preparation for their reintroduction into their natural habitats. In particular, assess the requirements and develop captive breeding programs for Critically Endangered Asian Vertebrates among the Asian Species Action Partnership species in Cambodia (particularly reptiles)	MAFF, MOE, GSSD
	1.6 Develop and implement a training program in animal husbandry techniques for the staff of the Phnom Tamao Zoological Park and Wildlife Rescue Centre and other <i>ex-situ</i> conservation areas.	MAFF, MOE, GSSD
	1.7 Develop practical plans for mobilizing the required funds.	MAFF, MOE, GSSD
	1.8 Explore and take measures combining <i>in-situ</i> and <i>ex-situ</i> conservation for species having small wild populations and/or a weak ability to survive and reproduce.	MAFF, MOE, GSSD
<p>Strategic Objective 2: Recover species and populations.</p>	2.1 Recover and/or maintain endangered and rare species in <i>ex-situ</i> facilities.	MAFF, MOE, GSSD
	2.2 Develop and implement reintroduction programmes to release captive-bred species back into the wild choosing an area they inhabited historically. The objective of such programmes is to establish a new population in the original or	MAFF, MOE, GSSD

	similar environment.	
	2.3 Promote augmentation programs by releasing individuals into existing populations to increase their size and genetic diversity.	GSSD, MOE, MAFF
	2.4 Carry out programs to establish animal or plant populations outside their historic ranges.	MAFF, MOE, GSSD
	2.5 Establish gene banks for the conservation of sperm and natural gene banks for the research and conservation of endangered species.	GSSD, MOE, MAFF
<p>Strategic Objective 3: Build capacity for the establishment and maintenance of the National Botanical Garden, National Herbarium, Aquarium, and other <i>ex-situ</i> conservation areas.</p>	3.1 Build capacity of local experts for the collections and maintenance of <i>ex-situ</i> materials and specimens, including, among other things, the introduction of techniques and methods for plant and genetic resources conservation.	MOE, GSSD
	3.2 Enhance regional and international cooperation on scientific and technology transfer on <i>ex-situ</i> conservation and management.	GSSD, MOE
	3.3 Collect and disseminate biodiversity outreach materials for the <i>ex-situ</i> conservation of critically endangered and threatened species.	GSSD, MOE
	3.4 Encourage and support young taxonomists in their field research and laboratory work.	GSSD, MOE

Theme 4: Sustainable Mining

1. Background

Mineral resources in Cambodia include bauxite, carbonate rocks, natural gas, gemstones, gold, manganese, petroleum, phosphate rock, salt, silica, and zircon. With the exception of carbonate rocks and gemstones, the country's mineral resources are largely unexploited. To attract domestic and foreign mining companies to invest in the mining sector, the government promulgated the Law on Minerals Management and Mining in 2001. The Ministry of Industry, Mines and Energy (MIME, now known as the Ministry of Mines and Energy - MME) is the main government agency that implements the country's mineral law and policy. The MME's Department of Geology and Mines and the Department of Energy are responsible for developing the country's mineral resources, providing mining assistance to the private sector, and administering mining-related regulations and inspections. In the past, various reports indicated that without strong and comprehensive mining regulations and standards, many mining operations were destroying natural ecosystems with severe impacts to downstream watercourses and the surrounding communities from water pollution that affected the overall aquatic biodiversity; this was in turn having detrimental effects on economic livelihoods and social harmony.

The 2002 NBSAP contains three strategic objectives and three priority actions relating to the exploration, extraction and processing of mineral resources. The negative impact of mining activities on biodiversity, including the destruction and pollution of habitats, partly due to a lack of adequate and environmentally friendly methods, was found as one of the main issues together with the absence of appropriate monitoring programmes.

With the adoption of the 2002 NBSAP, some mining methods have been improved. The cost/benefit analysis and EIA have continued to be applied systematically, although mining activities, particularly small scale mining, still pollute and degrade natural ecosystems. Implementation of actions relating to mining in the 2002 NBSAP was supported by a number of policies and strategies including the 2001 Law on Management and Exploitation of Mineral Resources.

The Cambodian Development Council (CDC) is the government agency that grants exploration licenses to investors. If exploration is successful, investors are required to present a master project plan to the CDC before being granted a mining license. The amount of investment approved for mining projects by the CDC totaled \$181 million in 2005¹⁵.

In the Rio+20 Conference report, "The Future we want", the world community recognizes that "mining offers the opportunity to catalyse broad-based economic development, reduce poverty and assist countries in meeting internationally agreed development goals, including the Millennium Development Goals, when managed effectively and properly". However "governments need strong capacities to develop, manage and regulate their mining industries, in the interest of sustainable development."

2. Issues

The same issues identified in 2002 are still valid today, but mainly regarding illegal mining activities:

- (a) Destruction and pollution of natural habitats by mining activities, particularly illegal mining activities;
- (b) Lack of consideration of biodiversity protection in illegal mining activities;
- (c) Lack of adequate mining methods in illegal activities;
- (d) Absence of well-defined monitoring program from illegal mining.

In addition, enforcement of the 2001 Law of Minerals Management and Mining of Cambodia has not been very effective, partly due to lack of transparency:

- (a) A number of mining companies carry out mining activities with licenses given only for exploration activities;
- (b) An escalating number of licenses for mineral resources are being allocated to private sector investors in the absence of an adequate legal framework or environmental and social safeguards;
- (c) Exploration or mining licenses have been granted on indigenous land without consulting

with local communities and ethnic minority groups;

- (d) Mining licenses have been allocated inside protected areas, protected forests and ecologically sensitive areas, while Chapter 8 of the 2008 Protected Area Law restricts the use of natural resources in the core and conservation zones;
- (e) The high cost of restoring or rehabilitating environments that are degraded by mining is used as an excuse not to restore degraded ecosystems.

Mining can, to some extent, exemplify the issues of unsustainable production and consumption when ecosystems are destroyed, pollutants and various wastes are dumped into water streams, and energy and water resources are overused. The world community recognized, on the occasion of the United Nations Conference on Environment and Development in 1992, that the major cause of the continued deterioration of the global environment was the unsustainable pattern of consumption and production. The challenge for all countries was then to decouple economic growth from the rising rates of natural resource use and the environmental impacts that occur in consumption and production life cycles and due to waste generation. At the World Summit on Sustainable Development (WSSD) in 2002, it was acknowledged that sustainable consumption and production form one of the three overarching objectives of, and essential requirements for, sustainable development, together with poverty eradication and the management of natural resources in order to foster economic and social development. A voluntary 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns was adopted at the Rio+20 Conference.

Sustainable consumption and production is about “the use of services and related products, which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardize the needs of further generations”¹⁶. Sustainable consumption and production offers important contributions for the transition towards low-carbon and green economies/green growth. It requires building cooperation among different stakeholders, as well as across sectors in the countries.

The challenges posed by production and consumption are mounting as Cambodia’s demand for natural/biological resources is increasing with population growth and demand, and with economic growth and the need for export products. The economic sectors causing the most significant environmental pressures in Cambodia are: agriculture, forestry, energy, water supply, mining, construction, food production, tourism, transport services and waste disposal. Environmental impacts of production and consumption can be reduced by using the 3-R strategy consisting of reducing resource use and waste generations, re-using resources, and recycling wastes. The strategy can be implemented through specific controls at the sites of production, use and disposal, by adopting green technologies or by transferring demand from higher to lower impact consumption categories. Policy options can include improved environmental information, certification, labeling, verification, green public procurement and market-based instruments.

The issue of sustainable production and consumption is relevant to a number of other NBSAP themes, such as agriculture and animal production (Theme 13), aquaculture (Theme 10), energy resource (Theme 14), manufacturing industry (Theme 17), quality of life and poverty reduction (Theme 22), landscape and seascape management and coordination (Theme 23) and, with more emphasis on the consumption and use aspects, to Themes 7 (Waters resources), 9 (Sustainable forest resources), 10 (Freshwater fisheries), 11 (Coastal and marine resources), 12 (Animal wildlife resources), 16 (Customary sustainable use and traditional knowledge), and 17 (Tourism). The clearing-house mechanism (Theme 24) will contain information and data on the importance of awareness-raising, education and communication (Theme 20) for production and consumption.

Specific issues relating to sustainable production and consumption in Cambodia¹⁷ include:

- (a) Lack of specific laws and regulations addressing the Sustainable Consumption and Production concept especially including Cleaner Production;
- (b) No significant investment on, and lack of appropriate financing mechanisms for the recycling of solid wastes, ‘Cleaner Production’ or, in general, ‘Sustainable Consumption and Production’;

- (c) Weak recognition of ‘Cleaner Production’ and ‘Sustainable Consumption and Production’ in most industrial development policies;
- (d) Weak institutional and technological capacity.

However, opportunities for ‘Sustainable Consumption and Production’ in the country include the facts that the Green Growth Roadmap promotes ‘Sustainable Consumption and Production’ activities. Furthermore, the 3-R Concept is being promoted through environmental education programmes, and a number of existing laws provide some framework for application of Sustainable Consumption and Production principles.

3. Strategic objectives

The following strategic objectives were adopted to address the identified issues

- (a) **Strategic objective 1:** Assess the impact of mining on biodiversity components and functions, and enhance awareness about this impact and its implications for sustainable development and poverty reduction in Cambodia;
- (b) **Strategic objective 2:** Develop and apply, as appropriate, preventive and corrective measures;
- (c) **Strategic objective 3:** Strengthen measures that will enhance the contribution of mining resources to biodiversity conservation, poverty reduction, sustainable development and the well-being of all in Cambodia;
- (d) **Strategic objective 4:** Strengthen the enabling environment for the implementation of the actions identified for biodiversity-friendly mining activities.

Good planning (Theme 6) taking into account the existing laws (Theme 21), supported by the application of biodiversity-inclusive SEA and EIA, adequate landscape management measures and coordination (Theme 23), adequate management of water resources (Theme 7), and using the participatory approach involving well informed (Theme 20) local communities and indigenous ethnic minorities (Theme 19) and representatives of relevant stakeholder groups will ensure that mining activities are carried out in line with the objectives of this NBSAP.

Ensuring that mining activities are in line with the conservation of biodiversity (Group 1 themes in this NBSAP) and the sustainable use of its components (in particular the resources considered in Group 2 themes), will have a positive contribution particularly for the strategic objectives under Theme 1 on Protected Areas System, Theme 10 on Freshwater Fisheries and Aquaculture, Theme 11 on Coastal and Marine Resources and Theme 12 on Forest Resources. The implementation of the actions listed in Table 8 below will therefore contribute specifically to the achievement of Cambodia Biodiversity Target 7, and also to many others including Targets 1 to 6, 10 to 12, 15 and 16. These actions will also contribute to the achievement of the NSDS 2030 vision that Cambodia should, by 2030, have “abundant mineral resources and a sustainable mining sector that is exploiting minerals without destruction of nearby human settlements and landscapes, and without causing serious health and environmental impacts; and which economizes the scarce mineral resources and promotes recycling of metals”.

Table 8: Key actions and relevant ministries as well as agencies responsible for their implementation under the theme on “Sustainable Mining”

Strategic Objectives	Key Actions	Coordinating and participating ministries and agencies
<p>Strategic objective 1:</p> <p>Assess the impact of mining on biodiversity components and functions, and enhance awareness about this impact and its implications for sustainable development and poverty reduction in Cambodia.</p>	<p>1.1 Assess the ecological and socioeconomic impact of mineral resource exploration, extraction and processing on the status and trends of biodiversity (natural habitats and wildlife in particular) and its functioning. Describe in particular the destruction and pollution of natural habitats by mining activities.</p> <p>1.2 Assess the role of biodiversity in mining (e.g. water hyacinth in water purification).</p>	<p>MME, MOE, MAFF, GSSD</p> <p>MME, MOE, MAFF, GSSD</p>
<p>Strategic objective 2:</p> <p>Develop and apply, as appropriate, preventive and corrective measures</p>	<p>2.1 Integrate biodiversity protection considerations in mining activities essentially through the application of (i) the Voluntary Guidelines on Biodiversity-Inclusive Impact Assessment (CBD Decision VIII/28 also adopted by the Ramsar Convention) and (ii) the Akwé: Kon Voluntary guidelines for the conduct of cultural, environmental and social impact assessments regarding developments proposed to take place on, or which are likely to impact on, sacred sites and on lands and waters traditionally occupied or used by indigenous and local communities (Annex to CBD decision VI/7 A).</p> <p>2.2 Study the feasibility, costs and benefits of correcting existing mining industries for environmental soundness</p> <p>2.3 Investigate whether environmental and social impact assessments were made in existing mines and whether the results were taken into account to halt detrimental activities or compensate for negative impacts on biodiversity/environment;</p> <p>2.4 Explore and promote alternatives to mining in terms of land and resource use, based on the result of land-use planning and sustainable financing options. These options could include ecotourism, carbon storage credits under the REDD+ framework, and endowments</p> <p>2.5 Assess the impact on biodiversity of (authorized or unauthorized) mining within protected areas and conservation areas</p>	<p>MME and MOE MAFF, GSSD</p> <p>MME and MOE MAFF, GSSD</p> <p>MME, MAFF, MOE, GSSD</p> <p>MME, GSSD MOE, MAFF</p>

	<p>2.6 Explore biodiversity for mining when preventative and corrective measures are insufficient</p> <p>2.7 Reclaim and rehabilitate degraded mining sites</p>	<p>MME, GSSD MAFF, MOE</p> <p>MME, GSSD MOE, MAFF</p>
<p>Strategic objective 3: Strengthen measures that will enhance the contribution of mining resources to biodiversity conservation, poverty reduction, sustainable development and the well-being of all in Cambodia.</p>	<p>3.1 Make benefits from mining activities a resource for the conservation and sustainable use of biodiversity.</p>	<p>MME, GSSD MOE, MAFF</p>
<p>Strategic objective 4: Strengthen the enabling environment for the implementation of the actions identified for biodiversity-friendly mining activities.</p>	<p>4.1 Strengthen the human, technical and technological capacities for the effective achievement of the objectives and implementation of the actions listed under this theme. Capacity-building programmes will target all the sectors that are relevant to mining and the conservation of biodiversity and will be done essentially through communication, education, research and public awareness.</p> <p>4.2 Facilitate and encourage the acquisition and adaptation of low carbon and clean technology for mining activities, the 3R Concept (reduce, recycle, re-use), land and water restoration and impact assessment.</p> <p>4.3 Develop Guidelines on Biodiversity-Inclusive Environmental Impact Assessment for Cambodia building on the EIA guidelines adopted under the CBD and the Ramsar Convention, taking into account human health.</p> <p>4.4 Enforce the mining law, review the code for mining and propose, as appropriate, additions to fully take into account biodiversity issues.</p> <p>4.5 Put in place programmes and resources for assessing the contribution of mining resources to the country's economy and the well-being of the people, and for monitoring and evaluating the impact of mining activities on biodiversity and its ecosystem services, and the impact of measures taken to protect biodiversity from the negative impacts of mining activities.</p>	<p>MME, MAFF, MOE, GSSD</p> <p>MME, MAFF, MOE, GSSD</p> <p>MME, MOE, GSSD, MOH MAFF</p> <p>MME, MOE, GSSD</p> <p>MME, MAFF, MOE, GSSD</p>

	<p>4.6 Strengthen coordination among ministries, bearing in mind that most of the actions listed above are inherently multi-disciplinary and multisectoral, and that their effectiveness requires coordination across the government, also between governmental and non-governmental organizations. Recognizing this, the government formalized the cross-ministerial coordination involved, e.g. in the EIA process with, (i) management level representation of various ministries in the Environment Steering Committee, which also includes NGOs and the Chamber of Commerce, and (ii) formation of environmental units within other ministries having resource-management functions, to coordinate with the Ministry of Environment, including the Ministry of Industry (MOI), the Ministry of Mine and Energy (MME). A number of agencies of Ministries such as MAFF, the Ministry of Public Works and Transport (MPWT), Ministry of Rural Development (MRD), Ministry of Tourism (MOT), and the Ministry of Health (MOH) participate in many phases of the EIA process.</p>	<p>MME, MAFF, MOE, GSSD, MOI, MME, MRD, MPWT, MOT, MOH</p>
<p>4.7 Mobilize financial resources for studies, assessments and other activities described under this theme, using a diversified source of financial resources including the profits from mining resources.</p>	<p>MME, MAFF, MOE and GSSD</p>	

Theme 5: Environmental Security

1. Background

At the time of the adoption of the 2002 NBSAP, the main issues relating to environmental security were (i) the presence of land mines that were responsible for the daily deaths or maiming of several persons; making it impossible to establish legal conservation programmes in those insecure zones, and (ii) natural disasters, more specifically floods that caused severe human suffering and deaths, serious damage to infrastructure, major disruption of social and economic activities, and loss of agricultural land and crops. In addition, although a National Committee for Disaster Management was established in 1999, awareness of disaster prevention measures and the role of biodiversity in these measures was limited.

In order to prevent and/or reduce the negative impacts of catastrophic events on biodiversity resources and improve security in areas of high biological importance, two strategic objectives were adopted in the 2002 NBSAP with the following priority actions: (i) strengthen flood prevention awareness programs and rehabilitation plans by integrating biodiversity protection measures, (ii) develop a strategy for minimizing pollution of water bodies and creating environmental security for integrated biodiversity water resources, and (iii) prevent and/or reduce damage from flood, drought, watershed degradation, erosion and sedimentation and thus protect fish and other aquatic resources.

In terms of the implementation of the adopted objectives and actions, Cambodia enacted the National Biosafety Law (2004) under MOE, and the Law on Water Resources Management of the Kingdom of Cambodia (2007) under MOWRAM.

Moreover, the Ministry of Rural Development (MRD) adopted in 2010 the Rural Water Supply, Sanitation and Hygiene Strategy 2010-2025 and is implementing it in collaboration with UNICEF to address, among other points, flood responses and water supply and quality. MRD, MOWRAM and CNMC are also collaborating on an integrated management of transboundary water resources. These activities are ongoing and require additional funding to proceed effectively.

Cambodia¹⁸ made remarkable progress in reducing casualties from landmines and explosive remnants of war. The annual number of civilian casualties recorded fell from 4,320 casualties in 1996 to 243 in 2009. Due to the magnitude of the task, Cambodia was granted an extension of the period for landmine clearance from 2010 to 2019. Clearance methods are becoming safer and more efficient, with a 2% annual increase, it is expected that another 47,000 ha can be cleared by 2019.

2. Issues

The following key issues were identified during the implementation of the objectives and priority actions under this theme:

- (a) Development and management (i.e. conservation and sustainable use) of natural resources are impaired by natural disasters and other security problems;
- (b) Negative impacts of floods on biodiversity resources;
- (c) Lack of awareness of disaster prevention measures and the role of biodiversity;
- (d) Limited capacities at the community and national levels to manage and reduce risk.

3. Strategic objectives

The following strategic objectives were adopted to address the identified issues

- (a) **Strategic objective 1:** Gather relevant information and data on disasters and other environmental security problems, on disaster risks and vulnerabilities, as well as on capacities for addressing disasters and disaster risks;
- (b) **Strategic objective 2:** Identify ways and means to address environmental security through preventive, proactive and corrective measures;
- (c) **Strategic objective 3:** Strengthen the enabling environment for the effective implementation of measures addressing environmental security.

The strategic objectives and associated actions under the themes on protected areas (Theme 1) and threatened species (Theme 2) are also relevant here. Successful implementation of the actions identified in Table 9 will facilitate the implementation of actions under many other themes of Group 1 (conservation

of the different components of biodiversity) and 2 (sustainable use of biological resources and ecosystems as well as the services they provide). In the same perspective, implementation of these actions will contribute to the implementation of various targets based on biological resources and ecosystem management such as Cambodia Biodiversity Targets 5, 6, 8, 10 to 12, 15 and 20.

Table 9: Key actions and relevant ministries as well as agencies responsible for their implementation under the theme on “Environmental Security”

Strategic Objectives	Key Actions	Coordinating and participating ministries and agencies
<p>Strategic objective 1:</p> <p>Gather relevant information and data on disasters and other environmental security problems, on disaster risks and vulnerabilities, as well as on capacities for addressing disasters and disaster risks.</p>	1.1 Identify, assess and monitor disaster risks and the physical, social, economic and environmental vulnerabilities of societies to disasters.	NCDM, MOE, GSSD MOWRAM, MAFF, MRD, MLMUPC, MME
	1.2 Record, analyse, summarize, map and disseminate, on a regular basis, statistical information on disaster occurrence, impacts and losses, through international, regional, national and local mechanisms	NCDM, MOE, GSSD MOWRAM, MAFF, MRD, MLMUPC, MME, MOSVY
	1.3 Establish an environmental and natural resource database and promote exchange and dissemination of data for disaster risk assessment, monitoring and early warning purposes	NCDM, MOE, GSSD MOWRAM, MAFF, MRD, MLMUPC, MME
	1.4 Assess existing human resource capacities for disaster risk evaluation and reduction at all levels	NCDM, MOE, GSSD MOWRAM, MAFF, MRD, MLMUPC, MME)
	1.5 Compile and standardize, as appropriate, statistical information and data on regional disaster risks, impacts and losses.	NCDM, MOE, GSSD MOWRAM, MAFF, MRD, MLMUPC, MME
	1.6 Conduct risk assessment and risk management of living modified organisms and ensure adverse risk to biodiversity and human health is minimized	GSSD, MOE, MAFF
<p>Strategic objective 2:</p> <p>Identify ways and means to address environmental security through preventive, proactive and corrective measures</p>	2.1 Develop early warning systems that are timely and understandable to those at risk, and guidance on how to act upon those warnings;	NCDM, MOE, GSSD MOWRAM, MAFF, MRD, MLMUPC, MME

	<p>2.2 Introduce a preventive strategy into all sectors of the society (including, among others, production, consumption, education, research and development, public construction works, communication, and waste management) to avoid pollution occurrences and minimize pollution impacts of water bodies.</p>	<p>NCDM, MOE, GSSD MOWRAM, MAFF, MRD, MLMUPC, MME</p>
	<p>2.3 Prevent the damage that may occur as a result of flooding, drought, watershed degradation, erosion and sedimentation to protect fish resources and other aquatic biodiversity. These measures can include the construction or rehabilitation of bank protection works, dikes, and the provision of water storage facilities; the prohibition of sand mining on the bed and banks of water bodies or of the obstruction of flow/drainage, with the participation of communities.</p>	<p>MOWRAM, MME, MOE MAFF, GSSD</p>
	<p>2.4 Integrate biodiversity protection measures in flood prevention awareness programs and rehabilitation plans (including tree planting on riverbanks and foothills, preventing deforestation, etc.)</p>	<p>NCDM, MOE, GSSD MOWRAM, MAFF, MRD, MLMUPC, MME, MOSVY</p>
	<p>2.5 Take proactive measures that will build community resilience and reduce vulnerability to future disaster risks. More specifically, create environmental security for integrated biodiversity water resources management and development through the formulation and adoption of a coherent policy for the water sector as a whole, for water resource use and development planning, economic instrument for water resource management, establishment of protected areas, control of floods, watershed, management, penalties</p>	<p>NCDM, MOE, GSSD MOWRAM, MAFF, MRD, MLMUPC and MME</p>
	<p>2.6 Take corrective measures, bearing in mind that the phases of relief, rehabilitation and reconstruction following a disaster are windows of opportunity for the rebuilding of livelihoods and for the planning and reconstruction of physical and socio-economic structures.</p>	<p>NCDM, MOE, GSSD MOWRAM, MAFF, MRD, MLMUPC, MME</p>
<p>Strategic objective 3: Strengthen the enabling environment for the effective implementation of measures addressing environmental security</p>	<p>3.1 Revise and update policies so as to integrate environmental security in the framework of sustainable development and poverty reduction, with a special emphasis on disaster preparedness, prevention and mitigation, as well as vulnerability reduction</p>	<p>NCDM, MOE, GSSD MOWRAM, MAFF, MRD, MLMUPC, MME, MOP, MOSVY</p>

	<p>3.2 Ensure community participation in disaster risk reduction through the adoption of specific policies, the attribution of roles and responsibilities, and the delegation and provision of the necessary authority and resources</p>	<p>NCDM, MOE, GSSD MOWRAM, MAFF, MRD, MLMUPC, MME, MOSVY</p>
	<p>3.3 Develop or strengthen the infrastructure and scientific, technical, technological and institutional capacities needed for carrying out research, observations, analysis, mapping and, where possible, forecasting natural and related hazards, risks from LMOs, vulnerabilities and disaster impacts;</p>	<p>NCDM, MOE, GSSD MOWRAM, MAFF, MRD, MLMUPC, MME</p>
	<p>3.4 Develop or strengthen institutions, mechanisms and capacities that can contribute to building resilience to hazards, in particular at the community level;</p>	<p>NCDM, MOE, GSSD MOWRAM, MAFF, MRD, MLMUPC, MME, MOP</p>
	<p>3.5 Assess existing human resource capacities for disaster risk reduction at all levels and develop and implement capacity-building plans and programmes for meeting on-going and future requirements;</p>	<p>NCDM, MOE, GSSD MOWRAM, MAFF, MRD, MLMUPC, MME, MOSVY</p>
	<p>3.6 Enhance cooperation within the country, the region and internationally in the field of disaster risk assessment and reduction.</p>	<p>NCDM, MOE, GSSD MOWRAM, MAFF, MRD, MLMUPC, MME</p>
	<p>3.7 Allocate resources for the development and effective implementation of disaster risk management legislation, policies and programmes.</p>	<p>NCDM, MOE, GSSD MOWRAM, MAFF, MRD, MLMUPC, MME, MOP</p>
	<p>3.8 Build a culture of safety, prevention and resilience, through communication, education and public awareness programmes, and through the mobilization of adequate resources for disaster risk reduction</p>	<p>MOEYS, NCDM, GSSD, MOE, MAFF</p>

Theme 6: Sustainable Land-Use Planning

1. Background

Recognizing the importance of planning in decisions that can have significant and sometimes irreversible impacts on land, the 2002 NBSAP focused on ensuring the integration of conservation and sustainable use of biodiversity and its components into land-use planning. The two strategic objectives adopted with the associated three priority actions dealt with the strengthening of institutional capacity in land-use planning, and the development of national and provincial land-use master plans, together with the development of community-based land-use planning manuals and plans.

Significant progress has been made in achieving the strategic objectives:

- (a) The Ministry of Land Management Urban Plan and Construction (MLMUPC), with financial support from the Government of the Republic of Korea, carried out training about participatory land-use planning;
- (b) MLMUPC also produced, in a participatory manner, the National Base Map, Map Symbol Standards, and Master Plan for the National Spatial Data Infrastructure (NSDI) in Cambodia;
- (c) The Inter-ministerial committee established to coordinate the preparation and implementation of development projects along the western and northern parts of the country set standards for agricultural land and residential land;
- (d) Sub-decrees were signed in 2009 on the procedures for commune land-use planning, on procedures for registering land of indigenous communities, and on registration and right to use lands of indigenous communities;
- (e) An approach to land classification and mapping was discussed with the support of the Land Management and Administration Project (LMAP).

Implementation of the objectives adopted in the 2002 NBSAP were also supported by laws such as the Land Law, the 2008 Law on Protected Areas, the Law on Forestry, and the Law on Fisheries; by the Sub-Decrees on Social Land Concession, on Community Forestry Management, on Sporadic Land Registration, on the Procedures to establish Cadastral Index Map and Land Register, on State Land Management; and by the Strategy of Land Policy Framework.

Although land-use master plans were adopted, there is still a need for financial resources for their implementation.

2. Issues

The following key issues were identified:

- (a) Development projects are still taking place at the expense of cultivable land and natural habitats, especially wetlands;
- (b) A policy framework and accurate information to guide land-use allocation is still lacking, as well as effective land-use planning capacity;
- (c) Roles and responsibilities of institutions need to be clarified;
- (d) An official and standardized land and biome classification system is still lacking;
- (e) There are still no agreed national guidelines for land-use planning, no experience in Macro Land-use planning, and no public funds invested yet in land-use planning activities;
- (f) Land tenure is still a problem for many, especially rural farmers. Providing titles and security of land tenure will encourage local communities to adopt sustainable agricultural systems and increase agricultural production;
- (g) Large tracts of arable land are still covered with dangerous land mines.

3. Strategic objectives

The following strategic objectives were adopted to address the identified issues:

- (a) **Strategic objective 1:** Inventory land-use planning activities, assess their effectiveness and identify areas where land-use planning is needed to ensure the conservation of biodiversity, the sustainable use of its components, and the contribution to sustainable development and poverty eradication;
- (b) **Strategic objective 2:** Integrate land-use planning in sustainable development and poverty reduction strategies, plans and programmes;
- (c) **Strategic objective 3:** Strengthen the enabling environment for the implementation of the land-use planning.

Strategic objectives and actions listed under this Land-Use Planning theme are important in the initial steps in implementing actions under Groups 1 (Protection of Biodiversity) and 2 (Sustainable use of Biodiversity) themes. Actions under such themes as ‘Resource Mobilization’ (Theme 18), Community Participation (Theme 19), Legislation and Institutional Structure (Theme 21), Landscape and Seascape Management and Coordination (Theme 23), and CHM (Theme 24) will support the implementation of the actions listed in Table 10 below for land-use planning.

Table 10: Key actions and relevant ministries as well as agencies responsible for their implementation under the theme on “Sustainable Land-Use Planning”

Strategic Objectives	Key Actions	Coordinating and participating ministries and agencies
<p>Strategic objective 1: Inventory land-use planning activities, assess their effectiveness and identify areas where land-use planning is needed to ensure the conservation of biodiversity, the sustainable use of its components, and the contribution to sustainable development and poverty eradication.</p>	<p>1.1 Assess the effectiveness of completed, on-going and planned land-use-planning activities at the national, provincial and district levels, at the commune or village or landscape levels, and at the farm or field levels, and gather information about conflicts, ecosystem degradation or loss of biodiversity and its ecosystem services caused by lack of land-use planning.</p> <p>1.2 Assess the needs for land-use planning particularly in areas with high or conflicting development potentials, such as peri-urban areas, large irrigation schemes and hydropower dams. In the case of dams, in particular, assess the impacts of existing and planned dams on biodiversity and ecosystem services, and identify locations and designs that will minimize those impacts.</p> <p>1.3 Assess existing and needed human, financial, technological and institutional capacities for land-use planning.</p> <p>1.4 Review locations and biodiversity value of national Important Bird Areas (IBA) and Key Biodiversity Areas (KBA); and ensure that the network of IBA/KBAs are taken into account in land-use planning decisions and that any impacts of land-use change upon IBA/KBAs are assessed through robust biodiversity-inclusive Environmental Impact Assessments (EIA).</p>	<p>MPLUP, MRD, MOE, MAFF, MME MOP</p> <p>MPLUP, MRD, MOE, MAFF, MME</p> <p>MPLUP, MRD, MOE, MAFF, MME</p>
<p>Strategic objective 2: Integrate land-use planning in sustainable development and poverty reduction strategies, plans and programmes.</p>	<p>2.1 Develop guidelines for land-use planning, building on the ecosystem approach and experiences at the national, regional and global levels, so as to optimize the use of the resources found in the country and their social, environmental and economic benefits.</p>	<p>MPLUP, MRD, MOE, MAFF, MME</p>

	<p>2.2 Develop a national land-use master plan and provincial land-use plans integrating environmental, social and economic concerns, and using a participatory approach.</p> <p>2.3 Develop community-based land-use plans</p> <p>2.4 Include land-use planning in ecosystem restoration activities.</p>	<p>MLMUPC, MRD, MOP, MOE, MAFF</p> <p>MOE, GSSD</p> <p>MLMUPC, MRD, MOP, MOE, MAFF, MOP</p>
<p>Strategic objective 3: Strengthen the enabling environment for the implementation of land-use planning</p>	<p>3.1 Integrate land-use planning in all planning processes dealing with biological resources and take into account present and future needs and pressures</p> <p>3.2 Develop human and institutional capacity on land-use planning, including manuals on participatory land-use planning.</p> <p>3.3 Compile information and collect data needed in land-use planning, and disseminate through the clearing-house mechanism and other relevant means</p> <p>3.4 Strengthen cooperation and coordination regarding land-use planning between MLMUPC and the departments and offices in charge of natural resources, such as GDANCP in MOE or the Offices of Fisheries under the Department of Agriculture and Fisheries in MAFF.</p> <p>3.5 Have policies in place to safeguard land against inappropriate use, especially where land has particular value in delivering benefits of key strategic importance.</p> <p>3.6 Mobilize the necessary financial resources to carry out activities for land-use planning.</p>	<p>MPLUP, MRD, MOE, MAFF, MME</p> <p>MLMUPC, MRD and MAFF</p> <p>MPLUP, MOE, MAFF</p> <p>MPLUP, MRD, MOE, MAFF, MME</p> <p>MPLUP, MRD, MOE, MAFF, MME</p> <p>MPLUP, MRD, MOE, MAFF, MME</p>

Theme 7: Sustainable Water Resources

1. Background

Cambodia is a "water-wealthy" country, with an annual water availability of nearly 50,000m³ per person. Water resources are an essential component of the nation's environment and natural resource base. Cambodia possesses a vast array of water resources, with the Mekong River and the Tonle Sap lake system being the most important ones. Both constitute the basis for the country's fisheries, irrigated agricultural production, domestic and industrial water supply, hydro-electric potential and navigation. A long dry season and pollution from various sources limit the amount and quality of water available for aquatic life, human consumption, agriculture and other uses. Construction and improvement of irrigation facilities and establishment of flood protection structures have always been a priority.

The creation of the Ministry of Water Resources and Meteorology (MOWRAM) in 1999 centralized 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 main goal of the 2002 NBSAP under this theme was then to "ensure that the water environment is unpolluted and supports healthy fisheries and aquatic ecosystems". Thus five strategic objectives were adopted to ensure the application of environmental impact assessment to projects touching water resources, to ensure enough amounts of water and water flow for fisheries and fish migration, and to prevent water pollution from all sources by protecting river banks, lake shores and riparian areas. Despite the Mekong River Sustainable Development Agreement (1995), hydro dams were a hot issue for countries in the region, including Cambodia, where the EIA capacity was still weak.

A number of programmes were then identified in the 2002 NBSAP with a view of achieving the strategic objectives. They include programmes for (i) the management of water resources, (ii) public water to improve water quality for humans, livestock and aquatic biodiversity, (iii) groundwater monitoring, (iv) water pollution prevention for the industry and agriculture sectors, (iv) urban waste water treatment; and (v) ensuring the financial sustainability of hydraulic infrastructure program.

Apart from the programme on financial sustainability of hydraulic infrastructure, which has yet to be started, all the other programmes are underway and some require financial support to proceed effectively. Also MOWRAM has rehabilitated irrigation for agriculture at many sites.

It is important to note some of the relevant laws, policies and strategies adopted since 2002:

- (a) The 2003 National Water Supply and Sanitation Policy contains explicit provisions regarding sanitation and hygiene improvement and advocates for a dramatic increase in rural sanitation coverage between 2015 and 2025, from the 30% targeted in the original 2015 CMDG to 100% rural sanitation coverage 10 years later. This will require investment, focused attention, and new and innovative approaches;
- (b) The 2007 Law on Water Resources Management of the Kingdom of Cambodia, which defines the rights and obligations of water users, states the fundamental principles of water resource management and identifies the institutions with the authority to implement and enforce the law and 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;
- (c) The 2010 Rural Water Supply, Sanitation and Hygiene Strategy 2010-2025 defines the water supply, sanitation and hygiene services to be made available to people living in rural areas, as well as the institutional arrangements and financial, human and other resources necessary to sustainably provide these services. The underlying purpose is to accelerate progress toward the achievement of the Cambodian Millennium Development Goals (CMDGs) in 2015 and the Sector Vision in 2025; and
- (d) The Sub-Decrees on Water Pollution Control (1999)¹⁹, and on Solid Waste Management (1999)²⁰.

2. Issues

The following key issues are still impacting water resources in Cambodia:

- (a) Pollution caused by agricultural, industrial and domestic activities;
- (b) Negative impacts of dams, building of harbors, navigation channels, irrigation, river canalization and diversions on fish and agriculture productivity. As noted in the National Sustainable Development Strategy (2009), dam constructions can cause serious impacts on the hydrological regime of the country's water resources resulting in serious effects on human settlements and natural resources such as in the Tonle Sap ecosystem;
- (c) Deterioration of banks and riparian zones;
- (d) Lack of effective law enforcement;
- (e) The government's limited capacity to control inappropriate settlements and use of flood management embankments;
- (f) Lack of effective and popular mechanisms and means of communication and information dissemination;
- (g) Limited financial resources at the national and sub-national levels, in particular for implementing the National Policy on Water Resources Management and for getting the participation of farmers in the operation and maintenance of irrigation facilities;
- (h) Some water resources are shared in the region;
- (i) The numerous natural disasters (floods and droughts) during the past years;
- (j) Limited information, due to insufficient monitoring and observation stations, for rainfall forecasts, drought and flood warnings, as well as information on flood hydrology, river geomorphology, bank erosion locations and floodplain sediments.

3. Strategic objectives

The following strategic objectives were adopted to address the identified issues.

- (a) **Strategic objective 1:** Maintain water resources quality and quantity suitable for human consumption, and use in agriculture, livestock and industries;
- (b) **Strategic objective 2:** Reduce the effects of flooding and droughts on water supply and quality.

Availability of good quality water in sufficient quantity is critical for the effective management of biological resources and ecosystems/landscapes. A successful implementation of these objectives through the actions listed in Table 11 will contribute to the implementation of the objectives under Group 2 themes: to Theme 22 on health, quality of life and poverty reduction; Theme 17 on the functioning of industries; and to the NSDS vision 2030 that Cambodia should have a sustainable supply of water for key sectors such as fisheries, water supply, irrigation, hydropower, transportation, tourism, recreation, wastewater treatment and good ecosystem functions, and plan for a sustainable use of water resources based on integrated water resource management that ensures a proper quantity and quality of water.

Table 11: Key actions and relevant ministries as well as agencies responsible for their implementation under the theme on “Sustainable Water Resources”

Strategic Objective	Key Actions	Coordinating and participating ministries and agencies
<p>Strategic objective 1: Maintain water resources quality and quantity suitable for human consumption, and use in agriculture, livestock and industries</p>	<p>1.1. Develop and implement water resources allocation and management programs for fisheries, human consumption, irrigation in agro-ecosystem, hydropower, transportation, tourism, recreation, wastewater treatment and good ecosystem functions</p>	<p>MOWRAM MOE, GSSD, MAFF</p>
	<p>1.2. Promote small water investments in the local community</p>	<p>MME, GSSD, MAFF, MOE, MRD MOWRAM,</p>
	<p>1.3. Develop and implement a public water program to improve water quality, so as to be able to satisfy present and future demands and ensure that water bodies have the capacity to sustain aquatic biodiversity and fish life, and to protect human and animal health.</p>	<p>MOWRAM, MOE, GSSD, MAFF, MME</p>
	<p>1.4. Ensure the financial sustainability of the hydraulic infrastructure program by including the introduction of the concept of water use fees, and arrangement for the participation of the users in the maintenance and management of rehabilitated and newly constructed irrigation schemes for improving the agriculture sector.</p>	<p>MOWRAM, MAFF, MOE, MME, GSSD</p>
	<p>1.5. Develop and implement a groundwater monitoring program to track groundwater quality, groundwater pumping for groundwater discharge, groundwater level, groundwater current, and for modelling and mapping.</p>	<p>MOWRAM, MRD, MOE, MAFF, MOH, GSSD</p>
	<p>1.6. Develop and implement a water pollution prevention program for the industry sector, and include regulations for storm water disposal and wastewater management, licensing of wastewater abstractions and discharges, and technology development transfer.</p>	<p>MOE, GSSD MOWRAM, MME</p>
	<p>1.7. Prevent pollution of water for agriculture sector, making sure to include lakeshore and riverbanks protection and reforestation, guidelines for the application of agro-chemicals, community education programs for economical, and low-impact use of</p>	<p>MAFF, MOE, GSSD MOWRAM</p>

	agro-chemicals.	
	1.8. Establish an efficient urban wastewater treatment program that includes the installation of piped sewerage in urban areas, as well as the installation of household and community treatment systems.	MOE, GSSD, MOWRAM, MLMUPC and MME
Strategic objective 2: Reduce the effects of flooding and droughts on water supply and quality	2.1 Develop a combination of prevention and adaptation measures to reduce the effects of flooding and droughts on the availability of good quality water for human, industrial and other ecological needs.	MOWRAM, MOE, GSSD, NCSD

Theme 8: Biodiversity and Climate Change

1. Background

Cambodia was very conscious about the increasing threats from climate change it was facing at the time of adoption of the 2002 NBSAP, with more frequent and intensified floods, droughts, saline intrusion and extreme weather events, an increasing loss of human lives, and significant damage to economic development and natural resources. Cambodia was highly vulnerable to the impacts of climate change due to its high dependency on climate-sensitive sectors, such as agriculture, water resources, forestry, fisheries and tourism, all of which form the foundation of its economic growth and support the livelihoods of a great majority of its population.

The main issues at that time in relation to biodiversity and its associated ecosystem services were (i) the potential impacts of sea level rise, temperature increase and change in precipitation on biodiversity and (ii) the potential impacts of climate change mitigation or adaptation measures on biodiversity. The 2002 NBSAP thus contained strategic objectives and priority actions for the integration of biodiversity conservation and sustainable use into the National Climate Change Action Plan, and for assessing and addressing climate change impacts on biodiversity.

Since then, the Climate Change Department (CCD) of the Ministry of Environment, in collaboration with other partners and with the support of some donors, have been implementing many activities contributing to biodiversity management. The National Climate Change Committee (NCCC) was established in 2006 with the mandate to coordinate and monitor the implementation of the Government's policies, strategies, regulations, plans and programmes in response to climate change issues. A Climate Change Technical Team (CCTT) was established as an inter-ministerial body to provide technical support to the NCCC in fulfilling its mandate. The Climate Change Department (CCD) within MOE serves as the Secretariat for the NCCC and coordinates the activities of the CCTT. Its tasks have been to build institutional capacity, formulate the climate change strategy plan for the next 10 years and promote its implementation, and to mainstream climate change into planning and budgeting process, while working toward the building of community resilience and sustainable livelihood in the face of climate change.

The National Adaptation Programme of Action (NAPA) on Climate Change was also developed and adopted in 2006, and the second national communication was developed in 2007. The following points were noted in the NAPA for Cambodia (i) key climate-related hazards include: flooding (flash), salt water intrusion, coastal zone inundation, drought and low flows, windstorms, and storm surge; (ii) the main human vulnerabilities and livelihood impacts include reduced agricultural production, water shortage and/or groundwater depletion, and increased disease and/or other health problems; (iii) examples of priority adaptation projects include vegetation planting for flood and windstorm protection, community mangrove restoration and sustainable use of natural resources, and production of biopesticides.

As stated in the National Strategic Development Plan Update 2009–2013, the integration of climate change into national and sub-national level planning, and the development of climate change strategies, action plans and financing frameworks are among the priority actions undertaken. The Cambodia Climate Change Strategic Plan 2014–2023 (CCCSP) was adopted in 2013. The strategic objectives of the CCCSP were formulated in part based on the strategic objectives of the relevant sectors and line ministries, including in particular MOE and MAFF that are dealing with most of the components of biodiversity.

The following strategic objectives of the CCCSP are directly relevant to biodiversity conservation and sustainable use: (i) Strategic Objective 1: Promote climate resilience through improving food, water and energy security; (ii) Strategic Objective 2: Reduce sectoral, regional, and gender vulnerabilities and health risks related to climate change impacts; and (iii) Strategic Objective 3: Ensure climate resilience of critical ecosystems (such as Tonle Sap Lake, Mekong River, coastal ecosystems, and the highlands among others), of biodiversity, protected areas and cultural heritage sites.

2. Issues

Despite the progress made since adopting the 2002 NBSAP, the following key issues have been identified:

- (a) Potential impacts of sea level rise, temperature increase and change in precipitation on biodiversity composition, distribution, survival, and the like;

- (b) Potential impacts of climate change mitigation or adaptation measures on biodiversity;
- (c) Limited water resources, as well as limited financial resources and access to agricultural techniques;
- (d) Cambodia is among the countries most vulnerable to climate change, particularly to floods, droughts and tropical storms. Most Cambodians depend on agriculture, but they lack the infrastructure and information necessary to cope with extreme events. Observations of climate change over the past 30 to 50 years in the lower Mekong basin show an increase in temperature and in rainfall during the wet season, intensified flooding (particularly in the Mekong Delta and Cambodia floodplain) and drought events, sea level rise and salinity intrusion in the Mekong delta.

In terms of climate change, Cambodia indicates some weaknesses that are listed in the 2013 Cambodia Climate Change Strategy:

- (a) Weak knowledge and science-based decision making;
- (b) Lack of a clear procedure for the integration of climate change into the national development plans;
- (c) Limited capacity of the national institutions responsible for climate change and limited participation of stakeholders;
- (d) Out-dated information to address climate impacts;
- (e) Limited human resources;
- (f) Climate change planning is not a common practice;
- (g) Limited knowledge, research and technology;
- (h) Limited financial resources;
- (i) Low adaptive capacity among citizens.

3. Strategic objectives

The following strategic objectives were adopted to address the identified issues

- (a) **Strategic objective 1:** Assess the actual and projected impact of climate change and climate change mitigation or adaptation measures on genetic resources, species, ecosystems and related ecosystem services, and on sectors depending primarily on biodiversity, in particular agriculture, fisheries and livestock;
- (b) **Strategic objective 2:** Assess and document the role of biodiversity in climate change mitigation and adaptation measures, and strengthen biodiversity conservation measures that have a positive impact on climate change mitigation and adaptation;
- (c) **Strategic objective 3:** Minimize anthropogenic pressures such as pollution, exploitation and sedimentation on ecosystems that are vulnerable to climate change, so as to maintain their integrity, functioning and resilience;
- (d) **Strategic objective 4:** Strengthen the enabling environment for the implementation of the actions that promote climate change mitigation and adaptation through the conservation of biodiversity, the sustainable use and, where needed, the restoration of its components.

Implementing the actions identified under these strategic objectives will contribute to achieving the objectives under all the themes relating to biological resources and ecosystem services conservation and sustainable use (such as under the themes in Groups 1 and 3). The following actions listed in Table 12 below will also contribute directly to the achievement of Cambodia Biodiversity Targets 11 (on enhancing ecosystem resilience and the contribution of biodiversity to carbon stocks through conservation and restoration of degraded ecosystems and thus on contribution to climate change mitigation and adaptation) and 15 (for the reduction of anthropogenic pressures vulnerable ecosystems impacted by climate change). These actions are also relevant to many other targets, such as those pursuing effective management of forests, agriculture, aquaculture, fisheries and animal production.

Table 12: Key actions and relevant ministries as well as agencies responsible for their implementation under the theme on “Biodiversity and Climate Change”

Strategic Objectives	Key Actions	Coordinating and participating ministries and agencies
<p>Strategic objective 1:</p> <p>Assess the current and projected impact of climate change and climate change mitigation or adaptation measures on genetic resources, species, ecosystems and related ecosystem services, and on sectors depending primarily on biodiversity, in particular agriculture, fisheries and livestock</p>	<p>1.1 Assess the current and projected impact of sea level rise, increased temperature, drought and natural disasters on biological resources and related ecosystems resulting directly or indirectly from climate change and requiring priority conservation in Cambodia. The focus will be primarily on identifying areas that are naturally resilient to climate change and on the impacts on agricultural and fishery productivity and sustainability, as well as on animal and human health</p> <p>1.2 Review the impact of climate change mitigation or adaptation measures taken, particularly the establishment of PAs and conservation areas, on genetic resources, species, ecosystems and related ecosystem services, and on agriculture, fisheries and livestock</p> <p>1.3 Increase the resilience of vulnerable local communities to the impacts of climate change on biodiversity.</p> <p>1.4 Assess the vulnerability of the different components of biodiversity (genetic resources, species and ecosystems) to climate change and, on that basis, prioritize adaptation measures for key regions of Cambodia, such as coastal zones, highlands, rural and urban areas threatened by climate change, as well protected area management effectiveness</p> <p>1.5 Identify and assess factors that exacerbate the effects of climate change (e.g. coastal area erosion, silting of lakes, establishment of dams etc.)</p>	<p>MOE, MAFF, MWRRM, GSSD</p>
<p>Strategic objective 2:</p> <p>Assess and document the role of biodiversity in climate change mitigation and adaptation measures, and strengthen biodiversity conservation measures that have a positive impact</p>	<p>2.1 Document the role of conservation and sustainable use of biodiversity (particularly in protected areas or conservation areas), recovery and re-introduction of species, and restoration of degraded ecosystems for climate change mitigation and adaptation, and for combating desertification and disaster risk reduction</p>	<p>MOE, GSSD MAFF</p>

on climate change mitigation and adaptation		
<p>Strategic objective 3: Minimize anthropogenic pressures (such as pollution, exploitation and sedimentation) on ecosystems that are vulnerable to climate change, so as to maintain their integrity, functioning and resilience</p>	2.2 Assess the effectiveness of the protected area system in place; its effectiveness in the conservation of species, genetic resources and ecosystems against current and predicted climate impacts.	MOE, GSSD MAFF
	2.3 Identify and address the gaps in the protected area system, bearing in mind the possible range shifts in plant and animal species populations in the face of climate change.	MOE, GSSD MAFF
	2.4 Ensure climate resilience of critical ecosystems (such as Tonle Sap Lake, cultural heritage sites, Mekong River, lowland deciduous dipterocarp forests, coastal ecosystems, and highlands.) through the strengthening of the national protected area system (see Theme 1 above) consisting of protected areas and conservation areas that are ecologically representative, effectively managed, well connected and well integrated in wider landscapes and seascapes.	MOE, GSSD MAFF
	2.5 Enhance the contribution of ecosystems to carbon sequestration through REDD+, the establishment and/or restoration of protected forests, community forests and wildlife corridors.	MOE, GSSD MAFF
	2.6 Adopt farming systems (e.g. multiple cropping systems, use of biomass mulching, low greenhouse gas emission agriculture and animal production) that are more resilient to climate change and that emit less greenhouse gases.	MOE, GSSD MAFF
	3.1 Minimize pollution in development projects (see in particular themes 4 on mining, 7 on water resources and 11 on marine and coastal resources)	MOE, GSSD MAFF
3.2 Promote recycling and re-use of wastes, and of systems with reduced wastes (see in particular themes 5 on environmental security, 7 water resources and 17 on industry, technology and services.)	MOE, GSSD MAFF	
3.3 Carry out biodiversity-inclusive environmental impact assessment for public works and development projects.	MOE, GSSD MAFF	

	<p>3.4 Ensure that protected areas and conservation areas are effectively managed through robust patrolling and zonation plans to limit climate induced pressures through increased exploitation</p>	<p>MOE, GSSD MAFF</p>
<p><u>Strategic objective 4:</u> <i>Strengthen the enabling environment for the implementation of the actions that promote climate change mitigation and adaptation through the conservation of biodiversity, the sustainable use and, where needed, the restoration of its components</i></p>	<p>4.1 Enhance participation in climate change assessments and response activities, as well as cooperation and coordination frameworks for addressing climate change within the commitments under the multilateral environmental agreements, essentially through:</p> <ul style="list-style-type: none"> a. the mainstreaming of climate change in the relevant sectors; b. participatory land-use planning; c. South-South cooperation, e.g. under the ASEAN framework and trans-boundary initiatives within the Mekong River Basin framework, as well as North-South collaboration. <p>4.2 Mobilize financial resources and support for implementation of actions under this theme, involving a number of well-coordinated mechanisms, with a mix of traditional and innovative instruments related to climate finance, such as the Adaptation Fund, the Green Climate Fund, payment for ecosystem services including within REDD⁺, financial and fiscal incentives, carbon market mechanisms, and public-private partnerships.</p> <p>4.3 Develop and implement well-targeted education, training, communication and awareness-raising programmes.</p> <p>4.4 Strengthen the clearing-house mechanism and other means (such as radio, television, newspapers, mobile and web technologies and targeted outreach materials) for improved access to relevant information, knowledge management, and technical and technological cooperation on climate change issues.</p> <p>4.5 Strengthen the capacity for collection, analysis, modelling and interpretation of climate data; for information management and dissemination to various end-users, including seasonal forecasting for adaptation and community early-warning facilities for disaster risk management; and for technology acquisition and adaptation to the country situation.</p>	<p>MOE, GSSD MAFF</p> <p>MOE, GSSD MAFF</p> <p>MOE, GSSD MAFF, MOEYS</p> <p>MOE, GSSD MAFF</p> <p>MOE, GSSD MAFF</p>

	<p>4.6 Strengthen institutions and coordination frameworks for national climate change responses and application of relevant policies, related legal frameworks and action plans, and application of enforcing mechanisms.</p> <p>4.7 Promote and encourage community- and ecosystem-based natural resources management approaches as cost-effective ways of addressing climate change.</p>	<p>MOE, GSSD MAFF</p> <p>MOE, GSSD MAFF</p>
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GROUP 2: SUSTAINABLE USE OF BIODIVERSITY (Themes 9-16)

Theme 9: Sustainable Forest Resources Management

1. Background

It was recognized in the 2009 NSDS that forests provide many significant resources, functions and services, including providing many primary and secondary economic products, recreational opportunities, wildlife habitat, water and soil conservation, a filter for pollutants, in addition to absorbing CO₂ and producing oxygen. Forest biodiversity provides not only timber but a wide range of non-timber forest resources including bushmeat, and food, medicinal and cosmetic plants, as well as wildlife and a diversity of landscapes of interest for example to tourism. Forests contain sources of water and perform services such as air purification, maintenance of soil fertility and biota, and soil and water conservation, all of which are essential to human well-being.

In addition to supporting biodiversity, forests also support employment and traditional uses by the people. There is a general concern over the human impact on forest health and the natural processes of forest growth and regeneration. The human threat to forest resources has been increasing in the form of illegal logging activities and inappropriate forest sub-product collection, including land clearing for agriculture and ownership. The volume of forest logging increased dramatically in the early 1990s given that it was one of the major sources of income for rural people, and of revenue for different factions.

At the time of adoption of the 2002 NBSAP, deforestation was estimated to occur at a rate seven times higher than the sustainable level due to the extraction of firewood and charcoal production. It was acknowledged, at the policy level, that the long-term benefits from the country's forest resources could be optimized through proper conservation and management of forest ecosystems. In addition to providing environmental benefits, the sound management of forests was also considered to be a source of long-term income for the government, the people living in or near forested areas, and the private sector involved in forest management. Opportunities to reverse deforestation included the development of sustainable forest management plans and better monitoring of forest concessions, improved capacity for law enforcement, and the establishment of forest plantations with both fast growing exotic as well as domestic hardwood species.

At the time, the primary challenges included over-harvesting of trees for timber, firewood and charcoal production; ineffective law enforcement; impacts of public works such as road building; watershed degradation; limited extent of forest demarcation; incomplete understanding of the status, trends and values associated with forest resources and forest ecosystem services, and limited awareness and application of best management practices.

The 2002 NBSAP addressed these challenges to ensure the sustainable protection, use and management of forests and woodlands, and to improve the efficiency and sustainability of extraction, transformation and use of timber and non-timber forest products. The specific objectives and actions were articulated around the development of a comprehensive national plan for the sustainable management of the country's forest estate. The plan incorporated the following objectives:

- (a) Reforestation using native species, while restricting the introduction of exotic species, and while rehabilitating the degraded forest areas;
- (b) Strengthening of law enforcement to prevent illegal logging, including extension of the Forest Crime Monitoring Unit and application of environmental impact assessments to forest harvesting activities;
- (c) Monitoring and evaluation of forest concession allocation and management;
- (d) Involvement of local communities in forest protection, management and improvement;
- (e) Promotion of environmentally friendly forestry practices;
- (f) Monitoring of the status and trends of forest cover and resources;
- (g) Delineation of the permanent forest estate for conservation, community use and industrial protection, and forest inventories and damage assessment.

There has been considerable progress since the adoption of the 2002 NBSAP, but much remains to be accomplished to achieve its objectives:

- (a) Cambodia enacted the Forestry Law in 2002, which defines the framework for management, harvesting, use, development and conservation of forests throughout the country. The objective of the Forestry Law is to ensure the sustainable management of forests for their social, economic and environmental benefits, including the conservation of biological diversity and cultural heritage. Under the Forestry Law, the state ensures customary user rights of forest products and by-products for local communities. It also confirms that the management of forests is under the jurisdiction of the Ministry of Agriculture, Forestry and Fisheries (MAFF), with the exception of the management of flooded forests, which is covered under a different law, and delegates the authority to manage Protected Areas to the Ministry of Environment. Article 4 of the Forestry Law states that prior to major forest ecosystem related activities that might significantly impact the environment and social conditions, an environmental and social impact assessment must be conducted.
- (b) The CMDG target of maintaining forest cover at 60% in 2015, bringing it down from 61.15% in 2002 was not met (forest cover was about 57.59% in 2009). The causes of deforestation and forest degradation have not yet been reduced sufficiently. These causes include the high levels of poverty resulting from the country's long civil war and social dislocations, which led to increases in illegal forest activities and weak law enforcement; rapid population growth and the subsequent overharvesting of forest resources, and the clearing of forests to support the expansion of subsistence agriculture; and the insufficient number of Forestry Administration (FA) staff, as well as their often-limited technical capacities, insufficient amount of available equipment, and lack of cross-sectoral collaboration.
- (c) The Rectangular Strategy (RS)-Phase II (2008-2013), which is a national socio-economic development policy agenda, focused on four components, including (i) agricultural development; (ii) infrastructure rehabilitation development; (iii) private sector development and employment creation; and (iv) capacity building and human resource development. The priorities for forestry reform included law enforcement, effective management of protected areas, climate change actions and the promotion of community forestry programs.
- (d) It should be emphasized that the decline of forest resources and forestland has had impacts on the socio-economic lives of rural communities; the deteriorated ecological functions affect local agriculture and animal husbandry. As a result, the rural population has had to travel to more distant forest areas to satisfy their requirements for forest products, resulting in conflicts with other communities or law enforcement officers. The lack of clear demarcations, classifications and registration distorts the interpretation of land tenure and user rights, both of which are essential elements in management planning and conflict prevention and resolution. Local communities are gradually turning to their adjacent degraded forests to initiate protection measures in order to restore forests and livelihoods.
- (e) As stated in the report on the Cambodia's MDG, "according to national census figures from 1998 to 2008, domestic fuelwood dependency decreased only from 90.4% of households to 83.6%, a figure still much higher than the current linear path target of 64.7%. If charcoal is included in fuelwood consumption, the figure rises to 91.1% (charcoal was not included in the baseline). Using a more precise measurement of fuelwood consumption, the Ministry of Mines, Industry and Energy (MIME) estimated the 2008 figure at 73% of households and projected this would be 54% in 2013." In the short term, the Government is promoting affordable and efficient commercial cooking stoves as a strategy to reduce fuelwood consumption. One million efficient cooking stoves have been produced since 2003, saving an estimated 5,000ha of forest over that same period. In the long term, the Government is pursuing a strategy for rural electrification supplemented by various small-scale renewable energy programs. These actions to reduce dependence on fuelwood should be scaled up together with improvements in farming techniques, and engagement in an active programme of forest rehabilitation and reforestation, including commercial plantations.
- (f) Building on the 2002 Forestry Law the RGC has embedded forestry sector reforms into the Cambodian National Strategic Development Plan (NSDP) 2009-2013, as well as into the country's Rectangular Strategy for Growth, Employment, Equity and Efficiency in Cambodia – Phase II of the fourth legislature policy priorities. In 2010, the RGC approved a National Forest Programme (NFP) aligned with those strategies, with the following priority

programme areas to be addressed from 2011 to 2029: (i) forest demarcation taking into account both the Forestry Law (2002) and the Land Law (2001) and the classification and registration of forest as “Production Forests”, “Protection Forests” or “Conversion Forests”; (ii) conservation and development of forest resources and biodiversity; (iii) forest law enforcement and governance; (iv) community forestry programme; (v) capacity and research development; and (vi) sustainable forest financing. Biodiversity elements of the 2010 NPF strategy have been integrated into this updated NBSAP.

- (g) The Cambodia REDD⁺ National Roadmap outlines the national plan for ‘REDD⁺ Readiness’ activities; and the National Policy and Strategic Plan for Green Growth recognizes the role of REDD⁺ in sustainable forest management and conservation in Cambodia.
- (h) Other supportive legislations and sub-decrees include the 1993 Royal Decree on the Creation and Designation of Protected Areas, the 1996 Law on Environmental Protection and National Resources Management, the 2003 Sub-decree on Community Forestry Management, the 2008 Law on Protected Areas, and other forest-related sub-decrees.
- (i) Cambodia’s post 2002 achievements in its commitment to manage forests sustainably include the following:
 - Illegal logging and other human pressures that deplete forest areas have declined or been eradicated in many areas as people are now complying more often with forest-related regulations and policies;
 - The adoption of Codes of Practice for sustainable forest management;
 - The termination of forest concession agreements with 15 companies with a cumulative forest area greater than 3 million ha, some of which have been converted to protected forests, and the decision to require remaining forest concession companies to develop approved Sustainable Forest Management Plans and Environmental and Social Impact Assessments and sign new investment agreements;
 - The designation of 20 additional Protected Forest and Biodiversity Conservation areas administered by the Forestry Administration of MAFF covering 1.63 million hectares²¹ and 8 fish conservation areas administered by the Fisheries Administration;
 - The termination of agreements of commercial fishing lots and subsequent reservation for local community use. Community forest management is where the local community takes responsibility for sustainable forest management with the support from the Forest Administration; and the supply and income from forest products can help to reduce poverty;
 - The decision that the remaining forest resources of the country shall be considered as Permanent Forest Estate to be managed by promoting conservation and sustainable forest management initiatives that directly contribute to the rehabilitation and conservation of a maximum stock of forested land and forest resources; and
 - Development of a Forest Gene Conservation Strategy under the DANIDA supported Cambodia Tree Seed Project, in which 34 indigenous tree species have priority status for conservation; 7 distinct gene-ecological zones have been established on the basis of bio-climate, vegetation, physiography and soil; a seed source registration system and the initiation of community participation in forest gene conservation and tree seed source management has been developed.

2. Issues

Despite the progress that has been accomplished since the adoption of the 2002 NBSAP, the following issues have been identified, recognizing that forest biodiversity is a broad term that includes the variety and variability of animals, plants and micro-organisms found in forests at the genetic, species and ecosystem levels which are necessary to sustain forest functions, structures and processes:

- (a) Incomplete understanding of the status and trends associated with forest resources;
- (b) Continued deforestation, forest ecosystem/habitat fragmentation, conversion to agricultural land and degradation associated with: infrastructure development (road building,

- urbanization, mining), watershed degradation, forest fires, and illegal logging;
- (c) Climate change;
 - (d) Introduction and spread of invasive alien plant and animal species;
 - (e) Over-harvesting of trees for timber, fuelwood and charcoal production; and non-timber forest products (plants and animals, including bushmeat);
 - (f) Overhunting or illegal trade of wildlife;
 - (g) Overgrazing;
 - (h) Limited community-managed forest areas and use of traditional knowledge;
 - (i) Water pollution;
 - (j) Inadequate law enforcement and conflicts over rights of access and use that enable illegal logging and encroachment/land grabbing;
 - (k) Incomplete forest demarcation;
 - (l) Limited effectiveness of protected forests;
 - (m) Limited individual technical and institutional capacities and knowledge;
 - (n) Sectoral land-use planning at the expense of effective collaborations between ministries and institutions; and
 - (o) Limited financial resources, including limited forestry revenues not reinvested into the sector.

3. Strategic objectives

The following strategic objectives were adopted to address these identified issues:

- (a) **Strategic objective 1:** Identify, inventory, monitor and enhance awareness about forest genetic resources, species, ecosystems and related ecosystem services that are important for sustainable development and poverty eradication in Cambodia;
- (b) **Strategic objective 2:** Identify and describe the direct and indirect factors and processes that are impacting Cambodia's forest resources and forest functions, and apply as appropriate, preventive and corrective measures;
- (c) **Strategic objective 3:** Maintain or strengthen measures that have a positive impact on forest biodiversity and thus enhance the benefits from forest resources and, in general, forest ecosystems, to all Cambodians;
- (d) **Strategic objective 4:** Strengthen the enabling environment for the implementation of the actions identified under the strategic objectives relating to forests.

The implementation of the strategic objectives on forest resources and forest landscapes will be supported by the implementation of several of the actions that are listed under all the other themes. The actions identified in Table 13 will contribute directly to the achievement of the national targets for biodiversity 1, 2, 5, 6, 8, 9 to 12, 15 to 20, and, vice versa, implementation of actions under each of these targets will support the achievement of the targets relating to forests. Each of these targets will support the achievement of the NSDS vision that by 2030 Cambodia will possess forests that cover a large part of the country and are well protected, that are rich in biodiversity and providing valuable environmental services, and that are managed in a sustainable manner in order to contribute effectively to the reduction of the impacts of climate change and to allow sustainable timber production and a sustainable supply of energy resources and non-timber forest products for the people of Cambodia, in particular its rural communities.

Table 13: Key actions and relevant ministries as well as agencies responsible for their implementation under the theme on “Sustainable Forest Resources Management”

Strategic Objectives	Key Actions	Coordinating and participating ministries and agencies
<p>Strategic objective 1: Identify, inventory, monitor and enhance awareness about forest genetic resources, species, ecosystems and related ecosystem services that are important for sustainable development and poverty eradication in Cambodia.</p>	<p>1.1 Improve knowledge and understanding of the status and trends of forest types and their coverage and functions in Cambodia, as well as the associated traditional knowledge of those forests, by conducting local, regional and national assessments and organizing information in databases and through the national clearing-house mechanism on:</p> <p>(a) The status and trend of different components of forest biodiversity (including plants, animals and microorganisms) with an emphasis on those components that are the most critical to the functioning of forest ecosystems or sea- and landscapes, that are important to sustainable development and poverty eradication, and that require priority conservation;</p> <p>(b) The roles and values of biodiversity components, including their contributions to the mitigation of climate change and the national economy and the socioeconomic and environmental impacts of forest cover and biodiversity loss, as well as forest ecosystem degradation;</p> <p>(c) More specifically, the role and value of forests in socioeconomic production landscapes (SEPLs);</p> <p>(d) The extraction of timber, fuelwood and non-timber forest products;</p> <p>(e) The pressures impacting forest landscapes and resources, including mangroves;</p> <p>(f) Traditional knowledge and customary protocols associated with the country’s forests; and</p> <p>(g) Technology available for the conservation and sustainable use of forest resources and landscapes.</p> <p>1.2 Identify ecologically or biologically significant forest areas and areas that are vulnerable or particularly sensitive to climate change and other anthropogenic pressures.</p> <p>1.3 Enhance awareness of the status, trends, values and threats to forests resources and landscapes.</p>	<p>MAFF, MOE, GSSD</p> <p>MAFF, MOE, GSSD</p> <p>MAFF, MOE, GSSD</p>

<p>Strategic objective 2:</p> <p>Identify and describe the direct and indirect factors and processes that are impacting Cambodia's forest resources and forest functions, and apply, as appropriate, preventive and corrective measures.</p>	<p>2.1 Identify direct and indirect factors negatively affecting all types of forests in Cambodia, and identify priority components of forest landscapes. Assess their impacts and establish a national monitoring program.</p> <p>2.2 Using macro land-use planning that allows for holistic planning across sectors, jurisdictions and local government borders (Objective 3 of the National Forest Programme 2010 – 2029(NFP)), and taking into account modern sustainable management models adaptive to changing contexts (NFP objective 8), as well as the 2002 Forest Law, the 2001 Land Law and related sub-decrees,</p> <ol style="list-style-type: none"> a. Demarcate forest boundaries, classify and register forest types in the country; b. Develop and implement a comprehensive national plan for the management of the forest estate, including the revision and updating of the present legislation regarding all aspects of forest resources protection and conservation and moving towards forest certification according to international norms; protection of resource tenure rights and practices of local communities and indigenous ethnic minorities; expansion of community-based forestry and other participatory management processes; and the development of plantation forestry to increase the forest area under sustainable management; c. Develop plans for community-based forest management, including guidelines for community forestry initiatives and other types of community forestry (e.g. Community-Based Production Forestry, Community Conservation Forestry, Community Protected Areas) to ensure the protection and conservation of forest resources (NFP objective 7) and forest landscapes; d. Restore and rehabilitate prioritized forest landscapes. <p>2.3 Adopt measures and policies, including the application of environmental impact assessment, forest certification (NFP sub-programme) and customary sustainable use practices, as well as forest law enforcement, to significantly reduce deforestation and forest degradation.</p> <p>2.4 Provide appropriate incentives to encourage the private sector to establish commercial forest plantations on degraded forestland based on agreed technical standards.</p>
MAFF, MOE GSSD	MAFF, MOE, GSSD, MOP
MAFF, MOE GSSD	MAFF, MOE, GSSD

	<p>2.5 Prevent the introduction and/or spread of invasive alien species that threaten forest ecosystems and mitigate their negative impacts by arresting their spread and attempting to eradicate them if they have been previously introduced. More specifically, develop policies and guidelines promoting the use of native species in cultivation and restricting the introduction of introduced species.</p>	MAFF, MOE, GSSD
	<p>2.6 Adapt to climate change and mitigate its effects on forest-based livelihoods (NFP Objective 2) through:</p> <ul style="list-style-type: none"> a. Tree planting and forest plantations (NFP sub-programme); b. The reduction of deforestation and forest degradation, in line with the REDD+ National Strategy and programmes; c. The protection of selected forest areas; and d. The restoration of forest ecosystems and recovery of forest components. 	MAFF, MOE, GSSD
	<p>2.7 Promote the sustainable use of forest resources including non-timber forest products (such as bushmeat) and the various services derived from forest biodiversity</p>	MAFF, MOE, GSSD
	<p>2.8 Establish and support small- and medium scale forest-based enterprises or cooperatives operating in each forestry cantonment for the processing of wood for export, as well as the processing of non-timber forest products</p>	MAFF, MOE, GSSD
	<p>2.9 Reduce losses associated with unsustainable harvesting of timber and non-timber forest resources.</p>	MAFF, MOE, GSSD
	<p>2.10 Support activities relating to the Satoyama Initiative for the rehabilitation and strengthening of socioecological production landscapes (SEPL)</p>	MAFF, MOE, GSSD
	<p>2.11 Implement the Nagoya Protocol in relation to forest resources.</p>	MAFF, MOE, GSSD
<p>Strategic objective 3: Maintain or strengthen measures that have a positive impact on forest biodiversity and thus enhance the benefits from forest resources and, in general, forest ecosystems, to</p>	<p>3.1 Maximize sustainable forest contributions to poverty reduction, enhanced livelihoods and equitable economic growth (NFP Objective 1) by:</p> <ul style="list-style-type: none"> a. Ensuring that management of protected forests and protection forests is effective. b. Support the benefits derived from socioecological production landscapes 	MAFF, MOE, GSSD, MOP

all in Cambodia	<p>within the Satoyama Initiative.</p> <ul style="list-style-type: none"> c. Develop and implement programmes and plans supporting new processing technologies for high-value forest products and by-products (NFP sub-programme) that will expand market opportunities and increase forest contribution to poverty reduction, enhanced livelihoods, and economic development, while safeguarding environmental services. d. Improve the sharing/distribution of incomes collected from the forestry sector. 	
<p>Strategic objective 4: Strengthen the enabling environment for the implementation of the actions identified under the strategic objectives relating to forests</p>	4.1 Assess the needs of human and research capacities and develop a programme to address those needs (NFP sub-programme 5.1 and 5.3).	MAFF, MOE GSSD
	4.2 Raise the capacity of institutions and the quality of education dealing with forests (NFP objective 6).	MAFF, MOE GSSD
	4.3 Extend and further support community forestry.	MAFF
	4.4 Train local communities, the private sector and local forest administrations in sustainable forest management.	MAFF, MRD GSSD, MOE
	4.5 Ensure maximum participation from the private sector and local communities in forest conservation and management for sustainable development.	MAFF, MRD MOE, GSSD
	4.6 Enhance the monitoring, inspection and evaluation capacities and capacities for reporting on sustainable forest management.	MAFF, MOE GSSD
	4.7 Improve forest law enforcement and governance (FLEG) at all levels (NFP objective 4) in particular through: <ul style="list-style-type: none"> a. The expansion of the Forest Crime Monitoring Unit (FCMU) project; b. Enforcement of the implementation of the Forestry Law; c. The development of conflict management system (NFP objective 5); d. The strengthening of enforcement in protected areas and protected forests and the improvement of policies to support these efforts. 	MAFF, MOE GSSD
	4.8 Develop diversified sustainable financing systems for the forestry sector, including the use of the National Forestry Development Fund established in the 2002 Forestry Law (NFP objective 9).	MAFF, MOE GSSD

Theme 10: Sustainable Freshwater Fisheries and Aquaculture

1. Background

Cambodia is one of the four largest fish producers in South-East Asia, specializing in fresh water fish from rivers, ponds and lakes. The Mekong River and Tonle Sap Lake are the main freshwater areas. Together with rice, fish constitutes the foundation of food security in Cambodia. In 2009, the fish catch from the Tonle Sap Lake represented about 60% of the total commercial fish catch of the country. The fishery sector contributes to around 5 to 10% of the GDP, while fish makes up 40% of the rural population's animal protein intake. Fisheries play a crucial role in supplying food for the Cambodian people, as well as in supporting the national economy.

As stated in the 2010 CMDG report, fisheries in Cambodia underwent reforms in 2000. Seventy-eight fishing lots were completely released and 81 fishing lots were partly released, resulting in a total area of 541,206 ha out of total 953,740 ha (56.74%) released for family-scale fishing by September 2010. The number of community fisheries (CFi) increased from 246 in 2002 to 469 in 2010, covering an area of 683,734 ha (of which 236, covering an area of 553,438 ha, are registered), with plans to reach 470 registered in 2015. In addition, 390 Community Fish Refuges (CFR) (1,170 ha) and 335 fish sanctuaries (46,618 ha) have been established. In 2012, Cambodia underwent another round of fishery reforms, with the closure of all fishing lots (80 fishing lots) covering a total area of 412,534 ha by keeping 50 new fisheries as conservation areas (97,503 ha) and community fisheries (315,031 ha). Currently, there are 516 community fisheries (998,765 ha) and 58 freshwater fisheries conservation areas (120,003 ha), which is equal to 10.23% of the total freshwater fishing areas. For coastal areas, Fisheries Administration has been establishing the first Marine Fisheries Management area located in Koh Rong, Preah Sihanouk province with the total area of 44,000 ha.

In recent years, the volume of fish caught has dropped due to the increasing number of fishers. Reports indicate that some fish species, particularly among the larger size species, are becoming endangered. Additional threats to fisheries were compiled in the Strategic Planning Framework 2010-2019 for Fisheries – Cambodia. They include: (i) loss of breeding habitat and declining wild stocks because of: climate change leading to changes in water levels, flow rates and flooding patterns, (ii) environmental degradation from pollution and increased mining sediment, (iii) damming, land conversion and deforestation, (iv) increased pressure on the resource due to economic and population growth factors, (v) increased international trade competition and more stringent import regulations, (vi) uncontrolled, illegal and destructive fishing, leading to conflict, (vii) disease, especially in aquaculture, and (viii) loss of land for fisheries due to weaknesses in land management.

Aquaculture systems were encouraged to correct this situation and ensure a sustainable fish supply. The importance of aquaculture development was underscored in the Second Five-Year Fisheries Sector Development Plan 2001-2005, and the development of freshwater and marine aquaculture was listed among the goals of the Agricultural Development Plan 2000-2005²². The Fisheries Department with the assistance of development agencies has actively promoted aquaculture in the uplands. This aquaculture is predominantly based on introduced species of fish and as such may be a serious threat to native fish-stocks. Adding to the threat, there are no guidelines for the importation of exotic species for culture that take into account environmental impact studies and environmental standards for fish-farms. The 2006 Law on Fisheries contains a chapter on aquaculture and makes general provisions on inland aquaculture and mariculture authorizations, water quality and discharge of waste matter, and on import, export and transport of live or fresh fish and processed fish products.

Fisheries management in Cambodia is divided between central and local governments. At the central level, the Department of Fisheries of the MAFF is responsible for developing research and drafting laws and policies on fisheries (and aquaculture) and is vested with inspecting powers. At the local level, fisheries are managed by the Provincial-Urban Fishery Authorities, which ensure compliance with the law in the area under their jurisdiction.

Fisheries in Cambodia are organized into industrial (large-scale), artisanal (medium- scale) and family fisheries (small-scale). They use different fishing times and fishing gears. Fishing gears and methods can be divided in two broad categories: limited access fisheries mainly for industrial fisheries and open access fisheries. The number of open access fisheries has grown significantly in recent years and can be categorized into small-scale or family fisheries, licensed fisheries and illegal fisheries. Small-scale or family fisheries are permitted to use diverse fishing gears; restrictions apply only on the size of the gears.

Unlike medium- and large-scale fishing which is restricted to the open season only, small-scale or family fishing is not restricted to a set season but is permitted all year round. Illegal fisheries are those fishing practices referred to as illegal in the 2006 Law on Fisheries, such as brush parks and explosives.

At the time of the adoption of the 2002 NBSAP, the main issues with freshwater fisheries and aquaculture had to do with unsustainable and illegal fishing; insufficient protection of selected fish areas and related capacity building activities to correct the limited awareness and to increase expertise, including within local communities and for the demarcation of fishing areas; and weak law enforcement.

Since the adoption of the 2002 NBSAP, the MAFF Department of Fisheries Conservation of the Fisheries Administration has demarcated many fisheries conservation areas, reviewed and reduced the fishing lot system to enhance community-based fisheries management. The Government has shown strong political will and the Prime Minister responded to this with the closure of 80 fishing lots in 2012²³. All fishing lots throughout Cambodia have now been cancelled. A range of projects were undertaken to support sustainable fisheries, including but not limited to the Tonle Sap Environmental Management Project/Sustainable Livelihoods Project and ECOSORN, along with environmental education and training, land-use planning, resource zonation, community development, small scale industrial development, fish and agriculture products processing, and involvement of local authorities. As part of the fishery monitoring and protection activities, fish conservation areas have been established including 8 fish sanctuaries under the authority of the MAFF Fisheries Administration²⁴.

The 2006 Law on Fisheries was promulgated “to ensure fisheries and fishery resource management, enhance aquaculture development, the management of production and processing, and to promote the livelihood of people in local communities for the social-economic and environmental benefits, including the sustainability of the conservation of biodiversity and natural culture heritages in the Kingdom”. Since then, the fisheries sector has undergone major reforms within the framework of the ten-year Strategic Plan 2009-2018 and the first three-year-rolling on Fishery Sector Development Action Plan, 2009-2011. These Plans have been developed based on the Cambodian Code of Conduct for Responsible Fishery. The Fisheries Administration also tightened its efforts in preventing and suppressing flooded forest land-grabbing²⁵. Additional supportive legislations include, among others, the 2005 Royal Decree on the Establishment of Community Fisheries²⁶ and the 2005 Sub Decree of Community Fisheries Management²⁷.

However, as reported in the 2009 NSDS, the fish stock remained under threat by direct and indirect factors, including over-fishing, destructive fishing practices, destruction of fish habitats, increased sedimentation, water pollution and impacts by up-stream dam development. The following obstacles to fisheries were highlighted: (i) insufficient information on fishing lot boundaries in relation to protected areas; (ii) limited enforcement of the fishery policy and regulations; (iii) limited community experience in fishery management; (iv) unclear size of fishing lots, and illegal use of prohibited fishing gear and fishing activities during the fish spawning period. Also, when faced with limited fish yields to support their livelihoods, local fishers started undertaking other activities that easily become unsustainable when they are not properly organized, such as extraction from inundated forests, collection of fuelwood and production of charcoal, or hunting waterfowl and wildlife.

Regarding species used in aquaculture, although the importance of using native species is known, there is a shortage of suitable indigenous fish species for aquaculture production and insufficient support to carry out studies to identify them.

As stated in the 2016 Cambodia’s National Biodiversity Status Report Update, the Fisheries Administration developed, in collaboration with World Fish and the Inland Fisheries Research and Development Institute (IFReDI), a comprehensive fish species list for Cambodia. “There are growing concerns that the trend in reducing fish species diversity is a sign of unsustainable harvest and potentially a tipping point for the fishery. Furthermore, there is a trend toward increased damming of the Mekong and its tributaries, which could further impact fish species diversity as stream flows and migration routes are altered. As highlighted in Cambodia’s Fifth National Report to the Convention on Biological Diversity, the Government has taken quite strong action, by removing the previous fishing concessions on the Tonle Sap Lake while also promoting aquaculture and community fisheries. [...] Fish diversity in Cambodia, across both fresh and salt water systems includes 1357 species”.

2. Issues

The following are key issues surrounding freshwater fisheries and aquaculture:

- (a) Information deficiencies, limited knowledge about the fishery resources, and poor statistics especially for capture fish;
- (b) Destructive fishing practices;
- (c) Overexploitation of fisheries (illegal fishing and over-fishing);
- (d) Shortage of suitable indigenous fish species for aquaculture production;
- (e) Development of dams, irrigation and flood control programs that negatively impact fish habitats;
- (f) Insufficient protection of critical aquatic habitat (fish sanctuaries);
- (g) Weak law enforcement;
- (h) Insufficient or lack of demarcated fishing areas, and of flooded forest and zones/areas within approved areas for fishery conservation and management;
- (i) Insufficiently trained fishery staff for development of community fisheries;
- (j) Improper management skills and training by communities;
- (k) Limited understanding of local fishers of relevant legislations concerning the conservation and management of aquatic fishery resources
- (l) Lack of management plans for a number of fishery management and conservation areas;
- (m) Lack of a trans-boundary fishery management body between Cambodia and the Lao PDR;
- (n) Poorly documented impact of climate change on aquatic fishery habitats and aquatic species;
- (o) Limited assessment, monitoring and evaluation of aquatic fishery resources;
- (p) Flood destruction of forest boundaries; and
- (q) Market distortions, perverse subsidies and transboundary issues.

3. Strategic objectives

The following strategic objectives were adopted to address the identified issues:

- (a) **Strategic objective 1:** Identify, inventory, monitor and enhance awareness about freshwater resources including fish varieties used in aquaculture;
- (b) **Strategic objective 2:** Identify and describe the major direct and indirect factors and processes that are negatively impacting Cambodia's freshwater fisheries and aquaculture, and apply, as appropriate, preventive and corrective measures;
- (c) **Strategic objective 3:** Maintain or strengthen measures that have a positive impact on freshwater fisheries and aquaculture, and thus enhance the benefits to all in Cambodia;
- (d) **Strategic objective 4:** Strengthen the enabling environment for sustainable freshwater fisheries and aquaculture.

Many actions identified under the following themes will contribute directly to the achievement of the strategic objectives relating to freshwater fisheries and aquaculture resources: Protected Areas System and *in situ* conservation (Theme 1), Threatened species (Theme 2), Water Resources and wetlands (Theme 7) bearing in mind that freshwater fisheries and aquaculture are highly dependent on water resources, Biodiversity and Climate Change (Theme 8), Customary use and traditional knowledge (Theme 16), and the themes under the enabling environment cluster.

The implementation of actions under the freshwater fisheries and aquaculture theme will contribute primarily to the achievement of Cambodia Biodiversity Targets 4 and 5 on the sustainable management of freshwater fisheries and aquaculture, and also to the following Targets: 1 (regarding awareness for the values, status and trends of marine and coastal biodiversity), 6 (on restoration of ecosystems that have been under a lot of pressure), 8 (regarding the increase in the surface of fish sanctuaries), and 16 (calling for the reduction of pollutant pressures on terrestrial and aquatic ecosystems). The improved management

and conservation of fisheries resources, as well as the development of sustainable fisheries resources will contribute to ensuring food security, it will enhance livelihoods and the nation's prosperity.

The chances of success are high, which should serve as encouragement to undertake the actions listed above. Indeed, in Cambodia (i) resources are vast with a wide range of accessible fishing techniques and technologies, good indigenous technical and environmental knowledge, and a high domestic and international demand; (ii) there are many examples of the successful application of community-based management; and (iii) there is a strong history of fish farming in a diversity of forms and levels, and of good traditional processing skills with low energy requirements.

Table 14: Key actions and relevant ministries as well as agencies responsible for their implementation under the theme on “Sustainable Freshwater Fisheries and Aquaculture”

Strategic Objectives	Key Actions	Coordinating and participating ministries and agencies
<p>Strategic Objective 1: Identify, inventory, monitor and enhance awareness about freshwater resources including fish varieties used in aquaculture.</p>	<p>1.1 Identify and inventory freshwater fisheries and aquaculture and develop national fisheries statistics including on abundance of catches and trends at sites.</p> <p>1.2 Carry out assessments of</p> <ol style="list-style-type: none"> a. Traditional knowledge and customary protocols relating to fisheries; b. Technology available in fisheries, and also for aquaculture; c. Status and trends of fisheries and aquaculture production; and d. Commercial value of fish varieties. <p>1.3 Enhance awareness about the status, trend, value of and threats to fisheries and aquaculture resources.</p>	<p>MAFF, MOE, GSSD</p> <p>MAFF, MOE, MOP, GSSD</p> <p>MAFF, MOE, GSSD</p>
<p>Strategic objective 2: Identify and describe the major direct and indirect factors and processes that are negatively impacting Cambodia’s freshwater fisheries and aquaculture; and apply, as appropriate, preventive and corrective measures.</p>	<p>2.1 Assess the impact of the following factors on aquatic resources:</p> <ol style="list-style-type: none"> 2.1.1 Destructive fishing practices; 2.1.2 Illegal fishing and over-fishing; 2.1.3 Development of dams, irrigation and flood control programs; 2.1.4 Invasive alien species; 2.1.5 Insufficient demarcation or lack of demarcation of fishing areas and lack of protection of critical; and 2.1.6 Shortage of suitable indigenous fish species for aquaculture production. 	<p>MAFF, MOE, GSSD</p> <p>MAFF, MOE, GSSD</p> <p>MAFF, MOE, MOWRAM, MRD, GSSD</p> <p>MAFF, MOE, GSSD</p> <p>MAFF, GSSD</p> <p>MAFF, GSSD</p>

	2.10 Restore/rehabilitate degraded or lost inland waters.	MAFF, GSSD
	2.11 Promote traditional knowledge and customary sustainable use.	MAFF, MOE MRD, GSSD
	2.12 Modernize fisheries (modernization of the traditional systems of extensive resource use).	MAFF, TSA, GSSD
	2.13 Reduce pressure on the wild fisheries resource through livelihood diversification.	MAFF, GSSD
	2.14 Protect the wetlands ecosystem from the effects of deforestation, land conversion and pollution.	MAFF, MOE GSSD
	2.15 Improve the post-harvest fish processing, and promote national markets and export of harvested fish and processed fish.	MAFF, TSA GSSD
	2.16 Address endangered species (see detailed actions under theme 2 above).	MAFF, MOE GSSD
<u>Strategic objective 3:</u> Maintain or strengthen measures that have a positive impact on freshwater fisheries and aquaculture, and thus enhance the benefits to all in Cambodia.	3.1 Support protected areas and conservation areas, including by stopping fishing in those areas.	MAFF, MOE, GSSD
	3.2 Apply customary sustainable use practices.	MAFF, MOE, MRD, GSSD
<u>Strategic objective 4:</u> Strengthen the enabling environment for sustainable freshwater fisheries and aquaculture.	4.1 Formulate a national sustainable fishery policy and action plan.	MAFF, GSSD
	4.2 Empower local communities and the private sector, including community fisheries, aquaculturists, and fish processors in order to develop and sustainably manage fisheries resources.	MAFF, MRD, GSSD
	4.3 Ensure land security for the protection and growth of the fisheries sector.	MAFF, GSSD
	4.4 Improve the livelihoods of poor people by enhancing their capacity to use fish resources more effectively after capture in order to add value.	MAFF, GSSD

	<p>4.5 Promote and support research and international cooperation, particularly with the FAO and other United Nations organisations and programmes, as well as international research organizations dealing with fisheries and aquaculture.</p>	<p>MAFF, MOEYS, GSSD, MOE</p>
	<p>4.6 Strengthen cooperation in the context of the implementation of the CBD, the Ramsar Convention, the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) and the Convention on Migratory Species (CMS).</p>	<p>MAFF, MOE, GSSD</p>
	<p>4.7 Strengthen cooperation within the country and regionally/trans-boundary (Mekong Basin) in order to exchange experiences and expertise and better coordinate and complement resources.</p>	<p>MAFF, MOE, GSSD</p>
	<p>4.8 Ensure sustainable access to fisheries resources for poor rural communities through fisheries reform.</p>	<p>MAFF, MOE, TSA, GSSD</p>
	<p>4.9 Mobilize financial resources including for law enforcement.</p>	<p>MAFF, MOE, GSSD</p>
	<p>4.10 Develop and implement a communication, education and awareness-raising strategy and promote, in particular, sustainable fishery practices on the national and local levels of government and in communities.</p>	<p>MAFF, MOE MOEYS, GSSD</p>
	<p>4.11 Develop fishery institutions and their infrastructure.</p>	<p>MAFF, GSSD</p>
	<p>4.12 Integrate the need for sustainable fisheries in development, sectoral and intersectoral strategies, and plans.</p>	<p>MAFF, MOE, GSSD</p>
	<p>4.13 Develop and implement monitoring, evaluations and reporting programmes.</p>	<p>MAFF, TSA, GSSD</p>

Theme 11: Sustainable Coastal and Marine Resources Management

1. Background

Cambodia's 435 km of coastal area and 500,000 km² marine Exclusive Economic Zone (EEZ) constitute ecologically and biologically rich areas where some of the well-known threatened marine mammals such as the dugong, marine dolphins and whales, and marine turtles and molluscs can be found.

At the time of the adoption of the 2002 NBSAP, reliable information on the status of fish stocks was not available. However, it was known that the fishing zones closest to the shore were overharvested by artisan fishers lacking the capacity to sail into higher seas and that there was a lot of illegal fishing through the use of illegal fishing gears and in the off-season. Mangroves were severely affected by wood harvesting for charcoal production and other uses, urbanization and other development work, and intensive shrimp aquaculture. Coral reefs and seagrass beds that are highly critical to marine productivity were also threatened by offshore oil and gas exploitation and the associated pollution. Many watersheds were degraded and coastal zones eroded or polluted by oil spills and other human activities. The capacity of the Fisheries Administration, then Department of Fisheries, in preventing illegal fishing, and monitoring the marine and coastal resources was limited by a lack of technical capacity, inadequate equipment and budget constraints.

Thus the objectives and actions put forward in the 2002 NBSAP focused on monitoring the status of marine species and their habitats, on setting up a Monitoring Surveillance and Control (MSC) Plan for industrial fishing and developing one for artisan fishery, on protecting coastal zones in particular the mangroves; and on improving the technical capacity of the Department of Fisheries.

Significant progress was made on all the objectives and actions adopted in the 2002 NBSAP. For example:

- (a) Pollution by oil spills, overfishing in the coastal areas, use of illegal fishing gears and fishing out of season were significantly reduced over the years;
- (b) Watershed and mangroves areas requiring protection or restoration have been identified and protected, while many degraded mangroves are undergoing replanting. In fact, Cambodia undertook a wide initiative of habitat protection, also taking climate change into account, through the designation and protection of important habitats including mangrove, sea grass, fish conservation areas and coral reef, and some other important aquatic habitats. Cambodia used community-based approaches and included the marine species under the sub-decree on aquatic endangered species (also see theme 2 above on threatened species);
- (c) Cambodia also undertook a number of capacity building projects, including training of personnel in coastal zone management techniques, education programs on climate change and adaptation in the coastal area to help the communities adapt to the climate change, as well as better understanding the value of biodiversity in adapting to or mitigating greenhouse gas (GHG) emissions through mangrove restoration, for example. Training was also provided to the local community on patrolling and the sustainable use of marine and coastal resources²⁸.
- (d) In 2005, the Government promulgated a Sub-decree on Community Fisheries and other relevant instruments: the 2005 fisheries policy statement and 2006 Fisheries Law to strengthen community-based development of fisheries sector, sustainable use and management of areas released from fishing concession, enhancement of natural fish stock, protection of fish sanctuaries and endangered aquatic species²⁹;
- (e) Also, the Government undertook to create an integrated coastal zone management system with support from the Government of Denmark³⁰;
- (f) Mariculture systems were encouraged to ensure a sustainable fish supply and avoid threatening some fish species. The 2006 Law on Fisheries made general provisions on mariculture authorizations.

2. Issues

Despite the progress made since 2002, there are still many issues relating to coastal and marine resources:

- (a) Inadequate information on fish stocks, and on marine and coastal resources in general;

- (b) Knowledge gaps and lack of scientific information regarding the description of areas meeting the ecologically or biologically significant areas (EBSA) criteria, vulnerable marine ecosystems (VME) and particularly sensitive sea areas (PSSA);
- (c) Watershed degradation;
- (d) Coastal erosion and depletion of mangroves;
- (e) Climate change;
- (f) Invasive alien species;
- (g) Over-harvesting of high value marine and coastal resources and fishing out of season;
- (h) Use of illegal fishing gears and by-catch of non-target or protected species;
- (i) Pollution caused by oil spills and other human activities that can result in physical damage, non-physical disturbances or biological disturbance;
- (j) Weak management, surveillance and enforcement capacity of the Department of Fisheries;
- (k) Non-sustainable coastal aquaculture;
- (l) Lack of a trans-boundary fishery management body between Cambodia and Thailand;
- (m) No assessment of abundance of marine mammals, sea grass and coral reefs;
- (n) Lack of marine mammal stranding network to rescue stranded animals;
- (o) Lack of regulation to manage marine ecotourism activities at a number of sea grass and
- (p) coral reef areas;
- (q) Local fishers' limited understanding of relevant legislations concerning conservation and management of aquatic fishery resources.

3. Strategic objectives

The following strategic objectives were adopted to address the identified issues

- (a) **Strategic objective 1:** Identify, inventory, monitor and enhance awareness about coastal and marine resources.
- (b) **Strategic objective 2:** Identify and describe the direct and indirect factors and processes that are negatively impacting Cambodia's coastal and marine resources; and apply, as appropriate, preventive and corrective measures
- (c) **Strategic objective 3:** Maintain or strengthen measures that have a positive impact on coastal and marine resources and thus enhance the benefits from coastal and marine resources to all in Cambodia
- (d) **Strategic objective 4:** Strengthen the enabling environment for the implementation of the strategic objectives and actions identified for coastal and marine resources.

Many actions identified under the following themes will contribute directly to the achievement of the strategic objectives relating to marine and coastal resources: Protected Areas System and *in situ* conservation (Theme 1), Threatened species (Theme 2), Water Resources and wetlands (Theme 7), Biodiversity and Climate Change (Theme 8), Forest Resources in particular mangroves (Theme 9), Customary use and traditional knowledge (Theme 16), and the themes under the enabling environment cluster.

The implementation of actions under the marine and coastal resources theme will contribute to the achievement of Cambodia Biodiversity Targets 1 (regarding awareness for the values, status and trends of marine and coastal biodiversity), 8 (regarding the doubling of the coverage of marine and coastal protected areas), 15 (on the reduction of anthropogenic pressures on coral reefs and vulnerable ecosystems impacted by climate change), and 16 (calling for the reduction of pollutant pressures on terrestrial and aquatic ecosystems).

Table 15: Key actions and relevant ministries as well as agencies responsible for their implementation under the theme on “Sustainable Coastal and Marine Resources Management”

Strategic Objectives	Key Actions	Coordinating and participating ministries and agencies
<p>Strategic objective 1: Identify, inventory, monitor and enhance awareness about coastal and marine resources.</p>	<p>1.1 Identify components of marine and coastal ecosystems which are critical to the functioning of the ecosystems and important for sustainable development and poverty eradication. In particular, conduct comprehensive national assessments, including retrospective analyses, of fisheries, both commercial fisheries as well as small-scale fisheries, to determine the level of unsustainable fishing practices;</p> <p>1.2 Identify marine and coastal areas meeting the ecologically or biologically significant areas (EBSA) criteria, within and, if possible, beyond national jurisdiction, and vulnerable marine ecosystems (VME) and particularly sensitive sea areas (PSSA)</p> <p>1.3 Carry out an assessment of the status and value of marine and coastal biodiversity in relation to the types and levels of human activity in areas described as meeting the EBSA criteria, taking into account traditional knowledge</p> <p>1.4 Regarding coral reefs, (a) Map and assess the vulnerability of coral reefs; (b) Carry out research on resilience and resistance to bleaching and raised temperature; and (c) Analyze the status and trends of coral-reef ecosystems, as well as the ecological and socio-economic impacts of coral-reef degradation and destruction</p> <p>1.5 Enhance awareness about the status, trends, value of and threats to marine and coastal resources across the government and society</p>	<p>MAFF, MOE, MOP, GSSD</p> <p>MAFF, MOE, GSSD</p> <p>MAFF, MOE, GSSD</p> <p>MAFF, MOE, GSSD</p>
<p>Strategic objective 2: Identify and describe the direct and indirect factors and processes that are negatively impacting Cambodia’s coastal</p>	<p>2.1 Gather information on the physical degradation and destruction of key marine and coastal habitats and assess their biological and socio-economic consequences</p>	<p>MAFF, MOE, GSSD</p>

and marine resources; and apply, as appropriate, preventive and corrective measures		
2.2	Develop and implement management practices, methodologies and policies, including in particular restoration of mangroves and rehabilitation of damaged coral, to reduce and mitigate the impacts of physical degradation and destruction of key marine and coastal habitats on the provision of services from marine and coastal ecosystems.	MAFF, MOE, GSSD
2.3	Protect mangrove forests through adequate land-use plans, and local community involvement	MOE, MAFF, MLMUPC, GSSD
2.4	Undertake direct action to protect the marine and coastal environment from negative impacts by prioritizing ecologically or biologically significant areas	MAFF, MOE, GSSD
2.5	Establish and maintain marine and coastal protected areas that are representative, effectively managed, ecologically based, and well connected and integrated in the wider land- and seascape	MAFF, MOE, GSSD
2.6	Develop monitoring and management programs for target fish species	MAFF, GSSD
2.7	Develop a full Monitoring Surveillance and Control (MSC) Plan for industrial fishing and establishment of a working pilot scheme for MSC of artisan fishery, including awareness and training	MAFF, MOE, GSSD
2.8	Control, under national jurisdiction, activities and processes that may have significant adverse impacts on deep seabed ecosystems and species beyond the limits of national jurisdiction, in order to address Article 3 of the Convention on Biological Diversity	MAFF, MOE, GSSD
2.9	Undertake actions to reduce and control sea-based sources of pollution	MAFF, MOE, GSSD
2.10	Achieve substantial progress in protecting the marine environment from land-based activities through effective application of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities	MAFF, MOE, GSSD
2.11	Develop national coral reef action plans and programmes mobilizing inter-agency and cross-sectoral partnerships, as well as close coordination	MAFF, MOE, GSSD

	<p>among national and subnational governments and local communities to address the multiple anthropogenic pressures on coral reefs, taking into account actions under other relevant themes, such as on fisheries or on climate</p> <p>2.12 Prevent or minimize the negative impacts of mariculture on marine and coastal biodiversity and enhance any positive effects of using native species.</p> <p>2.13 Prevent the introduction of invasive alien species into the marine and coastal environment, and eradicate, to the extent possible, those invasive alien species that have already been introduced.</p> <p>2.14 Promote community-based measures to manage fisheries sustainably</p> <p>2.15 Identify and implement management measures for multispecies reef fisheries to reduce unsustainable fishing practices;</p> <p>2.16 Sustainably manage populations of key reef fish and invertebrate species targeted by export-driven fisheries</p> <p>2.17 Strengthen regional and international cooperation to address issues related to the management of marine resources and ecosystems.</p>	
<p>Strategic objective 3:</p> <p>Maintain or strengthen measures that have a positive impact on coastal and marine resources and thus enhance the benefits from coastal and marine resources to all in Cambodia</p>	<p>3.1 Improve management effectiveness of established protected and conservation marine and coastal areas.</p> <p>3.2 Restore to and maintain fisheries stocks at sustainable levels</p>	<p>MAFF, MOE, GSSD</p> <p>MAFF, MOE, GSSD</p>
<p>Strategic objective 4:</p> <p>Strengthen the enabling environment for the implementation of the strategic objectives and actions identified for coastal and marine resources.</p>	<p>4.1 Assemble a database on marine and coastal biodiversity status and trends, threats, and management, and make it widely accessible in the national clearing-house mechanism</p> <p>4.2 Strengthen collaboration and harmonize initiatives with activities under other relevant conventions and organizations.</p>	<p>MAFF, MOE, MRD, GSSD</p> <p>MAFF, MOE, MRD, GSSD</p>

	<p>4.3 Within the framework of integrated marine and coastal area management (IMCAM), integrate biodiversity concerns in all socio-economic sectors that impact the marine and coastal environment</p>	<p>MAFF, MOE, MRD, GSSD</p>
	<p>4.4 Update and strengthen existing legislation, as well as institutions dealing with marine and coastal issues</p>	<p>MAFF, MOE, MRD, GSSD</p>
	<p>4.5 Introduce new or strengthen existing national regulations and management measures, including the application of the ecosystem approach to fisheries to address unsustainable fishing practices, such as overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices, and ensure effective enforcement;</p>	<p>MAFF, MOE, MRD, GSSD</p>
	<p>4.6 Strengthen capacity in marine science, research, information and management, technology transfer and acquisition, through education, other types of training, and public awareness, to improve implementation of the actions under this theme</p>	<p>MAFF, MOE, MRD, GSSD</p>
	<p>4.7 Capacity-building and training program for staff on coral reefs</p>	<p>MAFF, MOE, GSSD</p>
	<p>4.8 Provision of patrol boats to Department of Fisheries</p>	<p>MAFF, GSSD</p>
	<p>4.9 Identify diverse funding mechanisms and mobilize financial resources for implementation</p>	<p>MAFF, MOE, MRD, GSSD</p>
	<p>4.10 Create alternative sources of livelihood for local fishing communities, so as to reduce pressures on marine resources</p>	<p>MOE, GSSD, MAFF</p>

Theme 12: Sustainable Animal and Wildlife Resources Management

1. Background

Cambodia is host to a great diversity of animal and wildlife of significant importance in the lives of the people and for the functioning of ecosystems. The 2002 Forestry Law states that all wildlife species are state property and components of forest resources, including the mammals, birds, reptiles, amphibians, insects, other invertebrates, and their eggs or off spring. Wildlife management, research and conservation are administered under the General Secretariat for Sustainable Development (GSSD) of the National Council for Sustainable Development (NCSD), the General Directorate of Administration for Nature Conservation and Protected (GDANCP) of Ministry of Environment, and the Forestry Administration. The Department of Biodiversity of GSSD and the Department of Wildlife and Biodiversity in the Forestry Administration are jointly responsible for developing biodiversity conservation and wildlife management plans, as well as ecological monitoring, surveying, and research.

At the time of the adoption of the 2002 NBSAP, the primary issues affecting animal and wildlife resources in the country were (i) the threat to their survival from illegal hunting and trade, overexploitation, habitat destruction and degradation, pollution and invasive alien species, and (ii) the limited information available regarding their status.

The strategic objectives and priority actions for animal and wildlife resources were articulated around the reduction of illegal hunting and trade through awareness campaigns, the reduction of the impact of invasive alien species, monitoring of the status and exploitation levels of wildlife, and development of management plans for commercial animals and wildlife species. Each of those actions is on-going and some progress has been made in achieving the objectives that were established, but much remains to be accomplished. Indeed, the status of wildlife is available, but it requires updating; illegal hunting has been reduced, but its incidence continues to remain too high; and invasive alien species have been identified, but the resources required to control the impacts of those species effectively are insufficient.

In order to conserve and protect some landmark species of flora and fauna, additional production forest areas have been designated, including 12 Protected Forests and 8 Biodiversity Conservation Areas. Of the 23 Protected Areas under the MOE, 10 are Wildlife Sanctuaries. Local communities are involved in *in-situ* conservation of animal and wildlife and local villagers cooperate in projects.

With regard to *ex-situ* conservation, the government administered “Wildlife Rescue Centre” located within the Phnom Tamao Zoological Park confiscates wildlife that has been illegally traded in the country. Other *ex-situ* wildlife management centres include the Prey Angkor Zoo (private), the Angkor Centre for Conservation Biology (private), the Wildlife Development Centre in Kampot province (private) and Koh Kong Safari World, each of which has been developed by the private sector.

Cambodia is also involved in trans-boundary biodiversity conservation. In recognition that wildlife freely crosses national boundaries and moves from one country to another along neighboring borders, Cambodia participates in the conservation of biological resources through the implementation of the ITTO Trans-boundary Biodiversity Conservation project, the ADB Biodiversity Corridors Initiative and the Association of Southeast Asian Nations’ Wildlife Enforcement Network.

2. Issues

The primary issues regarding the current status of animal and wildlife resources in Cambodia include:

- (a) The lack of detailed and updated information on the status and trends of, and threats to, wildlife because of inadequate technology and limited human and financial resources required for monitoring. Some development partners, environmental NGOs and a few research institutions continue to gather that information, but on a limited scale;
- (b) Conservation and degradation of wildlife habitats caused by the demand for timber,
- (c) especially luxury species of high-priced timber, unsustainable extraction of non-timber forest products, land cleared for plantation crops and agriculture, road constructions and other public works increased access to wild lands, urban expansion, mining, and pollution;
- (d) Illegal and unsustainable hunting and fishing. The scale of Cambodia’s illegal wildlife trade is substantial, driven by international demand for meat and traditional medicines in neighboring countries. The trade leaves areas of apparently “healthy” forest devoid of

wildlife, with significant populations of many species surviving only in extremely remote areas or those protected by intensive conservation measures;

- (e) There is no specific legislation to address invasive alien species (IAS) issues, as well as limited information and human and financial capacity to address those issues that are associated with invasive alien species.

3. Strategic objectives

The following strategic objectives were adopted to address these issues:

- (a) **Strategic objective 1:** Identify, inventory, monitor and enhance awareness of animal and wildlife resources.
- (b) **Strategic objective 2:** Identify and describe the direct and indirect factors and processes that are impacting Cambodia's animal and wildlife resources and apply, as appropriate, preventive and corrective measures.
- (c) **Strategic objective 3:** Strengthen the enabling environment for the implementation of the actions identified for the conservation and sustainable use of animal and wildlife resources.

Implementation of actions identified under this theme will benefit from actions to be undertaken under several other themes, as well, in particular Theme 1 on protected areas system and *in situ* conservation; Theme 2 on threatened species; Theme 3 on *ex-situ* conservation; and a number of other themes, including those on water resources and wetlands (Theme 7); biodiversity and climate change (Theme 8); land-use planning (Theme 6); forest resources (Theme 9); customary use and traditional knowledge (Theme 16); as well as those relating to the enabling environment. The implementation of these actions will also contribute to the achievement of Cambodia Biodiversity Targets on awareness-raising (Theme 1), identification of threatened species and improving their status (Theme 10) and halving the rate of loss of natural habitats and reducing habitat fragmentation and degradation, over harvesting and the introduction of invasive alien species and their impacts (Theme 12).

Table 16: Key actions and relevant ministries as well as agencies responsible for their implementation under the theme on “Sustainable Animal and Wildlife Resources Management”

Strategic Objectives	Key Actions	Coordinating and participating ministries and agencies
<p>Strategic Objective 1: Identify, inventory, monitor and enhance awareness of animal and wildlife resources.</p> <p>Strategic Objective 2: Identify and describe the direct and indirect factors and processes that are impacting Cambodia’s animal and wildlife resources and apply, as appropriate, preventive and corrective measures.</p>	1.1. Continue taxonomic and ecological studies on animal and wildlife, and consolidate the available information on animal and wildlife in databases and through the national clearing-house mechanism.	MAFF, MOE, GSSD
	1.2. Identify animal and wildlife resources and assess their values, status and trends, and manage and share that information in user-friendly databases as well as through the national clearing-house mechanism.	MAFF, MOE, GSSD
	1.3. Assess the current status of invasive alien species impacting animals and wildlife in the country.	MAFF, MOE, GSSD
	1.4. Develop a national monitoring program and associated database on invasive alien species.	MAFF, MOE, GSSD
	1.5. Enhance awareness of the status, trends, values of, and threats to animal and wildlife resources.	MAFF, MOE, GSSD
	2.1. Undertake national campaigns against illegal hunting.	MAFF, MOE, GSSD
	2.2. Undertake national behavior change campaigns to reduce demand for bushmeat among the urban middle and upper classes.	MAFF, MOE, GSSD
	2.3. Establish additional national parks, wildlife reserves, wildlife rescue centers and zoos, and restore wildlife habitats that have been degraded.	MAFF, MOE, GSSD
	2.4. Develop alternatives to bushmeat, for example through animal domestication and breeding.	MAFF, MOE, GSSD
	2.5. Ensure effective site-based protection through improved law enforcement	MAFF, MOE, GSSD

	and patrolling in protected areas system.	
	2.6 Establish informant networks against illegal poaching around critical protected areas.	MAFF, MOE, GSSD
	2.7 Increase support for law enforcement efforts in areas already protected through additional human and financial capacities, and enhance collaboration with local communities, indigenous ethnic minorities and development partners, as well as natural resource management and environmental NGOs.	MAFF, MOE, GSSD
<p>Strategic Objective 3: Strengthen the enabling environment for the implementation of the actions identified for the conservation and sustainable use of animal and wildlife resources.</p>	3.1 Develop and implement awareness-raising programmes and a national strategy for Invasive Alien Species management.	MAFF, MOE, GSSD
	3.2 Coordinate work with government institutions, civil societies, the private sector and wildlife conservation organizations to increase efficiency and synergies while avoiding unnecessary duplication of effort, and engage local communities and indigenous ethnic minorities to strengthen their roles in land-use planning and ecosystem management.	MAFF, MOE, GSSD
	3.3 Update legislation/regulations and ensure their effective enforcement.	MAFF, MOE, GSSD
	3.4 Enhance implementation of CITES related provisions in the relevant national laws	MAFF, MOE, GSSD
	3.5 Mobilize funds for wildlife conservation and sustainable use exploring diverse sources of financing, including REDD+ and ecotourism.	MAFF, MOE, GSSD

Theme 13: Sustainable Agriculture and Animal Production

1. Background

At the time of the adoption of the 2002 NBSAP, Cambodia's economy was largely based on agriculture, mostly rice-based rain-fed and mono-cropped systems. Shifting cultivation, commercial crops planting, home gardens and perennial systems were also practiced. Agriculture employed most of the labor force. Cambodian agriculture depended largely on traditional cultivars of rice, maize, sesame, vegetables and sweet potato. New pests and pathogens have contributed significantly to the loss of land race diversity in the absence of gene banks and storage facilities. Loss of crop genetic diversity and land races, together with the improper use of pesticides and chemical fertilizers, were seriously compromising the country's food security.

Animal production was still limited but a shift was taking place from village level to commercial level production, and with the introduction, following other countries in Asia, of new genes in domesticated animals to boost production. However, the application of adequate husbandry techniques, sanitary measures and quality control were limited.

The challenges that Cambodia faced included the fact that: a lot of land needed to be cleared for agriculture; cropping/farming systems (in particular the use of soil and water polluting chemical fertilizers, pesticides and herbicides, the inadequacy of slash-and-burn cropping and mono-cropping and uncontrolled grazing) were not the most appropriate to respond to the food needs and food security in the country; and husbandry techniques and sanitary measures for livestock production were deficient.

When developing the 2002 NBSAP, Cambodia focused on agricultural biodiversity, which is a broad term that includes all components of biological diversity of relevance to food and agriculture, and all components of biological diversity that constitute the agricultural ecosystems, also named agro-ecosystems: the variety and variability of animals, plants and micro-organisms, at the genetic, species and ecosystem levels, which are necessary to sustain key functions of the agro-ecosystem, its structure and processes. Agricultural biodiversity provides not only food and income but also raw materials for clothing, shelter and medicines, and performs other services such as maintenance of soil fertility and biota, and soil and water conservation, all of which are essential to human well-being. Agricultural biodiversity is the outcome of the interactions among genetic resources, the environment and the management systems and practices used by farmers. It is the result of both natural selection and human inventive developments over millennia.

Strategically, Cambodia decided to focus its objectives and actions for the decade on:

- (a) The protection of agricultural land, and plant and livestock resources, including through Integrated Pest Management program;
- (b) Promoting agricultural biodiversity program for food security;
- (c) The training of farmers, livestock producers and fish growers on improved farming systems respectful of the environment, including for example mixed cropping, rotational agriculture and pastoral rotational grazing, the use of chemical and organic fertilizers and pesticide, water use in agriculture, and animal husbandry;
- (d) Strengthening research in new and alternative crops.

Following the adoption of the 2002 NBSAP, agricultural production increased remarkably in spite of unpredictable weather conditions. The livestock production also increased, but only slightly, and its contribution to the economy remained stagnant. This sub-sector needed to grow in order to meet local nutrition needs and to serve the tourism industry. Introduction and propagation of high yielding species and expanded veterinary services is a priority of MAFF.

To promote agricultural production, MAFF prepared laws and regulations including on the Sanitary and Phyto-sanitary Agreement, the Law on Production and Animal health, the 2012 Law on Management of Pesticide and Agricultural Fertilizer, and Law on the Management and Use of Agricultural Land. The enhancement of the agriculture sector is one of the four priority programme areas of the Rectangular Strategy and the 2009 National Strategic Development Plan (NSDP) 2009-2013 which is also the country's poverty reduction strategy, and the Green Growth Roadmap. The 2005 Agricultural Sector Strategic Development Plan 2009-2013 and the 2006-2010 Strategy for Agriculture and Water are both

aligned with the Government's Rectangular Strategy for Growth, Employment, Equity and Efficiency in Cambodia and efforts to achieve the Millennium Development Goals. The overarching intent of the Agricultural Sector Strategic Development Plan is to enhance agricultural productivity, diversification and commercialization in order to reduce poverty and promote economic growth alongside sustainable natural resource management. The Government's agricultural strategy promotes diversified farming systems, agro-forestry and protection, and the management of critical watersheds. Those strategies and their link to the maintenance of protected areas and biodiversity are considered critical to maintaining stability in agricultural systems and in ensuring food security. The significant contribution of protected areas to the supply and regulation of water for agriculture is recognized.

The issues observed in 2002 are still present, although progress can be noted on some of them: slash and burn cultivation is reduced, and the cooperation between agencies has improved. However, no study has been reported regarding genetic erosion.

Regarding implementation of the priority actions, MAFF undertook a number of programmes to address the issues:

- (a) MAFF conducted several farmers' training programmes on improved cultivation and livestock production systems respectful of the environment. MAFF also strengthened agricultural extension service delivery in a more broadened and comprehensive fashion in order to bring about a wider uptake of better cultivation techniques and effective practices on soil fertility management, plant protection, use and maintenance of agricultural machinery, postharvest and storage technology. The Integrated Pest Management (IPM) training programme, for example, led to the reduction of ecology disruption and environmental contamination, to the reduction of public health and toxic residues in food, and to an improvement in the livelihood of farmers, biodiversity and marketability of produce³¹. MAFF established a Plant Protection Office under the Department of Agronomy and Soil Improvement, in response to Article 4 of the International Plant Protection Convention (IPPC) that requires contracting parties to develop National Plant Protection Organisation³².
- (b) MAFF prepared an "Agriculture Sector Strategic Development Plan: 2006-2010" in October 2005 in order to achieve RGC's strategic goals as well as the NSDP 2006-2010 to promote agricultural diversity and agricultural productivity for domestic and external demands, and for the country's food security. A Strategy for Agriculture and Water Sectors was also adopted in 2007³³. The sustainability of agriculture is closely linked to the supply of water. Thus, the government should encourage its policy on the improvement of the irrigation systems through restoring the existing irrigation systems and building new ones to ensure there is sufficient water for farmers. These policies promote pro-poor agricultural systems and community arrangements, effective agro-business development, efficient, sustainable and pro-poor management of land and water resources.
- (c) In the Green Growth Roadmap, it is recognized that agricultural productivity can be promoted and maintained in the longer term if organic agricultural practices are promoted to delay the degradation of arable lands. Sectoral diversification can be supported by increased capacity building, Technical and Vocational Education and Training (TVET), and other initiatives by the Ministry of Labor and Vocational Training (MOLVT), and the Ministry of Education, Youth and Sports (MOEYS). If organic farming is promoted in rural areas and the production can be connected to the main markets, Cambodia can have the potential to become the hub for organic rice in Southeast Asia. Such capital inflow would spur private sector growth, create additional employment opportunities, and benefit international marketability and competitiveness of Cambodian products as a whole.
- (d) MAFF conducted agricultural lands inventories, soil surveys and agricultural land-use assessments throughout the country. It generated data and information relevant for planning for agricultural intensification and diversification and sustainable agriculture³⁴.
- (e) Research on new and alternative crops has also been strengthened³⁵;

The Government is conscious about the following challenges:

- (a) The preservation of ecosystems with a high productivity and rich biodiversity is the primary condition for sustainable yields of renewable raw materials and products such as food crops, livestock, timber, and fish;

- (b) The productivity in rice and other crops; access to extension services, credit and inputs; irrigation; ensuring better benefits for farmers through marketing; limited farmer's knowledge in using agricultural inputs, techniques and soil improvement management;
- (c) Competency in law enforcement to monitor and regulate agricultural inputs and soil resources and soil fertility management;
- (d) The use of land and other resources, as well as private sector investments and participation;
- (e) The formation of farmers so as to improve their effectiveness and partnering with private sector; and
- (f) The impact of climate change and natural disasters.

Some attention needs to be paid to invasive alien species and the following recommendations from the 4th edition of the Global Biodiversity Outlook of particular relevance:

- (a) Agriculture should be made more efficient, including through improved targeting and efficiency of fertilizer, pesticide and water use, reducing post-harvest losses, minimizing food waste, and promoting sustainable diets;
- (b) Nutrient pollution should be reduced by improving nutrient use efficiency in agriculture to reduce losses to the environment, enhancing treatment and recycling of sewage and industrial waste water, eliminating phosphates from detergents and the conservation and restoration of wetlands;
- (c) Efforts should be increased to identify and control the main pathways responsible for species invasions, including through the development of border control or quarantine measures to reduce the likelihood of potentially invasive alien species being introduced, and making full use of risk analysis and international standards;
- (d) The conservation of the wild relatives of domesticated crops and livestock should be integrated into management plans for protected areas. Surveys of the location of wild relatives should be conducted and this information included in plans for the expansion or development of protected area networks.

2. Issues

The following key issues were identified:

- (a) Land clearance/land-use (loss of agriculture land);
- (b) Soil and water pollution by excessive chemical fertilizers, pesticides and herbicides;
- (c) Mono-cropping;
- (d) Industrial cropping;
- (e) Genetic erosion (fewer variety);
- (f) Overgrazing;
- (g) Negative impact of agriculture in some areas (due to water pollution from excessive use of chemical inputs);
- (h) Lack of or limited cooperation between agencies;
- (i) Limited investment in technology and other inputs;
- (j) Limited laws and regulations enforcement;
- (k) Limited integration into wider development plans, thus increased chances of conflicts with other development plans;
- (l) Deficient husbandry techniques and sanitary measures for livestock production; and
- (m) Climate change, natural disasters and invasive alien species.

3. Strategic objectives

The following strategic objectives were adopted to address the identified issues

- (a) **Strategic objective 1:** Identify, inventory, monitor and enhance awareness about agricultural biodiversity, including the animal component;

- (b) **Strategic objective 2:** Address the direct and indirect factors and processes that are negatively impacting Cambodia's agricultural biodiversity and are therefore impacting agricultural and animal production; and apply, as appropriate, preventive and corrective measures;
- (c) **Strategic objective 3:** Maintain or strengthen measures that have a positive impact on agriculture and animal production and thus ensure food security for all, particularly for the rural community;
- (d) **Strategic objective 4:** Strengthen the enabling environment for the implementation of the strategic objectives and actions for sustainable agriculture and animal production.

The implementation of the actions under these strategic objectives will greatly contribute to the achievement of the Cambodia Biodiversity Targets 1 (on awareness-raising), 5 (on sustainable management of areas under agriculture and animal production) and 6 (on restoration of agricultural lands and recovery of their ecosystem services important to all, particularly local communities and women, the elderly and children of indigenous ethnic minorities). Implementation of the actions listed in Table 17 below and the Cambodia Biodiversity Targets relating to agriculture should have in mind that in the NSDS (2009),

- (a) The ultimate objectives of the recommended actions are (i) to generate productive soils with high organic content, (ii) to prevent land deterioration due to erosion or loss of nutrients, (iii) avoid accumulation of pesticides and heavy metals, (iv) a rich biodiversity found within varied biotopes in the landscape, and (v) sustainable agricultural practices;
- (b) The following NSDS targets for 2015 are yet to be met: (i) Target B: Achieve, by 2015, an increase of the national rice yield to 2.4 t/ha and 50% increase of non-agriculture income generating activities in rural areas; (ii) Target C: Achieve, by 2015, sustainable agricultural practices (IPM or organic agriculture) in 20% of the agricultural land; and (iii) Target D: Achieve, by 2015, sustainable land-use planning in 50% of the provinces.

Table 17: Key actions³⁶ and relevant ministries as well as agencies responsible for their implementation under the theme on “Sustainable Agriculture and Animal Production”

Strategic Objectives	Key Actions	Coordinating and participating ministries and agencies
<p><u>Strategic objective 1:</u> Identify, inventory, monitor and enhance awareness about agricultural biodiversity, including the animal component.</p>	<p>1.1 Provide a comprehensive assessment of the coverage of agricultural land; of the status, trends and value of agricultural biodiversity; and the types of management in Cambodia;</p> <p>1.2 Assess the associated knowledge, innovations and practices of indigenous ethnic minorities and local communities in sustaining agricultural biodiversity and agro-ecosystem services;</p> <p>1.3 Promote public awareness of the goods and services provided by agricultural biodiversity, and the value and importance of such diversity for food, agriculture and animal production;</p> <p>1.4 Enhance capacity to sustain livelihoods by expanding knowledge, and understanding and awareness of the multiple goods and services provided by the different levels and functions of agricultural biodiversity.</p>	<p>MAFF, GSSD</p> <p>MAFF, GSSD</p> <p>MAFF, MOEYS, GSSD, MOE</p>
<p><u>Strategic objective 2:</u> Address the direct and indirect factors and processes that are negatively impacting Cambodia’s agricultural biodiversity and are therefore impacting agricultural and animal production; and apply, as appropriate, preventive and corrective measures</p>	<p>2.1. Support research that will determine the most appropriate farming/cropping systems for the various ecosystems in Cambodia, addressing essentially:</p> <ol style="list-style-type: none"> Irregularity and, at times, insufficiency of rain waters in rain-fed agriculture; Uses of chemical fertilizers, pesticides and herbicides; Agricultural land protection and land-use program; Agricultural diversity promotion program for food security, food safety, crop diversification, paying attention to soil fertility maintenance and balance between food crops and other crops (industrial, biofuel); Seed production quality; Farming systems integrating crops, livestock, fisheries and agroforestry/forestry; 	<p>MAFF, GSSD, MOEYS, MOE</p>

	g. Sustainable cultivation management systems; h. Invasive alien species;	
	2.2. Conserve crop, including their wild relatives and animal germplasm <i>in situ</i> and <i>ex situ</i> as needed, so as to maintain and conserve genetic diversity;	MAFF, MOE, GSSD
	2.3. Identify and use adaptive management practices, technologies and policies that promote the positive effects and mitigate the negative impacts of agriculture on biodiversity;	MAFF, MOE, GSSD
	2.4. Support extension services that will effectively promote the best research results, particularly in rural areas;	MAFF, MOE, GSSD
	2.5. Review and improve the land tenure security, particularly for the poor;	MAFF, MOE, GSSD
	2.6. Develop market opportunities for agricultural products and address market distortion for an equitable sharing of benefits arising from the utilization of agricultural products;	MAFF, MOE, GSSD
	2.7. Improve animal health services, and animal production and productivity;	MAFF, MOEYS, MOE, GSSD
<p>Strategic objective 3:</p> <p>Maintain or strengthen measures that have a positive impact on agriculture and animal production and thus ensure food security for all, particularly for the rural and indigenous ethnic communities</p>	3.1 Support systems that are improving productivity and diversification of agriculture;	MAFF, GSSD
	3.2 Replicate and expand areas where sustainable agriculture is practiced;	MAFF, GSSD
	3.3 Develop agro-industry respectfully of the environment;	MAFF, MOE, MIH, GSSD
	3.4 Develop and promote agricultural product exports for increased incomes and job creation;	MAFF, MOE, MOC, GSSD
	3.5 Develop infrastructure in rural areas for transporting agriculture products to the market;	MAFF, MRD, MOE, GSSD

<p>Strategic objective 4:</p> <p>Strengthen the enabling environment for the implementation of the strategic objectives and actions for sustainable agriculture and animal production</p>	<p>4.1 Strengthen the capacities of farmers, in particular indigenous ethnic minorities, local communities and their organizations, and other stakeholders for sustainable agricultural and animal production by:</p> <ol style="list-style-type: none"> a. Training village development committee (VDC) on the rules, responsibilities and village action plan; b. Training farmers on improved cropping and livestock production systems respectful of the environment, including extension programmes on Integrated Pest Management (Farmer Field School); c. Raising awareness of agricultural diversity for food security; d. Promoting agricultural engineering; e. Improving infrastructure in rural areas; f. Improving and strengthening research and extension systems through technology transfer (including biotechnology) and the promotion of private sector participation, in (i) new and alternative crops, and (ii) animal genetics and breeding; <p>4.2 Improve market opportunity and access for agricultural and animal products, particularly for rural and indigenous ethnic communities;</p> <p>4.3 Take environmentally friendly measures that will improve the quality and quantity of agricultural and animal production and thus encourage market expansion and the export of agricultural products;</p> <p>4.4 Facilitate and take advantage of agricultural technology transfers and agricultural cooperatives;</p> <p>4.5 Enhance awareness on the regulations and legislations, and strengthen law enforcement;</p> <p>4.6 Encourage regional and international cooperation;</p> <p>4.7 Develop or identify and mobilize sustainable sources of financial resources;</p> <p>4.8 Enhance awareness on guidelines and policies relating to indigenous peoples' rights and customary sustainable use of biodiversity, in cooperation with MRD.</p>	<p>MAFF, MRD, MOEYS, GSSD</p>
		MAFF, MOC, MOE, GSSD
		MAFF, MOE, GSSD
		MAFF, MOE, GSSD
		MAFF, MOE, GSSD
		MAFF, MOE, GSSD
		MAFF, MRD, MOE, GSSD

Theme 14: Sustainable Energy Resources Management

1. Background

In Cambodia, over 80 percent of the primary energy consumption is provided by fuel wood and charcoal. The domestic use of fuel wood and charcoal commonly creates severe environmental problems due to forest logging and indoor/outdoor air pollution. Cambodia's energy supply also relies heavily on imported fuels. With the increasing demand and increases of international fuel prices, the government has been exploring new sources of energy, including hydropower, offshore and onshore oil and gas, and renewable energy.

Energy is an important source or input for the economic and social development of any nation. Significant energy use is relevant to the nature of energy services in different sectors of the economy and to environmental constraints. Energy is required for cooking and lighting in households and for other uses of social services. This shows that energy is a vital input for the social and economic development of nations.

Many environmental problems are arising with energy supply and use that are related to global warming. Such as air pollution, ozone layer depletion, forest destruction, and emission of radioactive substances. These issues must be considered simultaneously if humanity is to achieve a bright energy future with minimal environmental impacts. There is already much evidence that the future will be negatively affected of humans continue degrading the environment.

Cambodia is heavily dependent on wood and biomass energy and will remain so in the mid-term. Not only most poor rural families rely on firewood for cooking but also industries. Forests therefore play a very important role in the national energy balance and wood and biomass energy will remain the most accessible source of energy in the mid-term.

According to World Bank biomass is the dominant source of energy used in Cambodia making up to 85% of the total energy consumption. Fuel wood and charcoal are the main form of biomass while agriculture wastes (rice straw, palm leaves, coconut shells, corn cobs, cassava, sugarcane, cashew nut shells and dung) are used to a lesser extent.

It is important note that fuel wood plays an important role for the poor and rural people. Thus attention must be given to the role wood-energy can play in alleviating vulnerability and poverty. However, the main source of fuel wood in Cambodia, natural forests, has been severely degraded due to mismanagement over the past decades. Today's, wood fuel may be available in solid (i.e. fuel wood, wood-chips, sawdust, pellets, briquettes, or charcoal), liquid (i.e. black liquor, methanol and pyrolytic oil), or gasses (producer-gas) forms.

With progressive advancement in technology, new wood fuel in the forms of charcoal, briquettes, dendrothermal power, wood-alcohol and producer-gas are used to generate heat and power, through cogeneration. Recently, both woody and non-woody biomass is being utilized in wood and agro-industries for energy generation, by using modern bio-energy technologies such as gasification for example. With the hike and fuel prices, small scale industry and in particular the textile industry have started substituting their boilers with wood, which is causing an unexpected and unaccounted for pressure on biomass resources.

The biofuel industry was showing signs of development, led by the increasing international demand and sustained increases in oil prices. The Cambodian Government through MME, negotiated with the Thai Government to support the development of biofuels in Cambodia. In Cambodia, the case study showed a very positive example of socially sustainable biofuel production that is benefiting smallholders and other villages. Farmers gained more than the basic agricultural wage, paid less for electricity and had access to *Jatropha* seeds cake for fertilizer. For smallholder families, who produce their own feedstock on small plots (a double row 400m fence, 1,600 m²), and consumed their own oil in tractors and water pumps the profit was USD440. The same farmer who only sells seeds makes a net profit of USD102 on the same living fence. In the past three years, there has been a dynamic expansion of smallholder production of cassava in Khampong Thom, Khampong Cham and Banteay Meanchey Provinces. Thai and Vietnamese bioethanol processing enterprises send collectors in their own trucks to buy cassava tubers directly from farmers at the farm gate. Cambodian cassava producers presently capture robust net returns of USD350 per hectare. In Cambodia, the major rice growing areas currently lie within the country's economic corridor between Thailand and Vietnam. Major expansion of biofuel feedstocks or other agricultural

production would impact adversely on the country's dry forest eco-region that lies beyond the rice production areas in the Thailand-Vietnam economic corridor.

By developing the proper framework conditions and facilitating the dissemination of efficient technologies, the Royal Government of Cambodia has the opportunity to change wood-energy from a factor of deforestation to a factor of income generation and socio-economic development.

First, the present strategy recommends conducting regular national flow surveys that will provide more precise analysis of wood-energy supply/demand sustainability situation and raise awareness on the issue.

Secondly, forests are not equally distributed throughout the country and thus are locally overexploited. Technologies on use are very energy inefficient. In the mid-term considering population growth and the booming industrial sector (garment, brick), the solution to over utilization of forests is therefore to reduce demand.

Household cooking energy represents a major part of national energy consumption. The use of improved cook stoves in rural areas is limited. The dissemination of improved cook stoves supported through production facilities and distribution networks should therefore have a significant impact in terms of energy savings.

Although the industrial sector's demand is not significant, it is unclear how the sector will evolve in the future. The garment and brick and tile factories are respectively sustained by exports markets and the high demand of the construction sector, some of these factories use wood as their main source of energy. Energy innovations must be piloted and, if validated, disseminated to reduce the industrial sector's energy footprint on natural forests.

Thirdly, urban cooking energy is essentially composed of charcoal produced in Kampong Speu province. Even though the use of firewood as a direct cooking energy is decreasing; a decrease in the total wood demand for charcoal and firewood is not expected. Without interventions, wood demand will actually increase dramatically as 6 kg of wood are needed to produce 1 kg of charcoal. Even when considering the higher heating values of charcoal, traditional charcoal-making technologies involve very low energy efficiencies. Up to 80% of the energy content of the wood used for charcoal burning in earth mound kilns is lost in the process. This trend is a serious concern as forest resources are already under pressure and modern fuel such as LPG will not penetrate the urban markets fast enough to avoid forest degradation.

Thousands of families are involved in charcoal production turning vast areas of forests into barren lands.

A specific program shall disseminate improved charcoal kilns through these communities. Charcoal technological innovations have been validated in Cambodia. Their dissemination shall be done in collaboration with the Ministry of Environment and the Forestry Administration.

Fourthly, reduced demand and substitution options will not satisfy all needs. Rural communities have legally the right to protect, manage and use forest resources. Future attention should therefore be given to forest management, plantation and certification schemes and moreover the opportunity to increase income of these managing communities. As it is not the mandate of MME, a collaboration should be sought with the Forestry Administration to harmonize strategies and to implement a wood-energy supply program.

2. Issues

In addition to the issues described above, the following key issues were identified for consideration in the updated NBSAP:

- (a) Potential impacts of energy production on ecosystems
- (b) Needed technical and financial support for various tasks including data collection and feasibility studies
- (c) In the case of biofuels, land availability and tenure, displacement of local communities, and food security

3. Strategic objectives

The following strategic objectives were adopted to address the identified issues

- (a) **Strategic objective 1:** Identify, inventory, monitor, manage information and data, and enhance awareness about the contribution of biodiversity to the country's energy needs,
- (b) **Strategic objective 2:** Describe the direct and indirect impact of energy production and

consumption on biodiversity components and on local communities, as well as on indigenous ethnic minorities; and apply, as appropriate, measures to avoid and mitigate this impact;

- (c) **Strategic objective 3:** Maintain or strengthen measures that have a positive impact on energy biomass and thus enhance biomass supply for energy production in a sustainable manner and to the benefit of all in Cambodia;
- (d) **Strategic objective 4:** Strengthen the enabling environment for the implementation of the activities for biodiversity-friendly energy production, including acquisition and dissemination of appropriate technologies needed for the production and processing of biomass for energy.

The implementation of the strategic objectives under this theme (see Table 18 for key actions and actors) will greatly benefit from the actions identified under the themes relating to forest resources (Theme 12), agriculture (Theme 13), water resources (Theme 7), as well as awareness, education, research coordination and development (Theme 20), clearing-house mechanism for technical and scientific cooperation, knowledge sharing and information exchange (Theme 24), threatened plant species (Theme 2), land-use planning (Theme 6), customary use and traditional knowledge (Theme 16), community participation (Theme 19) and resource mobilization (Theme 18).

While implementing the actions under these strategic objectives, it is important to have in mind that, as stated in the NSDS (2009):

- (a) The vision for a sustainable energy sector in Cambodia is that by 2030 “Cambodia has rich renewable energy resources such as biomass, biogas, hydropower, solar and wind energy resources which are used in an efficient and environmentally sustainable way in order to fulfill all people’s and sectors’ needs of energy services, using a demand side management approach”; and
- (b) An important target is to achieve, by 2020, a widespread use of renewable energy, including up to 30% of biogas in urban and rural areas instead of fuelwood and charcoal use.

Table 18: Key actions and relevant ministries as well as agencies responsible for their implementation under the theme on “Sustainable Energy Resources Management”

Strategic Objectives	Key Actions	Coordinating and participating ministries and agencies
<p>Strategic objective 1: Identify, inventory, monitor, manage information and data, and enhance awareness about the contribution of biodiversity to the country’s energy needs.</p>	<p>1.1 Compile and analyze information and data on the energy needs of the country, including consumption patterns of households.</p> <p>1.2 Assess the current and potential contribution of different types/sources of energy, including biodiversity, to the country’s energy needs and compare their costs and benefits, taking into account production zones, village woodlots, tree planting including in public areas, agro-forest activities, agricultural and animal wastes, and household preference schemes for fuel substitution (crop/animal residue, woody biomass, commercial fuels, etc.), trading patterns.</p> <p>1.3 Study fuelwood and, in general, energy biomass flows to assess sustainability of production and use.</p> <p>1.4 Assess the potential of biofuels in the country (sources of feedstock, costs and impacts in life cycle) including both positive and possible negative aspects.</p>	<p>MME, GSSD, MAFF, MOE, MRD</p> <p>MME, GSSD, MAFF, MOE, MRD, MRD</p> <p>MME, GSSD, MAFF, MOE, MRD</p>
<p>Strategic objective 2: Describe the direct and indirect impact of energy production and consumption on biodiversity components and on local communities as well as indigenous ethnic minorities; and apply, as appropriate, measures to avoid and mitigate this impact.</p>	<p>2.1 Assess the current and potential impact of the energy sector on biodiversity and its ecosystem services, including in particular:</p> <ul style="list-style-type: none"> a. The impact of fuelwood harvest on deforestation; b. The impact of biofuel production on agricultural land and food production and security; and c. A life cycle analysis (LCA) to assess and compare the carbon footprint of biofuels and other sources of energy. 	<p>MME, GSSD, MAFF, MOE, MRD</p>

	<p>2.2 Reduce the impact of the energy sector on biodiversity and its ecosystem services by:</p> <ul style="list-style-type: none"> a. Introducing improved technologies into all aspects of wood-sourced energy and biomass residue supply and demand chains, and improving efficiency of wood in use, and thus reducing the need for wood; b. Substituting wood with other sources of energy such as biomass, wood residue and agricultural residues, for instance by promoting the use of alternative energy sources to reduce fuelwood use and diversify energy sources by developing and implementing energy efficiency programs for households in areas where fuelwood is limited, or by using improved cooking stoves and/or biogas digesters for household and small business; c. Promoting fuelwood and multipurpose tree plantations at the family and community level: tree planting in public areas, agroforestry or on-farm tree planting, village woodlot allocation for sustainable fuelwood collection, integration of wood fuel production into community forestry so as to ensure sustainable fuelwood supply and prevent negative impacts of energy development and use on natural ecosystems (Also see theme 12 on Forest Resources); and d. Developing more efficient charcoal production methods. <p>2.3 Apply to energy development projects, in particular hydropower and oil exploitation projects, the Voluntary Guidelines on Biodiversity-Inclusive Impact Assessment (CBD Decision VIII/28 also adopted by the Ramsar Convention) and the Akwé: Kon Voluntary guidelines for the conduct of cultural, environmental and social impact assessments regarding developments proposed to take place on, or which are likely to impact on, sacred sites and on lands and waters traditionally occupied or used by indigenous peoples and local communities (Annex to CBD decision VI/7 A).</p> <p>2.4 Promote the use of local natural resources for energy supply based on environmental sustainability, least-cost options and equitable access to electricity services.</p> <p>2.5 Promote small water investment in local community.</p>	<p>MME, GSSD MAFF, MOE, MRD</p>
<p>Strategic objective 3: Maintain or strengthen measures that have a positive impact on energy biomass and thus enhance biomass supply for</p>	<p>3.1 Support the implementation of the energy sector strategy, including the MIMÉ's 2004 draft Energy Strategy listing interventions to improve the sustainable supply and use of biomass in Cambodia.</p>	<p>MME, GSSD</p>

<p>energy production in a sustainable manner, and the benefits to all in Cambodia.</p>	<p>3.2 Improve the lives and income of the communities, in particular the marginal poor, presently engaged in biomass supply and demand chains.</p>	<p>MRD, MME</p>
	<p>3.3 Integrate biomass into the existing planning development processes such as rural and community development plans, rural electrification plans, poverty reduction strategies, and decentralized commune planning processes, with the participation of all relevant ministries, particularly MME and MAFF with its Forestry Administration.</p>	<p>MME, MOE MAFF, MRD, GSSD</p>
<p>Strategic objective 4: Strengthen the enabling environment for the implementation of the activities under this theme, including the acquisition and dissemination of appropriate technologies needed for the production and processing of biomass for energy.</p>	<p>4.1 Formulate a policy and action plan for a sustainable energy system in Cambodia based on renewable energy, energy efficiency and demand side management.</p>	<p>MME, GSSD</p>
	<p>4.2 Develop and strengthen the human and technological capacity needed for the implementation of the activities identified under this theme on energy resources.</p>	<p>MME, GSSD</p>
	<p>4.3 Strengthen institutions, and ensure adequate planning and the effective implementation of the energy sector strategy, the energy law, related laws and policies associated with biodiversity conservation and sustainable use.</p>	<p>MME, GSSD</p>
	<p>4.4 Encourage the development of standards and energy certification to promote green energy from renewable and sustainable sources in the country.</p>	<p>MME, GSSD</p>
	<p>4.5 Develop a formal and regulated biomass trading and production system which ensures equitable prices, sustainability of supply and the acknowledgement of its contribution to the economy, while ensuring avoidance of the importation of fossil fuels.</p>	<p>MAFF, MOC, GSSD</p>
	<p>4.6 Develop positive incentives from diversified and sustainable sources and that are respectful of biodiversity, our natural capital, to secure participation of all in the conservation and sustainable use of biological and genetic resources and the associated traditional knowledge while producing energy.</p>	<p>MME, MAFF, MOE, MRD, GSSD</p>
	<p>4.7 Integrate the best practices from the implementation of the energy sector strategy in communication, education, and public awareness programmes, using the national clearing-house mechanism.</p>	<p>MME, GSSD</p>

	4.8	Support cooperation between the departments of energy and relevant departments in other Ministries.	MME, GSSD
	4.9	Mobilize financial support for capacity building on techniques and research activities relating to green energy production.	MME, GSSD

Theme 15: Access and Benefit-Sharing

1. Background

The *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity* was adopted in 2010 in Nagoya, Japan at the tenth meeting of the Conference of the Parties (COP) to the Convention on Biological Diversity (CBD) in its decision X/1. The Protocol, which aims at sharing the benefits arising from the utilization of genetic resources in a fair and equitable way, including by appropriate access to genetic resources and transfer of relevant technologies and funding, is the result of long and delicate negotiations that started in 2005. These negotiations built on the Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization adopted in 2002 to assist Parties when establishing administrative, legislative or policy measures on access and benefit-sharing and/or when negotiating contractual arrangements for access to genetic resources and benefit-sharing, and following the call for action by Governments at the World Summit on Sustainable Development in 2002.

At the same meeting in 2010, the world community adopted the Strategic Plan for Biodiversity 2011-2020 containing Aichi Target 16, which states that by 2015, the Nagoya Protocol should become operational and be consistent with national legislations. The Protocol came into effect on 12 October 2014. Cambodia signed the Protocol in February 2012, translated it in the Khmer language and became Party on 19 April 2015.

Advantages expected from the Protocol are that³⁷:

- (a) Legal certainty with respect to access to genetic resources and the fair and equitable sharing of benefits arising from their utilization;
- (b) Compliance provisions of the Protocol as well as the provisions establishing more predictable conditions for access to genetic resources will contribute to ensuring the sharing of benefits when genetic resources leave a Party providing genetic resources;
- (c) The Protocol's provisions on access to traditional knowledge held by indigenous peoples/indigenous ethnic minorities and local communities when it is associated with genetic resources will strengthen the ability of these communities to benefit from the use of their knowledge, innovations and practices;
- (d) The Protocol will create incentives to conserve biological diversity, sustainably use its components, and further enhance the contribution of biological diversity to sustainable development and human well-being. This will result from the promotion of the use of genetic resources and associated traditional knowledge, and the strengthening of the opportunities for fair and equitable sharing of benefits from their use.

There exist other instruments³⁸ that support the objectives and implementation of the Protocol; including international agreements such as the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), Guidelines on Access and Benefit-sharing in research projects or codes of conduct, International Code of Conduct for Plant Germplasm Collecting and Transfer.

The fair and equitable sharing of the benefits arising out of the utilization of genetic resources is one of the three core objectives of the Convention on Biological Diversity (Article 1). A framework for its implementation is provided in Article 15 of the Convention. Many other CBD provisions³⁹ are of relevance to the objective and implementation of the Protocol. Some of the provisions in these articles are emphasized in the Preamble of the Protocol as follows:

- (a) Technology transfer and cooperation to build research and innovation capacities for adding value to genetic resources can make significant contributions to sustainable development, poverty eradication and environmental sustainability, and can thereby contribute to achieving the Millennium Development Goals;
- (b) Public awareness of the economic value of ecosystems and other biodiversity components, and the fair and equitable sharing of this economic value with the custodians of biodiversity are key incentives for the conservation of biological diversity and the sustainable use of its components;

- (c) Women play a vital role in access and benefit-sharing and therefore need to participate fully at all levels of policy-making and implementation for biodiversity conservation.

These articles and provisions of the Protocol articulate well what needs to be done by the Parties in order to implement the Protocol effectively. These articles also indicate that this theme is linked to many others in the Cambodia's NBSAP, such as themes 9 on Industry, Technology and Services; 15 on resource mobilization; 16 on community participation; 18 on Awareness, Education, Research Coordination and Development; or 22 on Technology and Information Sharing (CHM). At its first meeting held in 2014, the Conference of the Parties to the Convention on Biological Diversity Serving as the Meeting of the Parties to the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of the Benefits Arising from their Utilization provided additional detailed guidance with regard to measures needed for capacity-building and capacity development⁴⁰, and to measures for raising awareness of the importance of genetic resources and associated traditional knowledge⁴¹. They were used in the development of the strategic objectives under this theme and for the identification of the key actions for the implementation of these strategic objectives.

Accession to the Nagoya Protocol and adoption of legislation and policies on access to genetic resources and the sharing of benefits from the utilization of genetic resources is important for Cambodia. There is an estimated 3000 plant species, with at least 700 additional new species. In the year 2000, 8260 plant species were found in Cambodia, 10% of which are endemic. Access to this biodiversity needs to be regulated.

Cambodia has no existing legislation on access and benefit-sharing, but government ministries and institutions recognize its importance and a process to develop such legislation and policies is underway. Access and Benefit-Sharing (ABS) is a new topic to the public. There is therefore a limited understanding of access and benefit-sharing issues, making the formulation of a national policy challenging. There is a constraint in both expertise on ABS issues and financial resources.

2. Issues

The following key issues were identified:

- (a) Limited human and financial capacity for implementing ABS policies;
- (b) Lack of awareness on the ABS concept. At its first meeting, COP/MOP recognized that raising awareness amongst users of genetic resources was a priority for the effective implementation of the Nagoya Protocol and played a critical role for the overall success of the Protocol.
- (c) Poor communication, networking and policy development.

3. Strategic objectives

The following strategic objectives were adopted to address the identified issues:

- (a) **Strategic objective 1:** Strengthen Communication, Education and Public Awareness (CEPA) on access and benefits-sharing (ABS);
- (b) **Strategic objective 2:** Develop and implement a national ABS policy and legislation;
- (c) **Strategic objective 3:** Enhance the enabling environment for the development of ABS legislation and the implementation of the Nagoya Protocol on ABS and related legislation.

Table 19: Key actions and relevant ministries as well as agencies responsible for their implementation under the theme on “Access and benefit-sharing”

Strategic Objectives	Key Actions	Coordinating and participating ministries and agencies
<p>Strategic Objective 1: Strengthen Communication, Education and Public Awareness (CEPA) on access and benefits-sharing (ABS).</p>	1.1. Conduct an assessment of stakeholder capacities for access and benefit sharing (ABS).	MOE, GSSD
	1.2. Conduct a survey and assessment of the status of ABS education and educational material.	MOE, GSSD, MOEYS
	1.3. Analyze encountered ABS issues and identify gaps, challenges and opportunities for conducting CEPA on ABS.	MOE, GSSD, MOEYS
	1.4. Identify and distinguish target groups for formal, non-formal education and awareness-raising programs.	MOE, GSSD, MOEYS
	1.5. Identify resources needs for implementing CEPA-ABS program.	MOE, GSSD, MOEYS
	1.6. Develop and implement CEPA-ABS strategy based on identified needs and national circumstances.	MOE, GSSD, MOEYS
	1.7. Develop and implement CEPA-ABS Action Plan for individual target groups.	MOE, GSSD, MOEYS
	1.8. Establish a coordination mechanism to implement the Nagoya Protocol and national legislation on ABS in cooperation with regional and global organizations.	MOE, GSSD, MOEYS
	1.9. Build networks of relevant stakeholders, including indigenous ethnic minorities and local communities, academia, researchers, scientists and the private sector.	MOE, GSSD, MOEYS
	1.10. Develop institutional arrangements to implement the Nagoya Protocol and establish a well-functioning national competence authority and national focal points.	MOE, GSSD, MOEYS

	<p>1.11. Organize and conduct CEPA-ABS events such as: training activities, seminars, workshops, public forums, conferences.</p> <p>1.12. Develop educational and awareness materials, toolkits and media on ABS and traditional knowledge.</p> <p>1.13. Cooperate with regional and global networks to compile scientific evidence particularly for decision-makers.</p> <p>1.14. Mainstream ABS and traditional knowledge into educational curriculums for primary, secondary and high school.</p> <p>1.15. Develop and conduct a training of trainers program on ABS and traditional knowledge.</p> <p>1.16. Develop, manage, and maintain a user-friendly ABS-Traditional Knowledge (TK) information system and share widely at the national, regional and global levels.</p> <p>1.17. Employ the best available communication tools and internet-based systems for ABS activities including the Clearing-House Mechanism.</p> <p>1.18. Evaluate the effectiveness of awareness-raising activities and adjust the national awareness-raising strategy as appropriate based on feedback.</p>	<p>MOE, GSSD, MOEYS</p> <p>MOE, GSSD, MOEYS</p> <p>MOE, GSSD, MOEYS, MOP</p> <p>MOE, GSSD, MOEYS</p> <p>MOE, GSSD, MOEYS</p> <p>MOE, GSSD, MOEYS</p> <p>MOE, GSSD, MOEYS</p>
<p><u>Strategic Objective 2:</u> Develop and implement a national ABS policy and legislation.</p>	<p>2.1 Compile information and assess existing national policy and legal documents related to ABS and traditional knowledge, so as to identify gaps in light of the obligations of the Protocol.</p> <p>2.2 Establish a legal expert team or multi sectorial legal working group to review and analyze existing national policies, strategies, codes of conduct, and other relevant documents including <i>inter alia</i> community guidelines on natural resource use, community rights for land-use and property right policies.</p> <p>2.3 Identify individual stakeholders and key institutions that can contribute in the process of the national ABS policy and legislation development.</p>	<p>MOE, GSSD, MOEYS</p> <p>MOE, GSSD, MOEYS</p> <p>MOE, GSSD, MOEYS</p>

	<p>2.4 Identify traditional knowledge and ABS issues relating to the commercial and non-commercial uses of genetic resources to be considered for policy development.</p>	<p>MOE, GSSD, MOEYS</p>
	<p>2.5 Compile good practices on TK and sustainable use of natural resources by local community and the private sector for use in developing guidelines and for consideration in the development of ABS legislations and policies.</p>	<p>MOE, GSSD, MOEYS</p>
	<p>2.6 Identify the nature, characteristics, key aspects, and context of ABS policy and legislation that need to be developed.</p>	<p>MOE, GSSD, MOEYS</p>
	<p>2.7 Identify priority ABS policies, legislation and guidelines for immediate effect and action.</p>	<p>MOE, GSSD, MOEYS</p>
	<p>2.8 Develop an action plan for policy legislation development.</p>	<p>MOE, GSSD, MOEYS</p>
	<p>2.9 Develop ABS policy and law, including procedures for granting or refusing to grant prior informed consent (PIC), and measures to ensure law enforcement.</p>	<p>MOE, GSSD, MOEYS</p>
	<p>2.10 Strengthen coordination and collaboration with relevant stakeholders, including private sector and civil society to support the process of ABS policy development.</p>	<p>MOE, GSSD, MOEYS</p>
	<p>2.11 Enhance the capacity of government institutions and policy makers to support and adopt the national ABS policy through consultation meetings, workshops, conferences, and other means.</p>	<p>MOE, GSSD, MOEYS</p>
<p>Strategic Objectives 3: Enhance the enabling environment for the development of ABS legislation and the implementation of the Nagoya Protocol on ABS and related legislation.</p>	<p>3.1 Support a national focal point and one or more competent national authorities on access and benefit-sharing.</p> <p>3.2 Enhance participation and diversify governance, especially at the political levels.</p> <p>3.3 Assess capacity needs and priorities of indigenous ethnic minorities and local communities (LLCs) and relevant stakeholders, including the business sector and the research community.</p> <p>3.4 Strengthen the capacities of indigenous ethnic minorities and local communities, in particular women within those communities, and relevant stakeholders, including</p>	<p>MOE, GSSD</p> <p>MOE, GSSD</p> <p>MOE, MRD, GSSD</p> <p>MOE, MRD,</p>

	the business sector and the research community to handle ABS issues including for negotiating mutually agreed terms (MAT).	GSSD
	3.5 Develop minimum requirements, as appropriate, for MAT to secure the fair and equitable sharing of benefits arising from the utilization of relevant traditional knowledge.	MOE, MRD, GSSD
	3.6 Develop community protocols in relation to access to traditional knowledge and the fair and equitable sharing of benefits arising from the utilization of traditional knowledge.	MOE, MRD, GSSD
	3.7 Develop model contractual clauses for benefit-sharing arising from the utilization of traditional knowledge.	MOE, MRD, GSSD
	3.8 Enhance technological capacities.	MOE, GSSD
	3.9 Enhance sustainable financial capacities.	MOE, GSSD
	3.10 Strengthen the existing coordination mechanism and cooperation among stakeholders to implement ABS Action Plan and Program.	MOE, GSSD
	3.11 Strengthen the capacity of the national competent authority.	MOE, GSSD
	3.12 Strengthen knowledge and science-based decision-making.	MOE, GSSD MOEYS
	3.13 Establish internal networking and promote informational exchange among farmers, indigenous groups, local authorities, and beneficiaries of genetic resources.	MOE, GSSD, MOEYS, MAFF
	3.14 Pilot implementation of national ABS legislation and Nagoya Protocol on ABS at the national and sub national levels.	MOE, GSSD, MOEYS MAFF
	3.15 Promote endogenous scientific research on values of biodiversity, particularly genetic resources and on adding value to national genetic resources.	MOE, GSSD, MOEYS
	3.16 Compile baseline information and data on native and non-native species.	MOE, GSSD, MOEYS

	<p>3.17 Establish a functional ABS-CHM to promote ABS information sharing and international cooperation to comply with the national legislation and Nagoya Protocol on ABS.</p>	<p>MOE, GSSD, MOEYS</p>
	<p>3.18 Enhance understanding and organize information in user-friendly databases on the functioning, role, value and national requirements to access genetic resources for commercial and non-commercial use.</p>	<p>MOE, GSSD, MOEYS</p>
	<p>3.19 Make information on national ABS policies, relevant guidelines, and other tools of relevance to decision-making widely accessible.</p>	<p>MOE, GSSD, MOEYS</p>
	<p>3.20 Encourage the ways and means to respect local communities and traditional knowledge.</p>	<p>MOE, GSSD, MOEYS</p>
	<p>3.21 Integrate ABS issues and activities into relevant sector strategies and national sustainable development policies.</p>	<p>MOE, GSSD, MOEYS</p>
	<p>3.22 Implement national ABS policy and legislation, and additional specific provisions related to ABS from relevant regional and international agreements.</p>	<p>MOE, GSSD, MOEYS</p>
	<p>3.23 Enhance the contribution of benefits arising from the utilization of genetic resources to local livelihoods and national economy.</p>	<p>MOE, GSSD, MOEYS</p>
	<p>3.24 Ensure fair and equitable benefit sharing from genetic resource utilization and TK, with special attention to the most vulnerable groups especially indigenous peoples and local communities.</p>	<p>MOE, GSSD, MOEYS</p>
	<p>3.25 Ensure that national ABS policies are implemented individually or through networks within regional, sub national or groups of users, and contribute to the implementation of Cambodia's sustainable development goals including poverty eradication and the well-being throughout the nation.</p>	<p>MOE, GSSD, MOEYS</p>

Theme 16: Customary Sustainable Use and Traditional Knowledge

1. Background

For centuries, indigenous peoples and local communities have relied on home gardening, subsistence agriculture, fishing, hunting and the gathering of plant materials for food, medicines, and the like. As a result, over time, they have accumulated substantial knowledge that is relevant to sustainable resource use and management, and the conservation of biodiversity in their traditional territories. Customary use practices are learned and applied in hands-on settings and are transmitted orally. Although these customary use practices are maintained over the years, indigenous peoples and local communities have been able to adapt them to changes in environmental, social, economic and political conditions, as needed and within the limits set by the ecosystems in which they live.

When adopting the Convention on Biological Diversity, the world community acknowledged the interconnectedness and mutual reinforcement of biodiversity traditional knowledge and customary use in the preamble, as well as in Articles 8(j) and 10(c) of the Convention. It is important to note that these articles refer to customary use and traditional knowledge that are of communities whose traditional cultural practices are “compatible” with conservation and sustainable use of biodiversity.

In order to operationalize these articles, the Conference of the Parties (COP) to the Convention on Biological Diversity (CBD) endorsed a programme of work on Article 8(j) and related provisions in 2000 under Decision V/16, with the objective of promoting a just implementation of Article 8(j) and related provisions, at the local, national, regional and international levels and ensuring the full and effective participation of indigenous people and local communities at all stages and levels of its implementation. Subsequently, the Conference of the Parties to the CBD adopted additional tools of relevance to customary use and traditional knowledge:

- (a) The Plan of Action for the retention of traditional knowledge, innovations and practices (Appendix of decision VII/16, E).
- (b) The Akwé: Kon Voluntary Guidelines for the Conduct of Cultural, Environmental and Social Impact Assessments Regarding Developments Proposed to Take Place on, or which are Likely to Impact on, Sacred Sites and on Lands and Waters Traditionally Occupied or Used by Indigenous peoples and Local Communities;
- (c) The Tkarihwaí:ri Code of Ethical Conduct to ensure respect for the cultural and intellectual heritage of indigenous people and local communities; and
- (d) The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity.

In addition to the CBD, a number of other international frameworks contain provisions directly related to traditional knowledge and customary sustainable use: (i) the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, World Intellectual Property Organization; (ii) the International Treaty on Plant Genetic Resources for Food and Agriculture; and (iii) the 2007 United Nations Declaration on the Rights of Indigenous Peoples, and, to some extent, (iv) the Satoyama Initiative⁴².

In 2010, the COP to the CBD adopted the Strategic Plan for Biodiversity 2011-2020 with 20 so called Aichi Biodiversity Targets. Target 18 states that “by 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels”. Customary use and traditional knowledge are also relevant to the other targets. The CBD COP invited Parties to address customary sustainable use, in particular customary sustainable use policies, in their national biodiversity strategies and action plans, with the full and effective participation of indigenous peoples and local communities.

At its 12th meeting, the CBD COP invited the Working Group on Indicators of the International Indigenous Forum on Biodiversity and other international organizations, and particularly the Community-Based Monitoring and Information System approach, to operationalize the indicators on the status of traditional knowledge, innovations and practices and customary sustainable use of biological diversity

contained in document UNEP/CBD/WG8J/8/9: “Indicators relevant for traditional knowledge and customary sustainable use”⁴³. It was also recognized that many indigenous peoples and local communities are engaged in community-based initiatives that enhance the implementation of Article 10(c) at the national and local levels. Such initiatives include research and documentation of traditional knowledge and customary practices, education projects to revitalize indigenous languages and traditional knowledge associated with customary sustainable use of biological diversity, and community-based sustainable resource management plans. Some attention should also be given to traditional knowledge shared across borders as opportunities for international and regional cooperation.

The integration of Articles 8(j) and 10(c) of the CBD and their implementation as cross-cutting issues in the Strategic Plan for Biodiversity 2011-2020, the Aichi Biodiversity Targets, the national biodiversity targets, and the sustainable development goals is strategic, and a way to ensure the protection and maintenance of biocultural values for achieving human well-being. This was emphasized in the decision⁴⁴ taken by the CBD Conference of the Parties at its 12th meeting in 2014 regarding Article 8(j) and related provisions, which contains in its annex the Plan of Action on Customary Sustainable Use of Biological Diversity. Parties, other Governments, relevant organizations, indigenous peoples and local communities and stakeholders were all invited to implement the plan of action on customary sustainable use of biological diversity, taking into account diverse national circumstances including legal and policy regimes, and to report progress through the national reporting process. The first task in the Plan of Action is to incorporate customary sustainable use practices or policies, with the full and effective participation of indigenous peoples and local communities, into national biodiversity strategies and action plans.

The following points⁴⁵ from that Plan of Action, echoing the principles in the other international frameworks referred to above, represent an adequate basis for expressing the strategic goals and actions for the updated NBSAP:

- (a) Traditional knowledge should be valued, given the same respect and considered as useful and necessary as other forms of knowledge. The CBD Secretariat developed a Traditional Knowledge Information Portal in order to promote awareness and enhance access by indigenous peoples and local communities and other interested parties to information on traditional knowledge, innovations and practices relevant for the conservation and sustainable use of biological diversity;
- (b) Biodiversity, customary use of biodiversity by communities whose traditional lifestyles are relevant for the conservation and sustainable use of biodiversity and referred to hereafter as customary sustainable use, and traditional knowledge are intrinsically linked;
- (c) Indigenous peoples and local communities, through customary sustainable use of biological diversity, constantly shape and reshape social and ecological systems, landscapes, seascapes, plants and animal populations, genetic resources and related management practices. They are therefore well placed to adapt to changing conditions such as climate change, and thus contribute to strengthening the resilience of the social and ecological systems, as well as the generation of new knowledge;
- (d) Customary sustainable use of biodiversity is in line with and illustrates the ecosystem approach⁴⁶ and the Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity⁴⁷ (commonly referred to as “Addis Ababa Principles and Guidelines”);
- (e) The full and effective participation of indigenous peoples and local communities, in particular women, is of primary importance for the successful development and implementation of policies and programmes for customary sustainable use of biological diversity;
- (f) Cultural, social, economic and ecological elements associated with the traditional management systems of lands, waters and territories of indigenous peoples and local communities and their involvement in the management of these areas should be recognized, secured and protected, as they contribute to customary sustainable use of biological diversity;
- (g) Customary use practices are often linked to *sui generis* systems consisting of customary regulations, moral codes, ethical norms, and specific sanctions that help regulate equitable access to resources and help protect local resources from overuse, thus promoting

sustainability. *Sui generis* systems guiding customary use are by definition local and therefore unique, but they are usually guided by community protocols and other mechanisms such as common principles, least damage and waste in resource harvesting and use, harvesting within the safe ecosystem limits using strategies like seasonal closures and the creation of protected areas, protection of sacred species and sites, and protection of the rights of future generations to enjoy the benefits of biological diversity;

- (h) Because of the connections between customary use and traditional knowledge, it is important to consult and, as far as possible, involve indigenous peoples and local communities in all aspects of research, documentation, the establishment of related policy guidelines, and in all matters that will impact their lives or affect their wellbeing. Consideration of the right to free, prior and informed consent as reflected in the *United Nations Declaration on the Rights of Indigenous Peoples* and the promotion of ethical practices of research are important in this context.

2. Issues

The following key issues were identified:

- (a) Lack of baseline survey;
- (b) Pressure on land development and conversion;
- (c) Customary use and traditional rights are limited; and
- (d) No fair and equitable benefit sharing with indigenous ethnic minorities and local communities.

3. Strategic objectives

The following strategic objectives were adopted to address the identified issues

- (a) **Strategic objective 1:** Ensure that biodiversity customary sustainable use practices and traditional knowledge are valued, respected, protected and considered as useful and necessary for achieving Cambodia's biodiversity targets and for contributing to the country's sustainable development and poverty eradication;
- (b) **Strategic objective 2:** Support and strengthen community-based initiatives that contribute to the conservation and sustainable use of biodiversity;
- (c) **Strategic objective 3:** Apply traditional knowledge and customary sustainable use of biological diversity with the active involvement and effective participation of relevant indigenous ethnic minorities and local communities.

Table 20: Key actions and relevant ministries as well as agencies responsible for their implementation under the theme on “Customary Sustainable Use and Traditional Knowledge”

Strategic Objectives	Key Actions	Coordinating and participating ministries and agencies
<p>Strategic objective 1:</p> <p>Ensure that biodiversity customary sustainable use practices and traditional knowledge are valued, respected, protected and considered as useful and necessary for achieving Cambodia’s biodiversity targets and for contributing to the country’s sustainable development and poverty eradication.</p>	<p>1.1 Document customary sustainable use practices, related traditional knowledge and the possible <i>sui generis</i> systems guiding those customary use practices.</p> <p>1.2 Enhance awareness of the value of customary sustainable use practices and associated traditional knowledge.</p> <p>1.3 Integrate customary sustainable use practices and associated traditional knowledge in biodiversity resources management under all relevant themes of the NBSAP with the full and effective participation of representatives of the local communities and indigenous ethnic minorities.</p> <p>1.4 Operationalize the indicators on the status of traditional knowledge, innovations and practices and customary sustainable use, to assess progress towards achieving relevant actions in the NBSAP and the Cambodia Biodiversity Targets, as well as in the Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets.</p> <p>1.5 Value traditional knowledge shared across borders as opportunities for international and regional cooperation.</p>	<p>MOE, MAFF, MRD, GSSD, MOEYS</p> <p>MOE, MAFF, MRD, GSSD, MOEYS</p> <p>MOE, MAFF, MRD, GSSD</p>
<p>Strategic objective 2:</p> <p>Support and strengthen community-based initiatives that contribute to the conservation and sustainable use of biodiversity.</p>	<p>2.1 Mobilize funds and other forms of support to promote and strengthen community-based initiatives that contribute to the conservation and sustainable use of biodiversity, with the full and effective participation of local communities and indigenous ethnic minorities, including by supporting them in their development of project proposals for funding.</p> <p>2.2 Collate case studies, experiences and approaches on community-based natural resources management and make them available through, for example, the national CHM, the Traditional Knowledge Information Portal of the CBD Secretariat and the information portal of the International Indigenous Forum on Biodiversity (IIFB).</p>	<p>MOE, MAFF, MRD, GSSD, MOEYS, MOP</p>

	<p>2.3 Reinforce mechanisms that will promote cooperation regarding community-based initiatives among the relevant regional and global agreements signed / ratified by Cambodia, including <i>inher alia</i>, CBD, CITES, Ramsar Convention and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA).</p>	MOE, MAFF, MRD, GSSD, MOEYS
<p>Strategic objective 3: Apply traditional knowledge and customary sustainable use of biological diversity with the active involvement and effective participation of relevant indigenous ethnic minorities and local communities</p>	<p>3.1 Encourage the application of traditional knowledge and customary sustainable use of biological diversity in the planning, designing, establishment and management of protected and conservation areas and their integration in the wider landscapes and seascapes.</p> <p>3.2 Encourage the application of traditional knowledge and customary sustainable use of biological diversity in the recovery of endangered species, and in the establishment and management of <i>ex-situ</i> conservation areas.</p> <p>3.3 Encourage the application of traditional knowledge and customary sustainable use of biological diversity in land-use planning, and landscape and seascape management.</p> <p>3.4 Ensure the application of traditional knowledge and customary sustainable use of biological diversity in the management of plant, animal and microbial resources in all biomes, including agricultural lands, inland waters, marine and coastal areas and forests, and other resources such as mineral and energy resources.</p> <p>3.5 Ensure the application of traditional knowledge and customary sustainable use of biological diversity in awareness-raising, research and education programmes.</p> <p>3.6 Promote the development and conservation of traditional knowledge of the indigenous ethnic minorities and local communities in order to maintain the cultures and traditions of these minorities, including by undertaking research and documentation of traditional knowledge and customary practices, education projects to revitalize indigenous languages and traditional knowledge associated with customary sustainable use of biological diversity, and community-based sustainable resource management plans.</p>	MOE, MAFF, MRD, GSSD, MOEYS

GROUP 3: ENABLING ENVIRONMENT (Themes 17 to 24)

Theme 17: Industry, Technology and Services (Manufacturing, Biotechnology and Biosafety, and Tourism)

Sustainable Manufacturing Industry Management

1. Background

The manufacturing industry in Cambodia is composed of a few thousand large, medium or small-scale enterprises that have either a direct or indirect impact on the environment. Garment, tanning, textile, plastic, rubber, rice milling and other food processing, fishing, wood and wood products, rubber, cement, gem mining, tube factories and construction, tourism, and oil and natural gas industries can impact biodiversity adversely through the discharge of gaseous, liquid and solid wastes that cause water, air and soil pollution. They can also have an adverse impact on biodiversity through habitat fragmentation and degradation, as well as overexploitation of biological resources.

At the time of the adoption of the 2002 NBSAP, most factories did not have environmental management systems and there was no environmental impact assessment procedure in place for new industrial projects. Considering that increasing the environmental performance of the manufacturing industry would not only improve its efficiency but would also facilitate the selling of industrial products on environmentally sensitive international markets, the NBSAP focused strategically on awareness-raising so as to promote the use of environmentally friendly processes, adequate management of hazardous and other waste materials, environmental pollution control and monitoring systems and environmental impact assessments in the manufacturing sector.

Since the adoption of the 2002 NBSAP, there have been a lot of awareness-raising programmes on biodiversity, including in the manufacturing sector, as well as considerable improvements in hazardous and other waste management, and equipment for monitoring and analyzing environmental performance of the manufacturing industry. However, awareness-raising efforts should continue to be pursued and the capacity for EIA and monitoring environmental performance should be strengthened continuously, bearing in mind the expansion of the manufacturing sector.

Over the last decade, the Cambodian economy has been shifting away from the agriculture, forestry and fisheries sector towards manufacturing, more specifically to the garment industry, which represents the largest portion of Cambodia's manufacturing sector and operates largely on the final phase of garment production. This final phase includes turning yarns and fabrics into garments, as the country lacks a strong textile manufacturing base. Agriculture is still important in rural areas, where most people depend on paddy cultivation for subsistence. The toxic pollution from laundry factories and from the garment sector, and diverse liquid and solid wastes continue to be important challenges in the manufacturing industries.

With the adoption of the Green Growth Roadmap and following the recommendations of Rio+20, Cambodia set to “develop a national strategy for greening industries: based on resource efficiency and 3R strategies; and develop measures to strengthen the national environmental industry sector”. “Green manufacturing aims to reduce the amount of natural resources needed to produce finished goods through more energy- and materials efficient manufacturing processes that also reduce the negative externalities associated with waste and pollution”⁴⁸.

As noted in the Green Growth Roadmap, interventions that can improve the environmental quality of waste management include: environmental awareness campaigns on community levels; the identification and monitoring of proper dumping sites; better enforcement; the education of youth on the importance of the environment; control of the importation of second hand goods; and promotion of local-level self-governance and leadership to improve decentralized coordination of these efforts. There is also a need to improve and effectively enforce the sub-decree on solid waste management, applying not only to the proper management of solid wastes and/or garbage, but also to the management of hospital waste, industrial waste and other hazardous waste. Apart from sound management strategies, the RGC can also look into waste-to-energy options including options for bio-digesting or waste incineration.

The promotion of green businesses and green products should be continued so as to increase resource efficiency and increase life-cycle approaches to production of commodities. This way, waste will not be created in the first place. Such a change in products and services may be more labor intensive than

business-as-usual, but it would also further employment generation, for instance, by promoting cleaner products to ensure sustainable development of industry. For developing countries, facilitating the green manufacturing processes can stimulate innovation and enhance international competitiveness, translating into opportunities for increasing trade and global market share⁴⁹. Furthermore, manufacturing green products in specific sectors can enable developing countries to tap into growing international markets for sustainable products.

2. Issues

The manufacturing sector is faced with a number of challenges, particularly as it relates to sustainability. These challenges include: scarcity of fresh water, energy sources and other resources or raw materials; inefficient uses of scarce resources entailing economic losses and accelerating resource depletion; pollution (such as greenhouse gas (GHG) emissions, particulate matter, and sulphur dioxide, among others), which accelerates not only climate change, but also degrades ecosystems and causes health risks; hazardous substances and wastes; and large amounts of energy consumption which continue to increase with the expansion of the industry. Establishing some of these industries can take up a lot of space and ends up promoting deforestation for urban development and roads; this is exacerbated in the cases where the best technologies need to be acquired.

3. Strategic objectives

The following strategic objectives were adopted to address the issues relating to manufacturing industries:

- (a) **Strategic objective 1:** Assess the impact of manufacturing industries on genetic resources, species, habitats or ecosystems and related ecosystem services that are important for sustainable development and poverty reduction in Cambodia;
- (b) **Strategic objective 2:** Prevent and, as needed, reduce possible negative impacts of manufacturing industries on Cambodia's important biodiversity components; and
- (c) **Strategic objective 3:** Strengthen the enabling environment for the implementation of the actions under this theme.

The manufacturing industries under consideration greatly depend on biological resources (listed under the strategic themes in Thematic Groups 1 and 2 of this NBSAP) as raw materials. When they are well managed, they can be a source of funds for contributing to biodiversity budgets and trust funds, thus enhancing the enabling environment (strategic themes under Group 3). When they are not well managed, they can be a source of pollution and can lead to the overexploitation of biological resources and to biodiversity loss. Thus, as recommended in the 2009 NSDS, raw materials should be used efficiently and the remaining products recycled. The efficient use of materials means less waste generation.

Biotechnology and Biosafety

1. Background

As described in the Convention on Biological Diversity, biotechnology means any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use. Biotechnology has applications in medicine, agriculture, food production, and non-food industrial uses of plants, as well as in environmental uses. "Modern biotechnology", which is the application of (i) *in vitro* nucleic acid techniques, including recombinant deoxyribonucleic acid (DNA) and direct injection of nucleic acid into cells or organelles, or (ii) fusion of cells beyond the taxonomic family, has been proposed in the past decades for use, among other applications, to boost crop production and possibly solve the hunger issue in the world. Genetically modified crops include crops with resistance to certain pests, diseases, stressful environmental conditions, chemical treatments (e.g. herbicides), and spoilage during storage, or crops with improved nutrient profile. However, these techniques have raised a lot of concerns regarding human health, conservation of biodiversity, in particular genetic diversity.

Reports indicate that living modified organisms resulting from modern biotechnology (LMOs) or other GMOs have not yet been introduced in Cambodia or are being developed domestically. However, reportedly some foreign companies have expressed their intention to introduce LMO/GMO crops, such as maize and rice, into the country.

Cambodia acceded to the Convention on Biological Diversity in 1995. In Article 8(g), the Convention calls Parties to “establish or maintain means to regulate, manage or control the risks associated with the use and release of living modified organisms resulting from biotechnology which are likely to have adverse environmental impacts that could affect the conservation and sustainable use of biological diversity, taking also into account the risks to human health.” In accordance with the Convention, each Contracting Party has to take legislative, administrative or policy measures addressing the possible risks from modern biotechnology.

At the time of the adoption of the 2002 NBSAP, Cambodia did not have any protection measures in place against living modified organisms and lacked capacity in the field of modern biotechnology. Thus the NBSAP included strategical measures to develop modern biotechnology education and capacity, including national biosafety legislation and action plan required to prevent environmental and health hazards associated with the development, use and release of living modified organisms, and protect indigenous biodiversity from living modified organisms.

After adoption of 2002 NBSAP, Cambodia acceded to the Cartagena Protocol on Biosafety in 2003. The objective of the Protocol is to contribute to ensuring an adequate level of protection in the field of the safe transfer, handling and use of living modified organisms resulting from modern biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health, and specifically focusing on transboundary movements.

Progress in relation to the Protocol includes:

- (a) The establishment of a biosafety clearing house in 2006 with the Ministry of Environment to enhance cooperation with line agencies, the private sector, academic institutions, and for sharing information with the CBD secretariat and other Parties to the Cartagena Protocol;
- (b) An extension in 2004 of the mandate of the National Biodiversity Committee to also cover biosafety issues, and the development of Guidelines⁵⁰ for Risk Assessment and Risk Management of Living Modified Organisms;
- (c) In 2008, the adoption of a national law on biosafety⁵¹, and the development of a draft National Action Plan on Biosafety and Biotechnology;
- (d) The organization of a series of capacity-building training workshops for technical staff of relevant national and provincial institutions covering risk assessment and risk management resulting from LMOs, LMOs monitoring and management of biosafety, LMOs detection and monitoring, compliance and enforcement of transboundary movements of LMOs.⁵² However, these workshops need to be better coordinated and organized more efficiently;
- (e) Establishment of a Secretariat of the National Steering Committee for Biosafety (NSCB), and the designation of a National Focal Point and the National Competent Authority for the Protocol, with the Ministry of Agriculture, Forestry and Fishery being the chairperson of the Scientific Advisory Team (SAT), as well as a National Focal Point for the Biosafety Clearing-House;
- (f) The Ministry of Environment organized several awareness-raising sessions including debates on TV, and produced materials for public awareness such as newsletters and brochures. Some materials such as the supplementary protocol were translated into Khmer; and
- (g) The country established a biotechnology laboratory for the identification and detection of LMOs imported into the country, so as to support decision-making for issuing import approval letters.

In 2010, the Conference of the Parties served as the meeting of the Parties to the Protocol adopted in decision BS-V/16 of the Strategic Plan for the Cartagena Protocol on Biosafety for the Period 2011-2020 and its multi-year programme of work, with the following strategic objectives: (i) facilitating the establishment and further development of effective biosafety systems for the implementation of the Protocol; (ii) capacity-building; (iii) compliance and review; (iv) information sharing; (v) outreach and cooperation, to be implemented through a ten-year programme of work for the Protocol, supported by biennial work plans. Parties were urged to align their biosafety national action plans and programmes and their National Biodiversity Strategies and Action Plans with this Strategic Plan, and allocate adequate human and financial resources so as to expedite the implementation of the Strategic Plan.

2. Issues

The following key issues were identified:

- (a) Limited capacity in the field of modern biotechnology
- (b) Public awareness, participation and education in biosafety

3. Strategic objective

The following strategic objective was adopted to address the identified issues.

Strategic objective 1: Further the implementation of the National Action Plan on Biosafety and Biotechnology (2010-2014) and revise it in the context of the Cartagena Protocol on Biosafety and its Strategic Plan, and assess the contribution of these activities to the conservation and sustainable use of biodiversity, sustainable development and poverty reduction in Cambodia.

Sustainable Tourism

1. Background

In Cambodia, tourism is the third largest economic sector after agriculture and the garment industry. This sector is rapidly expanding, with the national revenue from tourism increasing 17-fold from USD 100 million in 1995 to USD 1,786 million in 2010, and generating 315,000 jobs in the same year⁵³. The target for the tourism sector, in terms of the number of tourist arrivals is 4.5 million by 2015, and 6.1 million international tourists by 2018, while the target for domestic tourists is 10.5 million; which is equivalent to the creation of 700,000 jobs⁵⁴. Cambodia's potential for different types of sustainable tourism, including ecotourism and green tourism is immense because of the country's rich cultural and natural heritage. The sustainable development of Cambodia's tourism thereby relies greatly on the protection and preservation of the country's socio-cultural heritage and environment, and its biodiversity (landscapes, genetic resources used for example in the culinary art, charismatic and endemic wildlife), in addition to the development of environment-friendly infrastructures and human resources.

At the time of the adoption of the 2002 NBSAP, Cambodia was aware of the potential impact of the expanding tourism on its natural environment from wastes, pollution and habitat degradation caused by unorganized tourism. Setting up and implementing some controls and guidelines for tourism were recognized as necessary measures for keeping the environment as healthy and intact as possible. In 2002 Cambodia was also in the process of strengthening its network of protected areas and cultural sites with the involvement of local communities as a way to contribute to the development of tourism. While increased tourism is a target, it was also recognized that the building of new roads and hotels for tourists would require care in order to prevent the negative impacts that these infrastructures would have on landscapes and the integrity of natural ecosystems. Services associated with hotel activities would also need to be well managed in order to prevent pollution and environmental degradation. In addition, Cambodia was conscious of the need to raise public awareness and train tour operators and tourism guides on the principles of sustainable and responsible tourism.

While focusing on the development of tourism activities that were respectful of the environment and that met the needs and expectations of local communities, the 2002 NBSAP provided the following strategic recommendations to:

- (a) Integrate biodiversity conservation and environmental management concerns into tourism policy and development plans and guidelines, including by subjecting tourism projects to social impact assessments and environmental impact assessments as prerequisite for granting authorization;
- (b) Develop ecovillage-based tourism and eco-tourism opportunities involving local communities; and
- (c) Integrate tourism and conservation of cultural heritage and nature by promoting tourism in protected areas, and monitor and manage the impacts of tourism in these areas.

Since the adoption of the 2002 NBSAP, the Conference of the Parties to the CBD adopted the Guidelines for Biodiversity and Tourism Development (Decision VII/14) that Parties are always encouraged to apply, particularly in "tourism and conservation hotspots", areas where there is both significant

biodiversity and significant pressure or potential pressure from tourism (see COP 12 decision on Biodiversity and Tourism Development in UNEP/CBD/COP/12/L. 23).

Cambodia made significant progress in improving the sustainability of the tourism sector:

- (a) Life-skills are part of the education curriculum to support tourism and other key economic sectors such as agriculture and information technology, in line with the Rectangular Strategy;
- (b) The Law on Tourism was promulgated in 2009. Its purpose in relation to biodiversity is to (i) govern the development of the tourism sector in a sustainable manner, effectively and qualitatively, and to reduce poverty; (ii) protect and conserve the natural resources, culture and customs, which serve as the foundation of the tourism sector; and minimize negative impacts while maximizing positive impacts of the tourism sector (Article 2);
- (c) The Ministry of Tourism (MOT) developed a strategic action plan for creating environmentally sustainable tourism, creating incentives for ecotourism development, including green-certification schemes for hotels, guesthouses and eco-lodges. The criteria for eco-tourism includes, among others, energy-efficiency, composting, waste-segregation, use of renewables such as biogas, and use of locally produced organic rice and organic products⁵⁵;
- (d) Community Based Tourism Development is being promoted to improve economic development and increase job opportunities;
- (e) In 2010, Cambodia's Ministry of Tourism developed a National Ecotourism Policy and Strategic Plan, building on the understanding and appreciation of the important role that biodiversity plays in promoting Cambodia as an attractive destination⁵⁶;
- (f) With the adoption of the National Forest Programme strategy in 2010, Cambodia is promoting and strengthening its management of protection forests, some of which are protected for eco-tourism, and is planning to integrate tourism development wildlife protection with sustainable harvesting of wildlife resources based on sound practices and results of scientific studies and researches. A set of rules and regulations, including population census, hunting season, harvest quotas, target species, trophy fees, royalties and hunting methods need to be developed in accordance with recognized national or international game hunting practices standards as well as knowledge of target species' ecology.

2. Issues

The following key issues were identified:

- (a) Pollution and habitat degradation caused by unorganized tourism.
- (b) Public awareness and training of tour operators and tourism guides.
- (c) Construction that can take up a lot of space and promote deforestation for urban development and roads.
- (d) Lack of adequate technology, knowledge and poor planning.

3. Strategic objectives

The following strategic objectives were adopted to address the identified issues

- (a) **Strategic objective 1:** Gather biodiversity information of relevance to tourism development, including inventorying nature based-tourism sites;
- (b) **Strategic objective 2:** Prevent tourism activities from impacting biodiversity negatively and, as needed, apply corrective measures where tourism has negative impacts on Cambodia's important biodiversity components;
- (c) **Strategic objective 3:** Strengthen measures relating to tourism that have a positive impact on biodiversity and thus enhance the benefits from biodiversity and associated ecosystem services to all in Cambodia ;
- (d) **Strategic objective 4:** Strengthen the enabling environment for the implementation of the actions for a sustainable tourism.

It is obvious that actions under all the other strategic themes can have an impact on the development and success of tourism in Cambodia.

Table 21: Key actions and relevant ministries as well as agencies responsible for their implementation under the theme on “Industry, Technology and Services (Manufacturing, Biotechnology and Biosafety, and Tourism)”

Strategic Objectives	Key Actions	Coordinating and participating ministries and agencies
<i>Manufacturing industries</i>		
<p>Strategic objective 1: Assess the impact of manufacturing industries on genetic resources, species, habitats or ecosystems and related ecosystem services that are important for sustainable development and poverty reduction in Cambodia.</p>	<p>1.1 Assess amount of waste and hazardous materials from manufacturing industries.</p> <p>1.2 Document data and information related to the waste, air and wastewater from the industrial sector.</p> <p>1.3 Document life-cycle of manufactured products.</p>	<p>MIH, GSSD, MAFF, MOI MOINF, MOP, MOE, MOC</p> <p>MIH, MOE, MAFF, MOI, GSSD, MOP, MOINF, MOC</p> <p>MIH, MOE, MAFF, MOI, GSSD, MOP, MOINF, MOC</p>
<p>Strategic objective 2: Prevent and, as needed, reduce possible negative impacts of manufacturing industries on Cambodia’s important biodiversity components.</p>	<p>2.1 Identify and describe the direct and indirect factors in manufacturing industries that are causing these industries to have a negative impact on Cambodia’s important biodiversity components.</p> <p>2.2 Apply measures to control the factors responsible of the negative environmental impacts of manufacturing industries.</p> <p>2.3 Restore the sites affected negatively by manufacturing activities.</p> <p>2.4 Control industrial wastewater discharge in compliance with national and international criteria and standards.</p> <p>2.5 Control industrial solid waste and/or municipal waste disposal in compliance with national and international criteria and standards.</p> <p>2.6 Develop and disseminate guidelines for greening manufacturing industries, including the development and implementation of environmental policies for the respective manufacturing industries, based on resource efficiency and the concept of 3R (reduce resources use and production of wastes; re-use and recycle and thus be clean, without polluting the environment; and</p>	<p>MIH, MOE, MOI, MAFF, GSSD</p> <p>MIH, MOE MOI, GSSD</p> <p>MIH, MOE MOI, GSSD</p> <p>MIH, MOE MOI, GSSD</p> <p>MIH, MOE MOI, GSSD</p> <p>MIH, MOE MOI, GSSD</p> <p>MIH, MOE MOI, GSSD</p>

	green, with preserving greenery, waterways and the natural heritages).	
	2.7 Establish expert teams to guide and assist with the greening of manufacturing industries.	MIH, MOE, MOI, GSSD
	2.8 Strengthen pollution control and monitoring on the industrial areas.	MIH, MOE, MOI, GSSD
	2.9 Reduce the environmental impact of existing industries and ensure that the new ones have a low ecological footprint.	MIH, MOE, MOI, GSSD
	2.10 Further mainstream biodiversity into the Green Growth Roadmap adopted by Cambodia in 2009 and in the Sustainable Development Goals.	MIH, MOE, MOI, GSSD
	2.11 Identify and apply incentive measures that will promote the greening of manufacturing industries.	MIH, MOE, MOI, GSSD
	2.12 Develop schemes for innovative environment-friendly investments.	MIH, MOE, MOI, GSSD
<u>Strategic objective 3:</u> Strengthen the enabling environment for the implementation of the actions under this theme.		
	3.1 Enforce the legislation and policies regulating the amount of waste and hazardous materials from manufacturing industries.	MIH, MOE, GSSD
	3.2 Enhance awareness of environmental issues in the industry sector.	MIH, MOE, MOI, GSSD
	3.3 Enhance awareness programs on Environmental Impact Assessment and Environmental Pollution Control and Monitoring System for the manufacturing sector.	MME, MOE, MAFF, MOC, GSSD
	3.4 Acquire equipment for monitoring and analyzing, and build a database.	MIH, MOE, GSSD
	3.5 Develop measures to orient or discipline the behavior of private actors, so as to promote compliance with sustainability criteria along the supply chain.	MIH, MOE, GSSD
	3.6 Build capacity through training workshops on: <ul style="list-style-type: none"> a. The use of environmentally friendly processes in the manufacturing sector (Indicator: number of companies reached through awareness; campaign or number of participants in training workshops); 	MIH, MOE, GSSD

	<p>b. The use of Environmental Management Systems (EMS) in medium and large size companies (Indicator: number of participants in training workshops and number of companies using EMS);</p> <p>c. Establishing environmental management systems; and</p> <p>d. Using Life Cycle Analysis tools.</p>	
	<p>3.7 Establish and use biodiversity-inclusive EIA procedure for new industrial development projects.</p>	MIH, MOE, GSSD
	<p>3.8 Promote environmental initiatives that are cost effective.</p>	MIH, MOE, GSSD
	<p>3.9 Adopt certification or ecolabelling systems and ISO standards. Develop clean technologies. Develop and adopt 3R policy in manufacturing industries.</p>	MIH, MOE, GSSD
	<p>3.10 Mainstream concepts of green manufacturing in education and training programmes, including for universities, government officials and the private sector.</p>	MIH, MOE, MOEYS, GSSD
<i>Biotechnology and biosafety</i>		
<p><u>Strategic objective I:</u> Further the implementation of the National Action Plan on Biosafety and Biotechnology (2010-2014) and revise it in the context of the Cartagena Protocol on Biosafety and its Strategic Plan, and assess the contribution of these activities to the conservation and sustainable use of biodiversity, sustainable development and poverty reduction in Cambodia.</p>	<p>1.1. Develop biosafety capacity-building action plans, well-coordinated at the local and national levels, for implementing the Cartagena Protocol on Biosafety and the Nagoya – Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety⁵⁷.</p> <p>1.2. Establish a national directory of human resources trained and/or working on subjects concerning biotechnology and Biosafety, and assess capacity-building needs, including training and institutional needs.</p> <p>1.3. Raise public awareness, and promote training, education and participation concerning the safe transfer, handling and use of living modified organisms (LMOs).</p> <p>1.4. Establish regulatory (national biosafety legislation and related guidelines) and administrative (administrative rules and procedures for handling notifications and requests for approval of imports of LMOs intended for direct use as food or feed, or for processing; contained use; and for</p>	<p>MOC, GSSD, MME, MOE, MAFF</p> <p>MOE, MME MAFF, MOC, GSSD</p> <p>MOE, MME, MAFF, MOC, GSSD</p> <p>MOE, MME MAFF, MOC, GSSD</p>

	introduction into the environment) rules consistent with the Protocol	
	1.5. Establish a system for enforcement of the Cartagena Protocol on Biosafety. Adopt and widely use guidance on risk assessment and risk management	MOE, MME, MAFF MOC, GSSD
	1.6. Integrate biosafety issues and the implementation of the Protocol into the relevant sectors	MOE, MME, MAFF GSSD, MOC
	1.7. Carry out research to provide relevant guidance on socio-economic considerations that may be taken into account in reaching decisions on the import of living modified organisms	MOE, MME, MAFF, MOP, MOC GSSD
	1.8. Mainstream biosafety into national development plans and relevant sectoral policies, strategies and programmes, including development assistance programmes	MOE, MME, MAFF MOP, MOC GSSD
	1.9. Mobilize additional financial resources and technical support for the implementation of the Protocol, as one of the major prerequisites of successful implementation of activities planned in the Protocol and within the overall framework of the Strategy for Resource Mobilization in support of the Convention on Biological Diversity	MOE, MME, MAFF, MEF MOC, GSSD
	1.10. Revise National Action Plan on Biosafety and Modern Biotechnology in a more pragmatic and implementable way, contributing to environmental protection, biodiversity protection and taking into account risk to human health	MOE, GSSD MAFF, MEF MOC
Tourism		
Strategic objective 1: Gather biodiversity information of relevance to	1.1 Identify areas where there is both significant biodiversity and significant pressure or potential pressure from tourism ⁵⁸	MOT, GSSD MAFF, MOE MCFA

<p>tourism development, including inventorying nature based-tourism sites</p>	<p>1.2 Compile and manage, within the clearing-house mechanism, information on the status, value and location of the components of biodiversity of touristic importance, and on measures taken to protect them and use them sustainably. This information should come from all sources of knowledge, including local and indigenous communities, scientists and citizens. It should comprise:</p> <ul style="list-style-type: none"> a. Biodiversity resources, including protected areas and any special features and sites of particular importance, and threatened resources. This should include a review and monitoring of recreation, visitation and other tourism activities in protected areas, as well as impacts and relevant management processes in ecologically sensitive areas; b. Culturally sensitive areas; c. A review of national and other sectoral plans, policies and strategies relevant for tourism development and biodiversity; d. Cultural, environmental and social impact assessments <p>1.3 Review legislation and policies relevant to biodiversity and tourism including, <i>inter alia</i>, assessment of the effectiveness of any measures for resource management, access and/or ownership by communities, especially indigenous ethnic minorities and local communities in relation to tourism development</p> <p>1.4 Review the status and plans of the tourism sector, tourism policy and tourism markets and trends, and their expected overall positive and possible negative impacts, at the national and regional level.</p> <p>1.5 Study the benefits from, and costs of, tourism to indigenous ethnic minorities and local communities</p>
<p>Strategic objective 2:</p> <p>Prevent tourism activities from impacting biodiversity negatively and, as needed, apply corrective measures where tourism has negative impacts on Cambodia's important biodiversity components</p>	<p>2.1 Apply the voluntary biodiversity-inclusive guidelines⁵⁹ for strategic environmental assessment and environmental impact assessment when planning activities relating to tourism</p> <p>2.2 Assess the impact of tourism on genetic resources, species, habitats or ecosystems and related ecosystem services that are important for sustainable development and poverty reduction in Cambodia</p>

	<p>2.3 Identify and apply measures to reduce the negative impacts of tourism activities</p> <p>2.4 Minimize the negative impacts of tourists on the biodiversity of tourism attraction areas.</p>	<p>GSSD, MOE, MAFF, MOT MCFA</p> <p>GSSD, MOE, MAFF, MOT MCFA</p>
<p>Strategic objective 3: Strengthen measures relating to tourism that have a positive impact on biodiversity and thus enhance the benefits from biodiversity and associated ecosystem services to all in Cambodia</p>	<p>3.1 Identify the benefits of tourism to biodiversity and economic and social development, bearing in mind that these benefits may take various forms, including: job creation, fostering local enterprises, participation in tourism enterprises and projects, education, direct investment opportunities, economic linkages and ecological services</p> <p>3.2 Rehabilitate some natural and cultural sites to add value to the sites and receive ecotourists.</p> <p>3.3 Maximize the environmental, social and economic benefits from tourism, including by carrying research projects for this purpose</p>	<p>MOT, MOE, MAFF, MEF MCFA GSSD</p> <p>MOE, GSSD MAFF, MOT</p> <p>GSSD, MOE, MAFF, MOT MCFA</p>
<p>Strategic objective 4: Strengthen the enabling environment for the implementation of the actions for sustainable tourism</p>	<p>4.1 Promote communication, education and public awareness activities for the general public and tourists on sustainable travel choices, and on the use of eco-labels, standards and certification schemes, if appropriate.</p> <p>4.2 Set up a national master plan to promote ecological tourism in protected area systems.</p> <p>4.3 Integrate biodiversity conservation and environmental management concerns into tourism policy and development plans and guidelines, including mandatory environmental impact assessments for tourism development projects.</p> <p>4.4 Integrate the conservation of cultural heritage and nature through the development of tourism programs in demarcated areas for protected area landscapes.</p> <p>4.5 Encourage and support village-based tourism development program, including the inventory of potential projects, guidelines for nature-based tourism development, community approach strategies, promotion of local products, conservation of historical sites and ecosystems, and promotion of</p>	<p>GSSD, MOE, MAFF, MOT MCFA</p> <p>MOE, GSSD MAFF, MOT MLMUPC, MRD, MOP</p> <p>GSSD, MOE, MAFF, MOT MCFA</p> <p>GSSD, MOE, MCFA, MAFF, MOT</p> <p>GSSD, MOE, MAFF, MOT MCFA</p>

	cultural heritage and family values	
4.6	In order to improve policy development and implementation, strengthen coordination among the various levels of decision-making in Government departments and agencies concerned with the management of biodiversity and tourism, as well as agencies responsible for broader national economic development.	GSSD, MOE, MAFF, MOT MCFA
4.7	Support existing multi-stakeholder bodies (such as the Biodiversity Steering Committee and the Technical Working Group) so that they can promote cooperation, effective dialogue and information-sharing with stakeholders, and play an effective role in resolving conflicts that might arise in relation to tourism and biological diversity.	GSSD, MOE, MAFF, MOT MCFA
4.8	Support the public and private sector to reach a united view on sustainable tourism and develop master plans for sustainable tourism for key tourism destinations in Cambodia.	MOT, GSSD, MOE, MAFF
4.9	Integrate programmes on issues relating to tourism and biodiversity into education, capacity-building and awareness-raising.	GSSD, MOE, MAFF, MOT MOEYS, MCFA, MOP
4.10	Develop guidelines building on best/good practices for use in training and education programmes ⁶⁰ .	GSSD, MOE, MAFF, MOT MOEYS, MCFA
4.11	Regularly monitor the environmental impact of tourism activities, particularly in protected areas, and develop management plans to address those impacts.	GSSD, MOE, MAFF, MOI MCFA, MOT
4.12	Re-enforce institutional arrangements so as to provide for the comprehensive involvement of stakeholders in the management of tourism that is respectful of biodiversity.	GSSD, MOE, MAFF, MOT, MCFA
4.13	Increase the capacity for using biodiversity-inclusive EIA and SEA, and the Akwé: Kon Guidelines to evaluate the impact of tourism.	GSSD, MOE, MAFF, MOT, MCFA
4.14	Develop and support community-based tourism and ecotourism.	GSSD, MOE, MAFF, MOI, MCFA, MOT

	<p>4.15 Build the capacity of national and subnational protected area and conservation area agencies to engage in partnerships with the tourism industry to contribute financially and technically to the operations and maintenance of protected areas through appropriate tools such as concessions, public-private partnerships, payback mechanisms and other forms of payments for ecosystem services, in complement to public budgetary allocations and without prejudice to public mandates and obligations toward achieving Aichi Biodiversity Target 11 and Cambodia Biodiversity Target 8.</p>	<p>MOE, GSSD, MAFF, MOI, MCF, MOT</p>
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Theme 18: Resource Mobilization

1. Background

This theme is about strategic ways and means to mobilize the resources needed to advance the conservation of biological diversity and the sustainable use of its components so as to achieve sustainable development, poverty reduction, the Sustainable Development Goals and the well-being of the people in Cambodia. This theme focuses on funding, while recognizing that money alone is not sufficient to achieve the conservation of biodiversity and the sustainable use of its components as described in the Strategic Plan for Biodiversity 2011-2020 and the National Biodiversity Strategy and Action Plan adopted by Cambodia in 2002. Thus, although the focus under this theme is on financial resources, it is understood that resource mobilization includes also mobilization of human resources, the strengthening of institutions, acquisition and use of new technologies, introduction of positive economic incentives, enhanced engagement of business and other stakeholders, and equitable sharing of benefits from the utilization of genetic resources.

For over a little more than two decades, various projects with significant capacity-building components⁶¹ have been carried out by bi- or multilateral organizations or by international NGOs. Many of them have not achieved their capacity building objectives to the fullest and have had insufficient impact on the conservation of biodiversity and the sustainable use of its components for the benefit of sustainable development. As noted in the 3rd National Report, The UNDP/GEF supported the Cambodia National Capacity Self-Assessment Project for Global Environmental Management, which identified gaps in terms of national capacity to ensure effective management of the nation's biodiversity.

Regarding financial resources, the 2002 NBSAP⁶² referred to financing under different themes such as protected areas and community-based management. The Strategy called for financial sustainability, the creation of favorable conditions for investors, an increase in the annual financial contribution of the government while encouraging financial mobilization at the international level, and transparency in all financial dealings related to natural resource exploitation.

An assessment of the implementation of the 2002 NBSAP twelve years after its adoption indicates that insufficient financing is a major constraint to achieving its objectives. Lack of resources is also a main obstacle in the achievement of the other biodiversity related conventions ratified by Cambodia. It is therefore critical that the updated/revised strategy and action plan for biodiversity identifies the most effective ways and means to mobilize the financial resources needed.

In 2008, the Conference of the Parties to the CBD approved a strategy for resource mobilization in support of the achievement of the three objectives of the Convention and the 2010 biodiversity target. The strategy is contained in the annex to decision IX/11 of the CBD Conference of the Parties. It aims to assist governments and relevant organizations in enhancing international financial flows and domestic funding for biodiversity, in order to achieve a substantial reduction of the current funding gaps in support of biodiversity. The strategy takes into consideration a wide range of possible local, national, regional and international funding sources, both public and private, and puts emphasis on the following during its implementation: (i) efficiency and effectiveness, (ii) synergies, (iii) innovation, (iv) capacity-building, (v) awareness-raising, (vi) gender and socio-economic perspectives. The strategy is articulated around 8 goals that provide a suitable framework for the actions that Cambodia has considered in its effort to mobilize resources for the implementation of its revised NBSAP, which integrate the biodiversity objectives of all the regional and global agreements it has ratified.

There are challenges to resource mobilization. However, Cambodia has already gained valuable experience with resource mobilization for the 2002 NBSAP. The following are some of the opportunities for future mobilization of financial resources:

- (a) Cambodia adopted policies, strategies and roadmaps that are favorable to the mobilization of resources for activities that support and lead to sustainable development and poverty eradication. For example, the Green Growth Roadmap developed by the Ministry of Environment (MOE) in 2009 is a supporting framework for environmentally sustainable and socially inclusive development and growth in Cambodia. This roadmap creates the basis for environmentally sound economic development through promotion of sustainable consumption and production, green business and greening the market, development of sustainable infrastructure, green tax and budget reform. The priority sectors identified in the

strategy include agriculture, infrastructure, urban development, employment and the development of human resources. The roadmap also aims to align all relevant Ministries, institutions, NGOs, international organizations, development partners and academia to cooperate in addressing current challenges to sustainable development;

- (b) As part of the effort to increase resources for the implementation of CBD, a national capacity self-assessment (NCSA) accompanying an action plan for national capacity development regarding implementation of the 3 Rio Conventions was developed and adopted by the government in 2007. The Prime Minister⁶³ made a call to those who care about biodiversity, land quality, climate change adaptation and mitigation, and poverty reduction to support the National Capacity Self-Assessment (NCSA) Action Plan and push for a long term plan;
- (c) There are major bilateral donors including Australia, Canada, China, Denmark, France, Germany, Japan, the Republic of Korea, the Netherlands, New Zealand, Sweden, the United Kingdom and the United States. However, as stated in the 5th National Report, a large part of the funds provided through bilateral agreement are used by NGOs or businesses from the respective donor country;
- (d) Various international NGOs are active in the region; to name a few: the Mekong River Commission (MRC), the World Fish Center and the ASEAN Regional Centre for Biodiversity Conservation (ARCBC);
- (e) Major multilateral donors include the United Nations (particularly UNDP), the European Union, the World Bank, the Asian Development Bank and the International Monetary Fund;
- (f) The Hollywood movie star, Angelina Jolie, has donated USD 10 million towards the biodiversity conservation project at Roneam Daun Sam and Samlaut Protected Areas;
- (g) Entry fees collected from visitors' access to Biosphere Reserves and National Parks, as well as income from forest concession, fishery concession and fishing taxes will be placed in the national coffers and returned as annual budget allocation for the management of the respective areas.

2. Issues

In Cambodia, the main issues regarding the resources needed for the implementation of the updated NBSAP are as follows:

- (a) Limited Government budget;
- (b) Low technology and lack of equipment;
- (c) Limited human resources; and
- (d) Language barrier.

3. Strategic objectives

The following strategic objectives were adopted to address the identified issues

- (a) **Strategic objective 1:** Enhance human resource development and engagement in biodiversity conservation and sustainable use;
- (b) **Strategic objective 2:** Make operational at the national level the Biodiversity Resource Mobilization Strategy adopted under the Convention on Biological Diversity;
- (c) **Strategic objective 3:** Strengthen the national technology capacity;
- (d) **Strategic objective 4:** Strengthen and enhance coordination of national institutions dealing with biodiversity issues.

Resource mobilization and capacity building are critical elements of the “enabling” cluster and as such constitute a key component in almost every project.

Table 22: Key actions and relevant ministries as well as agencies responsible for their implementation under the theme on “Resource Mobilization”

Strategic Objectives	Key Actions	Coordinating and participating ministries and agencies
<p>Strategic objective 1:</p> <p>Enhance human resource development and engagement in biodiversity conservation and sustainable use.</p>	<p>1.1. Building on previous national capacity assessments, assess the knowledge, skills and corresponding human resources required to implement this NBSAP.</p> <p>1.2. Organize consultation workshops to monitor and carry out a valuation of staff, and describe the roles and responsibilities of Ministries, their departments/agencies and other stakeholders currently involved in the key actions under the various themes of this Strategy.</p> <p>1.3. Develop and implement a human resource strategic plan, bearing in mind the current capability of existing educational and training establishments, and taking into account the short term as well as long term needs for implementing the actions identified in this NBSAP, the possibility of synergy among the strategic themes, and the possibility of South-South and North-South cooperation that exist to fill certain gaps in skills and expertise.</p> <p>1.4. Develop a technology system for human resource management.</p> <p>1.5. Promote budgetary allocations in national and relevant sectoral budgets for human capacity building.</p>	<p>MOE, GSSD, MAFF, MOEYS</p> <p>MOE, GSSD, MOEYS, MEF, MOP</p> <p>MOE, MOP, MOEYS, GSSD</p> <p>MOE, GSSD</p> <p>MOE, GSSD MAFF, MOP MOEYS</p>
<p>Strategic objective 2:</p> <p>Make operational at the national level the Biodiversity Resource Mobilization Strategy adopted under the Convention on Biological Diversity.</p>	<p>2.1 Start assessing financial needs by calculating the full cost of implementing each of the actions planned in the revised NBSAP, including an assessment of the ecological, genetic, socioeconomic, scientific, educational, cultural, recreational and aesthetic values of the important components of biological diversity.</p> <p>2.2 Identify institutions across multiple sectors and describe their specific role in financing the actions planned in the NBSAP.</p> <p>2.3 Undertake a reform of economic incentives that will promote the private/business sector engagement in conservation efforts.</p>	<p>MOE, GSSD MAFF, MEF</p> <p>MOE, GSSD MAFF, MEF</p> <p>MOE, GSSD MAFF, MEF</p>

	<p>2.4 Collect information from relevant actors/investors/donors (including GEF) on budgets and expenditures for the actions identified under each of the themes in the revised NBSAP, if possible across several years so as to gain a baseline overview of expenditures by institution and by key action.</p>	<p>MOE, GSSD, MAFF, MEF</p>
	<p>2.5 Develop and implement a resource mobilization strategy through the following actions:</p> <p>2.5.1 identify, screen and prioritize potential finance actors and biodiversity finance mechanisms; and assess how much funds each source can generate</p> <p>2.5.2 integrate considerations on biodiversity and its associated ecosystem services into national priorities and development plans by 2015, and thereby have the appropriate domestic financial provisions for biodiversity made in the budgets of those plans</p> <p>2.5.3 develop an operational plan with the necessary steps and timeframes</p> <p>2.5.4 identify robust baselines if targets have to be determined in the strategy</p> <p>2.5.5 Mobilize domestic financial resources from all sources, including, <i>inter alia</i>, the public sector, the private sector, and through new and innovative financial mechanisms, to significantly reduce the gap between identified needs and available resources at domestic level, for effectively implementing by 2020 the Strategic Plan for Biodiversity 2011-2020.</p> <p>2.5.6 Innovative mechanisms that can be explored and used include, but are not limited to, the reduction or redirection of environmentally-harmful subsidies, notably those related to intensive agriculture; application of policy options for improved stewardship of the country's natural capital, such as payments for ecosystem services; environmental fiscal reform, investments in ecological infrastructure, biodiversity offset mechanisms; access and benefit-sharing initiatives; environmental fiscal reforms including innovative taxation models and fiscal incentives for achieving the three objectives of the Convention; markets for green products; business-biodiversity partnerships and mobilization of international private sector contributions to biodiversity conservation through initiatives such as REDD+, the Green Development Mechanism (GDM) initiative, Earth Fund initiative; new forms of charity; and some new funds under the UNFCCC such as the Adaptation Fund (the <u>Least Developed Countries Fund (LDCF)</u> and the <u>Special Climate Change Fund (SCCF)</u>),</p> <p>2.5.7 Establish the trust funds planned under the Environment Law, the Protected Areas Law, the Law on Forestry and the like.</p>	<p>MOE, GSSD, MAFF, MEF</p>

	<p>2.6 Develop and implement ways and means to reduce the economic costs of biodiversity loss, including by addressing the drivers of biodiversity loss.</p> <p>2.7 Ensure coordination among funding partners at the national, regional and international levels for efficiency and to avoid unnecessary duplication.</p> <p>2.8 Build the human capacity to carry out these activities and raise awareness in support of resource mobilization, including strengthening capacities of relevant ministries and agencies to make the case for including biodiversity and its associated ecosystem services in discussions with donors and relevant financial institutions; promote budgetary allocations for biological diversity and its associated ecosystem services in national and relevant sectoral budgets.</p>	<p>MOE, GSSD, MAFF, MEF</p> <p>MOE, GSSD, MAFF, MEF</p> <p>MOE, GSSD, MAFF, MEF</p>
<p><u>Strategic objective 3:</u> Strengthen the national technology capacity.</p>	<p>3.1 Carry out a technology needs assessment for the implementation of this NBSAP and assess the potential benefits, costs and risks of the identified technologies, with a view to ensuring that acquired technologies are economically viable, socially acceptable and environmentally friendly.</p> <p>3.2 Create an enabling environment, including policies, human capacities, research institutions, cooperation/networking and budgets, for technology development, acquisition and adaptation, building on actions for implementing Articles 16 to 19 as well as the related provisions of the CBD.</p> <p>3.3 Develop, acquire and adapt technologies that are relevant to the conservation of biodiversity and the sustainable use of its components, and that do not cause undesirable damage to the environment, building on ongoing initiatives and programmes, for instance, under other conventions and international agreements, with a view to maximizing synergies and avoiding unnecessary duplication.</p>	<p>MOE, GSSD, MAFF, MOEYS</p> <p>MOE, GSSD, MAFF, MOEYS</p> <p>MOE, GSSD, MAFF, MOEYS</p>
<p><u>Strategic objective 4:</u> Strengthen and enhance coordination of national institutions dealing with biodiversity issues.</p>	<p>4.1 Inventory the institutions dealing with biodiversity at the local and national levels, including for research, education and other types of training (universities and specialized centers), information storage and dissemination (e.g., CHM, BCH), policy development and implementation, legislation and law enforcement, planning, designing, monitoring and environmental impact assessment.</p> <p>4.2 Identify and implement ways and means to strengthen complementarity and synergy among these institutions.</p>	<p>MOE, GSSD, MAFF, MOEYS, MOP</p> <p>MOE, GSSD, MAFF, MOEYS, MOP</p>

Theme 19: Community Participation

1. Background

At the time of the adoption of the 2002 NBSAP, a number of pilot projects were underway applying community-based natural resource management (CBNRM) principles to forestry and fisheries in different regions of the country. In 2001, for example, the Government undertook a fishery reform policy whereby some 500,000ha of prime commercial fishing grounds were turned over to local communities for their management. The success of these projects demonstrated that CBNRM is indeed an extremely valuable option to address problems of rural poverty and biodiversity conservation and sustainable use. As a result, the government decided to expand the CBNRM approach beyond fisheries and forestry into other sectors including land-use planning, wildlife management, protected areas, tourism and agriculture. In protected areas and protected forests, due to the limited number of rangers and the importance of the protected resources to local livelihoods, the Government increasingly engaged community groups in the protection and sustainable management of protected areas and protected forest resources. Various biodiversity conservation measures, in particular for adaptation to climate change, are to be implemented at the community level for success and cost-effectiveness.

Community participation implies the regular involvement of members of the community (that is, local authorities, women, youth, elders, communal and religious leaders, members of the indigenous ethnic minority groups, non-governmental organizations and the private sector) in natural resources planning, decision taking and policy-making, implementation, monitoring and reporting processes through multi-stakeholder consultations.

In order to ensure the success of CBNRM, support must be provided to building environmental awareness, understanding and empowerment, particularly in rural communities, and to helping people organize their communities. Legal and institutional frameworks are needed to support and enforce the communities' rights to use and protect their resources. Incentives and financial resources are also usually needed.

Knowing this, the NBSAP focused on addressing the following: (i) insufficient participation and involvement of the population and the private sector in biodiversity resource protection and management; (ii) lack of trained staff and of government capacity to undertake CBNRM; and (iii) limited financial support for CBNRM.

More specifically, the 2002 NBSAP targeted:

- (a) The development of community-based natural resource management programs for forestry, fisheries, land-use, protected areas, wildlife in particular threatened species protection, *ex situ* conservation, wildlife management, and agriculture; and
- (b) Implementation of legal, economic and other incentive measures promoting the contribution and participation of the different stakeholders to the conservation and sustainable use of biodiversity, including through strengthening institutional training in community-based natural resource management.

After the adoption of the 2002 NBSAP, Cambodia embarked on the process of decentralization and democratization, including the establishment of elected Commune Councils in early 2002. Active community groups were identified and supported to improve their capacity to interact with the Commune Councils, while at the same time seeking ways for the Commune Councils to support the different groups. The Ministry of Rural Development (MRD) undertook a programme for the development of indigenous ethnic minorities and local communities in order to enhance the quality of life of their members, as well as maintain their traditional culture, customs and beliefs.

Building on the decentralization and democratization processes set forth in the 2004 Rectangular Strategy, both MOE and MAFF have been promoting and encouraging the participation of local community members and ethnic minority groups in meetings, seminars and workshops to provide ideas and comments on the management of natural resources. MOE and MAFF developed the necessary guidelines and encouraged the local people living in and around the protected areas and protected forests to create community protected areas (CPA) and community forestry (CF). The number of CPAs created by and under MOE increased from 3 CPAs in 1999 to 120 CPAs in 2013. The number of CFs under management of FA/ MAFF is 453. The Community Fisheries Network, the Community based Eco-

tourism Network, and the Network of Participatory Land-use planning were also established⁶⁴. Co-management with the full participative involvement of local people throughout the process, from planning through to the monitoring of achievements, has become a fundamental principle in the implementation of strategies relating to biodiversity conservation and sustainable development. This principle is included in various strategies adopted by Cambodia such as the Strategic Planning framework for fisheries, the Cambodia Climate Change Strategic Plan 2014-2023, the eco-village⁶⁵ concept, and the Green Growth Roadmap.

However, capacity-building and financial support for CBNRM are limited. These limitations have slowed down the development of community-based programmes. Also there is no data on the development of the community based wildlife protection programmes.

2. Issues

The following key issues were identified:

- (a) Insufficient participation and involvement of the population and private sector to biodiversity resource protection and management.
- (b) Lack of trained staff and of government capacity to undertake CBNRM.
- (c) Lack of financial support for CBNRM.

3. Strategic objective

The following strategic objective was adopted to address the identified issues:

Strategic objective 1: Enhance effective and efficient community participation in natural resource management.

The success in implementing conservation and the sustainable use of biological resources and ecosystem services under the themes in Thematic Groups 1 and 2 and in implementing the CBD Articles 8(j), 10(c) and related provisions will require the effective participation of local communities and indigenous ethnic minorities who depend directly on biodiversity. Within the CBD and other biodiversity-related conventions, indigenous and local communities have been acknowledged as being key partners in achieving the goals of these treaties, and their knowledge, innovations and customary sustainable use practices as being essential for efficient, sustainable and economic ecosystem management, also for the conservation of biodiversity including genetic diversity. In addition, resource mobilization; awareness – raising and education; coordination of work for landscape and seascape management; respect of traditional knowledge, know-how and practices; the provision of the Nagoya Protocol; and knowledge sharing and information exchange will all support the participation of communities in the implementation of this NBSAP. The full and effective participation of indigenous ethnic minorities and local communities, at all relevant levels of the integration of traditional knowledge in the implementation of the Convention and this NBSAP is part of the Cambodia Biodiversity Target 17.

Table 23: Key actions and relevant ministries as well as agencies responsible for their implementation under the theme on “Community Participation”

Strategic Objectives	Key Actions	Coordinating and participating ministries and agencies
<p>Strategic objective 1: Enhance effective and efficient community participation in natural resource management.</p>	<p>1.1. Document the effectiveness of community participation, and assess the level of socioeconomic benefits gained by village development committee (VDC) community members from their participation in natural resource management, and develop guidelines building on best practices.</p> <p>1.2. Strengthen institutional training in community-based natural resource management, in particular for sustainable forest management, sustainable agriculture and animal production, sustainable fisheries and aquaculture, sustainable protected area system management and tourism, sustainable energy biomass production, and water resources management.</p> <p>1.3. Develop community based wildlife protection programs.</p> <p>1.4. Develop community based forestry programs.</p> <p>1.5. Develop community based agriculture programs.</p> <p>1.6. Develop community based fisheries and aquaculture programs.</p> <p>1.7. Develop community based land-use and rural development programs.</p> <p>1.8. Develop community based protected areas and conservation areas.</p> <p>1.9. Develop community based ecotourism.</p> <p>1.10 Develop community based production and utilization of biomass for energy</p>	<p>MAFF, MOE, MRD, MLMUPC, MOWA, MOP</p> <p>MAFF, MOE, MRD, MLMUPC, MOWA, MOP</p> <p>MAFF, MRD and MOWA</p> <p>MAFF, MRD and MOWA</p> <p>MAFF, MRD and MOWA</p> <p>MAFF, MRD, MOE and MOWA</p> <p>MLMUPC, MRD, MOP, MPWT, MOE, MAFF and MOWA</p> <p>MOE, MAFF</p> <p>MOE, MAFF MOT</p> <p>MOE, MAFF MME</p>

Theme 20: Awareness, Education, and Research Coordination and Development

1. Background

As stated in the country's Poverty Reduction Strategy Paper (PRSP), education is a crucial factor in human development. It contributes in myriad ways to poverty reduction, including by providing awareness to better make use of opportunities for economic progress. This sector is therefore accorded high-priority in RGC's development agenda. Increasing public awareness and an understanding of the importance of biodiversity is an essential element in guaranteeing the effectiveness of measures to achieve the conservation and sustainable use of the natural capital sustaining life and human well-being in Cambodia. In order to be efficient, awareness and education activities have to be supported by adequate scientific research and documentation. For efficiency and enhanced synergy, and in the framework of the ecosystem approach or similar approaches, the research being carried out by various bodies within the government, knowledge institutions and non-governmental organizations need some coordination.

Environmental education in Cambodia had a relatively short history at the time of the adoption of the 2002 NBSAP. The most notable government activities of relevance began with the establishment of the Ministry of Environment (MOE) and the Inter-ministerial Steering Committee for Environmental Education (IMSCEE) in 1993. Activities directly or indirectly related to biodiversity included training seminars and capacity building workshops, production of manuals on environmental education for primary school teachers, TV spots, posters, and conducting a national environment day. A department of environmental sciences was opened at the Royal University of Phnom Penh in 2001 to undertake research on environmental issues. Ministries and other institutions also had opportunities to undertake research on biological resources. It was the government's intention to better coordinate the development of such research activities between ministries and university departments.

Despite its short history, environmental education received both technical and financial assistance from the United Nations and other international organizations. In addition to the initiatives in the formal education sector, different ministries, international organizations, international and local NGOs were also carrying out environmental activities in the non-formal education sector to promote community-based environmental learning and activities or using educational tools to promote better forestry and agricultural practices. The geographical scope of these activities, however, was limited. There was a need to expand these activities to cover the whole country and reach everyone, especially local communities living in high biodiversity areas and areas that hosted threatened species. In ministries, training activities were mainly needed at the technical and managerial level in forestry, agriculture, fisheries, wildlife and protected area management.

The focus of the 2002 NBSAP was therefore on the (i) shortage of manpower and expertise in the field of biodiversity and sustainable resource management, to be addressed through training programmes on environment conservation and management of natural resources; (ii) weak integration of biodiversity and, in general, environmental concepts in educational curricula and materials; (iii) insufficient awareness and understanding of biodiversity issues and related laws, particularly among local communities who required translated educational and awareness materials into Khmer; (iv) weak national research activities, particularly at the Royal University of Phnom Penh, mainly due to limited financial resources and the lack of technical training for Government staff in biodiversity management. A National Biodiversity Research, Training, Information Center and Library was identified as a solution among others.

Since the adoption of the 2002 NBSAP:

Regarding awareness-raising:

- (a) The Ministry of Environment is carrying out an awareness programme on biodiversity, climate change, and biosafety⁶⁶; the Ministry of Agriculture, Forestry and Fisheries regularly conduct debates on animal production, fisheries and forestry protection. The Ministry of Tourism, the Ministry of Rural Development, the Ministry of Interior, provincial authorities and various NGOs are implementing several awareness and training programmes on biodiversity conservation at different locations. Due to limited human and financial resources, the last large scale national environmental education and awareness campaign was organized in 2005 as part of the GEF supported Tonle Sap Environmental Management Project (TSEMP);
- (b) National Biodiversity Day, International Wetland Day, World Water Day, National Fish Day

and National Tree Planting Day are celebrated annually throughout the country to enhance awareness.

Regarding education

- (a) Building on the Royal Government's 2003-2015 "Education for All" Plan, MOEYS is integrating environmental issues, especially biodiversity and ecology, into national school curriculum. The objective is to upgrade knowledge and skills, and to change student behavior regarding biodiversity conservation and sustainable use, while demonstrating its value to human health, agriculture (e.g. home garden, rice cultivation, string bean growing, organic vegetables, mushroom farm, fish, frog and chicken raising), forestry (timber and non-timber forest products), water resources, tourism and sustainable development. The Japan International Cooperation Agency (JICA) and the UNDP are particularly active in assisting Cambodia in incorporating an environmental education programme into primary and secondary school curricula. A range of train-the-trainer materials on environmental topics have been developed and used; many training materials have also been developed in Khmer.
- (b) The government has also substantially increased the budget for the education sector and achieved remarkable progress in improving cooperation in education with development partners including NGOs and the private sector.
- (c) At least three of the universities in Cambodia, namely the Royal University of Agriculture, the Royal University of Phnom Penh, and Prek Agricultural College, offer courses in life sciences, including biology, fisheries, forestry, animal production, veterinary sciences, land-use, and microbiology. Master's degrees in biodiversity conservation and related fields are also available.
- (d) Even with limited resources, the Department of Early Education and Care (DEEC) and other organizations have also been conducting a range of formal and informal education activities in the field with local communities and the media. MOE has even developed a new local language website – www.moe.gov.kh. It is considered, however, that without a vision and consistent unifying messages, the effectiveness of these environmental education activities is greatly diminished.

Regarding research development and coordination,

The Government and partner organizations are conducting programmes that include the establishment of three research and development institutes to address issues in the agriculture, fisheries and forestry sectors; namely the Cambodian Agricultural Research and Development Institute, the Forest Development and Research Institute, and the Inland Fisheries Development and Research Institute. Moreover, various research centers have been operating particularly for the above three sectors.

It is important to note that there are a lot of awareness-raising, training and research activities under other strategies, plans and programmes of relevance to biodiversity (e.g. under the NFP Strategy notably at the Forest -Wildlife Research and Development Institute (FWRDI), the 2009 National Green Growth Roadmap or the Cambodia Climate Change Strategic Plan 2014-2023) that are not listed here. Work under this theme needs to be well coordinated with these activities for effectiveness, synergy and efficient use of limited resources.

2. Issues

The following key issues were identified:

- (a) Lack of awareness and understanding of biodiversity issues among local people;
- (b) Limited extension services and facilities devoted to environmental awareness;
- (c) Limited integration of environmental concepts in educational curricula;
- (d) Shortage of manpower and expertise in the field of sustainable resource management;
- (e) The infancy of basic research in all fields of natural resources protection and sustainable use;
- (f) Lack of funding for environmental education and research;
- (g) Lack of environmental training and education materials in Khmer; and
- (h) Gaps in the Biodiversity Status Report.

3. Strategic objectives

The following strategic objectives were adopted to address the identified issues

- (a) **Strategic objective 1:** Enhance biodiversity awareness at all levels of society, including through facilitated access to relevant information; also strengthen existing channels and create new ones that will facilitate targeted awareness programmes aimed at key audiences such as rural communities and indigenous ethnic minorities, community elders, the private sector, staff in relevant Ministries and at provincial level, parliamentarians, women, the youth and media;
- (b) **Strategic objective 2:** Strengthen education and training programmes on biodiversity and related issues so as to achieve a critical mass of educated, skilled, talented, capable people for the implementation of this NBSAP and related strategies and plans;
- (c) **Strategic objective 3:** Support biological, ecological and socioeconomic research in the fields of plants, animals and microorganisms from terrestrial, marine and other aquatic habitats, and the ecosystems of which they are a part, and ensure adequate coordination of this research so as to take full advantage of complementarities and synergies.

These strategic objectives and the key actions identified below will enable Cambodia to implement Article 12 and 13 of the Convention on Biological Diversity, the relevant decisions taken by the CBD Conference of the Parties under Communication, Education and Public Awareness (CEPA) and regarding capacity building for the implementation of the Convention, the Strategic Plan for Biodiversity 2011-2020 and the actions under all the themes of this NBSAP. Progress on activities carried out to achieve this Target will facilitate the delivery of other targets associated with the NBSAP. Likewise, if other targets are achieved such as Cambodia target 3 (on the integration of biodiversity values into national and sub-national development and poverty reduction strategies and planning processes), target 17 (on traditional knowledge), target 19 (on the establishment of an interoperable and user-friendly information system) and target 2 (on resource mobilization), they will likely facilitate awareness-raising of biodiversity.

Table 24: Key actions and relevant ministries as well as agencies responsible for their implementation under the theme on “Awareness, Education, and Research Coordination and Development”

Strategic Objectives	Key Actions	Coordinating and participating ministries and agencies
<p>Strategic objective 1:</p> <p>Enhance biodiversity awareness at all levels of society including through facilitated access to relevant information; also strengthen existing channels and create new ones that will facilitate targeted awareness programmes aimed at key audiences such as rural communities and indigenous ethnic minorities, community elders, the private sector, staff in relevant Ministries and at provincial level, parliamentarians, women, the youth and media</p>	<p>1.1 Undertake a survey of people’s awareness of biodiversity so as to develop baseline information on awareness.</p> <p>1.2 Develop and implement a Communication, Education and Public Awareness (CEPA) strategy for Biodiversity, building on the CEPA strategy of the CBD, specifying the target audiences (whose awareness should be raised), the types of activities (how awareness should be raised), and the scale of the activity (by how much awareness should be raised).</p> <p>1.3 Strengthen biodiversity awareness programmes (including mass media campaigns, biodiversity web site, national biodiversity day, high-level events, publications, posters, TV and radio spots and documentaries, workshops, as much as possible targeted to specific groups/sectors, in collaboration with national NGOs and universities) and ensure coordination with similar awareness-raising activities being undertaken under other relevant strategies, plans and programmes for effectiveness, synergy and efficient use of limited resources.</p> <p>1.4 Establish a National Biodiversity Research, Disseminate, Training and Information Center and Library.</p> <p>1.5 Further develop the Biodiversity Status Report by collecting taxonomic data in all the groups of biodiversity components, as well as in all the representative areas of Cambodia, and develop the capacity needed for these activities.</p>	<p>MOE, GSSD, MOEYS, MAFF, MIME, MLMUPC, MOH, MCR and MOWA</p> <p>MOE, GSSD, MOEYS, MAFF, MIME, MLMUPC, MOH, MCR and MOWA</p> <p>MOE, GSSD, MOEYS</p> <p>MOE, GSSD, MAFF and MOEYS</p>
<p>Strategic objective 2:</p> <p>Strengthen education and training programmes on biodiversity and related issues so as to achieve a critical mass of educated, skilled, talented, capable people for</p>	<p>2.1. Mainstream environmental and biodiversity issues into the curricula at all levels of education, not only under biological sciences but also under other natural sciences such as physics and chemistry, and under human sciences in particular social sciences and economics, and ensure coordination with similar training and education activities being undertaken under other relevant strategies, plans and</p>	<p>IMSCEE, MOEYS and MOE, GSSD, MAFF</p>

<p>the implementation of this NBSAP and related strategies and plans</p>	<p>programmes for effectiveness, synergy and efficient use of limited resources</p>	
	<p>2.2. Strengthen capacity of Government staff and staff from any relevant agencies in biodiversity conservation, sustainable use and management</p>	<p>MOE, GSSD and MAFF</p>
	<p>2.3. Set up training programs on the management and conservation of natural resources, targeting members of communities who depend directly on biodiversity as a priority.</p>	<p>MAFF, MOE, GSSD MOEYS</p>
<p><u>Strategic objective 3:</u> Support biological, ecological and socioeconomic research in the fields of plants, animals and microorganisms from terrestrial, marine and other aquatic habitats, and the ecosystems of which they are a part, and ensure adequate coordination of this research so as to take full advantage of complementarities and synergies</p>	<p>3.1. Develop and coordinate biodiversity research programs for efficiency in the country, and more specifically at the Royal University of Phnom Penh, ensuring coordination with research activities being undertaken under other relevant strategies, plans and programmes for effectiveness, synergy and efficient use of limited resources including: the NFP strategy, the 2009 National Green Growth Roadmap or the Cambodia Climate Change Strategic Plan 2014-2023</p>	<p>RUPP, RUA</p>

Theme 21: Legislation and Institutional Structure

1. Background

At the time of the adoption of the 2002 NBSAP, the legal coverage of biodiversity related issues was inadequate and poorly enforced, and the public was not much aware of the legislation related to the environment. As such, the existing legislation concerning biodiversity was under revision, with by-laws and regulations related to the 1996 Law on Environmental Protection and Natural Resource Management being prepared, for example.

Thus, the 2002 NBSAP focused on the following strategic objectives and actions

- (a) Adoption of legislation, bylaws and regulations related to biodiversity issues, such as protected areas, endangered species, biosafety, water protection, pesticide control, property rights, community-based natural resource management, and land-use planning; clarification of ministerial jurisdiction and overlap prevention; and national campaign for raising awareness of environmental legislation;
- (b) Law enforcement through adequate incentive measure;
- (c) Implementation of Environmental Impact Assessment guidelines and institutional capacity building for applying EIA;
- (d) Implementation of regional and international biodiversity obligations from MEA;
- (e) Provision of support to the Biodiversity Steering committee and Secretariat with the mandate of coordinating NBSAP implementation.

Since the adoption of the 2002 NBSAP,

- (a) Cambodia has passed many new laws including the Forestry Law (2002), Land Law (2003), Fisheries Law (2006), Water Resource Management Law (2007), Protected Areas Law (2008), Biosafety Law (2008), Law on Crop Seed Management and Rights of Plant Breeders (2008) and related regulations⁶⁷, however there is still limited implementation and enforcement;
- (b) Cambodia ratified a number of international and regional agreements that are being implemented at a relatively slow pace due to limited financial resources. There is a strong need for synergies in the implementation of these commitments to guarantee complementary and mutual reinforcement. Stronger synergies at the national level will minimize the unnecessary duplication of efforts, it will avoid contradictions and make for a more efficient use of the available resources.
- (c) The roles and responsibilities of key ministries have been clarified but some roles still overlap;
- (d) Public awareness on legislation has been improved;
- (e) After EIA law was promulgated, a series of capacity building activities had been organized to strengthen institution, however more training is still needed.

2. Issues

The following key issues were identified:

- (a) Inadequate management standards in the different activity sectors
- (b) Overlap, fragmentation and inadequate co-ordination between authorities responsible for the protection, conservation and management of resources
- (c) Inadequate legal coverage of biodiversity related issues
- (d) Lack of public awareness on legislations related to the environment
- (e) There is a need to strengthen existing institutions and mechanisms that will ensure effective law enforcement.

3. Strategic objectives

The following strategic objectives were adopted to address the identified issues:

- (a) **Strategic objective 1:** Promote an effective and coherent implementation of policies and legislations relating to biodiversity.
- (b) **Strategic objective 2:** Strengthen existing national and regional institutions addressing biodiversity issues.

The long-term conservation, sustainable use and management of biological resources and ecosystems (see themes under Groups 1 and 2) require stable institutions and legal and policy frameworks that are supported by monitoring, as well as extension, awareness-raising, capacity-building, and sustainable financing programmes (Group 3 themes).

Table 25: Key actions and relevant ministries as well as agencies responsible for their implementation under the theme on “Legislation and Institutional Structure”

Strategic Objectives	Key Actions	Coordinating and participating ministries and agencies
<p>Strategic objective 1:</p> <p>Promote an effective and coherent implementation of policies and legislations relating to biodiversity.</p>	<p>1.1 Compile legislations, strategies, plans and programmes relating to biodiversity, and develop “Temateq⁰⁸ like” issue-based modules that will facilitate coherent and coordinated actions and implementation at the national and regional levels, and that will reinforce cross-sectoral understanding and cooperation.</p> <p>1.2 Develop or, as appropriate, amend by-laws and regulations on biodiversity related issues in order to meet newly identified threats to biodiversity, such as biosafety, species at risk, intellectual property rights, and clarify ministerial roles and responsibilities.</p> <p>1.3 Implement an institutional capacity-building project on Environmental Impact Assessment.</p> <p>1.4 Undertake national awareness campaigns on environmental legislation.</p>	<p>MOE, GSSD, MAFF and MOC</p> <p>MOE, GSSD, MAFF and MOC</p> <p>MOE</p> <p>MOE</p> <p>MOE</p>
<p>Strategic objective 2:</p> <p>Strengthen existing national and regional institutions addressing biodiversity issues.</p>	<p>2.1 Support institutional structures (such as CHM and BCH) at the national level, and establish and strengthen similar structures at the regional (in particular in the context of the Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin) and global levels to facilitate implementation of the CBD and biodiversity-related conventions in a participatory and coherent way, building on the ecosystem approach.</p> <p>2.2 Establish and support institutions relating to the implementation of the Nagoya Protocol, and the acquisition and adaptation of technology of relevance to biodiversity conservation and sustainable use.</p> <p>2.3 Strengthen the National Council for Sustainable Development and other interministerial structures established through the various laws and policies that govern the conservation and sustainable use of biological resources and ecosystems.</p>	<p>MOE, GSSD</p> <p>MOE, GSSD</p> <p>MOE, GSSD</p>

Theme 22: Quality of Life and Poverty Reduction

1. Background

Poverty reduction is the foremost priority of the Government of Cambodia. As stated in the 2010 Cambodia Millennium Development Goals (CMDG) report, Cambodia reduced poverty by about 17 percentage points over a period of 13 years. Over the three-year period from 2004 to 2007, poverty was reduced from 35% to 30%, at a rate of about 1.2% per year (with an average growth in GDP of 11% per year over this period). Over this period, the Cambodian economy has experienced a profound structural transformation including its integration into the global economy and a shift of jobs from agriculture to manufacturing. Economic growth over the past decade had been driven mostly by the garment, agriculture, tourism, and construction industries, with the garment industry constituting about 65% of exports.

The National Poverty Reduction Strategy: 2003-2005, the National Strategic Development Plan (NSDP) 2006-2010 and its 2009-2013 Update, which is also the country's latest poverty reduction strategy and the roadmap for achieving the CMDG, note that the achievement of poverty reduction is only possible with political and social stability, rule of law, critical reforms in public administration, infrastructure development, and balanced and equitable macro-economic growth, as planned in the Rectangular Strategy for Growth, Employment, Equity and Efficiency in Cambodia. As a result, in the past two decades, Cambodia has been addressing poverty reduction and the improvement of quality of life both at the policy and macro-economic levels, and at the level of direct interventions focused on the poorest populations.

While poverty has decreased substantially over the past 13 years, a third of the population still lives below the poverty line. The average rate of rural poverty is 35%, surpassing the 1% rate of Phnom Penh and the 22% rate of "other urban" areas. These inequalities are due to the high rates of growth largely centered on urban activities in recent years. A major challenge of the NSDP is therefore to adopt strategies and actions that accelerate poverty reduction in rural areas. Such strategies are typically developed as social and economic responses to poverty; however they need to be developed differently, taking into account environmental considerations including biodiversity, in the same way that environmental (biodiversity) management needs to take into consideration social and economic aspects in order to support poverty reduction and sustainable development.

Under this theme, we consider only the role of biodiversity, including ecosystem services and their management (conservation and use) in poverty reduction and in improving the quality of life. Biodiversity can be considered as the totality of genes, species, and ecosystems of a region and it thereby includes all the genetic resources, microorganisms, and plant and animal species, and ecosystems that are providing the goods and services that are critical to our well-being.

The 2005 Millennium Ecosystem Assessment as well as the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) provide conceptual frameworks linking biodiversity and its associated services to human well-being and poverty reduction⁶⁹. Human well-being consists of having multiple components, including basic materials for a good life (such as adequate livelihoods, sufficient nutritious food, shelter, and access to goods), freedom of choice and action (expressed as the opportunity to be able to achieve what an individual values doing and being), health (including access to clean air and water), good social relations (including social cohesion, mutual respect and the ability to help others), and security (personal safety, access to secure resources and security from disasters). Poverty is also multidimensional and has been defined as the pronounced deprivation of well-being. Ecosystems are essential for human well-being for their role as provisioning (the products people obtain from ecosystems, such as food, fuel, fiber, fresh water, and genetic resources), regulating (the benefits people obtain from the regulation of ecosystem processes, including air quality maintenance, climate regulation, erosion control, regulation of human diseases, and water purification), cultural (the nonmaterial benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences), and supporting (services that are necessary for the production of all other ecosystem services, such as primary production, production of oxygen, and soil formation) services.

The management of ecosystems and, in general, of biodiversity will influence how biodiversity and its ecosystem services will affect the well-being of Cambodians. The performance of Cambodia under all the themes of the NBSAP will determine how biodiversity will contribute to poverty reduction and quality of life in Cambodia in the coming years. It will be necessary to particularly take into account how the benefits from economic growth will be shared between urban and rural areas.

In Cambodia, an overwhelming majority of the population depends upon agriculture, fishery and forestry as major sources of livelihood, with most local farmers relying upon subsistence farming and foraging. The average rural household obtains food and generates income through a combination of activities such as farming, hunting, fishing and the gathering of wood and non-forest products. Other supplemental sources of livelihood include livestock raising; primary processing of agricultural, forestry and fishery products; odd jobs and vending. Despite the continuous efforts of the Government to conserve and protect the environment and the natural resource base, there are serious cases of resource depletion and degradation. In the past thirty years, intensive logging and the illegal extraction of timber have led to a drastic reduction in forest cover, from about 90% forest cover to less than 50% of the land base. In turn, these intensive rates of deforestation have created land erosion problems and a higher incidence of flooding, leading to the loss in fertile soils and crops. In the agricultural sector, the inappropriate use of pesticides is leading to the contamination of waters and fish habitats, and to the degradation of other aquatic resources. The over harvesting of wildlife has led to the near extinction of valuable food sources, including several species of wild animals and plants. The construction of dams and other water management infrastructures is a constant menace to the integrity of fish habitats. Industrial and urban pollution is threatening the quality of life of the human population.

Realizing the full potential of Cambodian agriculture can make a significant contribution to poverty reduction and enhanced quality of life. This will require very large investments in rural infrastructure, agricultural extension and business development services, increased food processing to international standards, increased vocational training in agriculture, an appropriate trade policy and linkages to markets.

At the time of adoption of the 2002 NBSAP, the 1997 Socio-economic Survey of Cambodia indicated that 36% of the population was living below the poverty line. The 2002 NBSAP highlighted the need for better planning and management of biological resources in order to improve living conditions and reduce poverty by addressing the following issues:

- (a) Poverty and limited support for alternative livelihoods of rural people
- (b) Unsustainable harvesting of key subsistence resources
- (c) Degradation of habitats providing staple food and commodities

Therefore in order to reduce poverty (objectives and actions), Cambodia decided to strategically monitor and analyze poverty, and formulate a poverty reduction strategy. Cambodia also undertook:

- (a) Community-based capacity-building programs in rural communities;
- (b) Environmental awareness programs to improve living conditions;
- (c) To increase family income by providing means to farmers for improving agricultural productivity;
- (d) To improve living conditions through medical care, hygiene, clean water and sanitation programs;
- (e) To promote opportunity for poor people to access basic education, adult literacy, informal education (number of students in the programs);
- (f) To promote economic development through infrastructure and micro-credit programs.

The Cambodian government also pays specific attention to the welfare of the indigenous ethnic minorities in Cambodia. The Ministry of Rural Development developed a National Policy on Indigenous Development, including indigenous rights to use the land that indigenous communities occupy. There has been significant growth in community-based natural resource management programs across forestry, fisheries, and protected areas, and also including participatory land-use planning approaches. MLMUPC has also been implementing programmes with relevant ministries to provide awareness to the rural population on the sustainable use of natural resources.

Cambodia's present performance in relation to the CMDGs is mixed and uneven. It is likely that Cambodia will not be able to meet all the CMDGs by 2015, unless its national efforts are further strengthened and are supplemented and reinforced through global support. Cambodia's progress towards the CMDGs is constrained by many impediments, of which two critical ones are the chronic shortage of investment funds and poor access to international markets, especially markets in developed countries, despite its entry into the WTO.

2. Issues

The following key issues were identified:

- (a) Poverty and limited support for alternative livelihoods for the rural population depending mainly on agriculture, with limited access to and ownership of agricultural land and with limited access to other natural resources such as forest- and fishery-related resources
- (b) Unsustainable harvesting of key subsistence resources
- (c) Degradation of habitats providing staple food and commodities
- (d) High population growth, inadequate opportunities, and high vulnerability of rural communities

3. Strategic objectives

The following strategic objectives were adopted to address the identified issues

- (a) **Strategic objective 1:** Enhance the contribution of biodiversity conservation, the sustainable use of its components and the fair and equitable sharing of benefits arising from the utilization of genetic resources to poverty reduction and the Cambodia Millennium/Sustainable Development Goals
- (b) **Strategic objective 2:** Strengthen the enabling environment for the implementation of the actions that will enhance the quality of life for all in Cambodia and contribute to poverty reduction.

Actions considered under all the themes of this strategy will contribute to the achievement of poverty reduction and to the maintenance of a high quality of life in Cambodia.

Table 26: Key actions and relevant ministries as well as agencies responsible for their implementation under the theme on “Quality of Life and Poverty Reduction”

Strategic Objectives	Key Actions	Coordinating and participating ministries and agencies
<p>Strategic objective 1: Enhance the contribution of biodiversity conservation, the sustainable use of its components and the fair and equitable sharing of benefits arising from the utilization of genetic resources to poverty reduction and the Cambodia Millennium/Sustainable Development Goals</p>	1.1. Assess the environmental and socioeconomic benefits from biodiversity conservation and sustainable use initiatives in all relevant economic sectors.	MAFF, MOE
	1.2. Support and encourage biodiversity conservation and sustainable use initiatives that yield substantial benefits and thus contribute significantly to improving quality of life and poverty reduction in Cambodia.	MAFF, MOE
	1.3. Promote and support community-based natural resource management programs in agriculture, forestry, fisheries, protected areas, and land-use, including women's capacity building.	MAFF, MOE, MRD, MLMUPC, MOWA, MOEYS
	1.4. Environmental awareness programs in rural areas.	MOE, MAFF, MRD, MLMUPC, MOEYS, MOWA
	1.5. Carry out poverty monitoring and analysis programs on a regular basis, using participatory poverty assessment.	MOP
	1.6. Integrate biodiversity perspectives in the implementation of the Poverty Reduction Strategy and Cambodia Millennium Development goals relating to poverty reduction.	MOP, MEF
	1.7. Bearing in mind that Cambodia's poverty is rooted in its large agricultural sector, which has low productivity and low growth but provides livelihood to the vast majority of the country's population, carry out research to improve agricultural productivity and disseminate the best practices to enhance agricultural production and revenues/incomes, as well as food security and rural livelihoods.	MOP, MRD
	1.8. Ensure the provision of rural drinking water supply services.	MOP, MRD

	1.9. Ensure the provision of rural sanitation services.	MOP, MRD, MOH
<p>Strategic objective 2: Strengthen the enabling environment for the implementation of the actions that will enhance the quality of life for all in Cambodia and contribute to poverty reduction</p>	2.1 Mobilize financial resources for the above-listed actions and strengthen human and institutional capacities, including through communication, education and other types of training, public awareness and health services.	MOE, MAF, MRD, MLMUPC, MOEYS, MOI
	2.2 Develop and implement environmental awareness programs in rural areas.	MOE, MAF, MRD, MLMUPC, MOEYS, MOI
	2.3 Promote the creation of green jobs and provide support based on the conservation and sustainable use of biodiversity, particularly in the water sector, agriculture, forestry, fisheries, energy and tourism sectors, as a way to expand job opportunities, improve rural livelihoods and reduce vulnerability of local and indigenous communities, in line with the country's priority poverty reduction actions;	MOE, GSSD, MAF, MRD, MLMUPC, MOEYS, MOI

Theme 23: Landscape and Seascape Management and Coordination

1. Background

In 2000, the world community endorsed the ecosystem approach as the primary framework for the management of biodiversity⁷⁰. The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. This approach, supported by 12 principles, takes into account all the components that are present and interacting within the ecosystem, as well as the structure, processes, functions and interactions taking place within the ecosystem. It is important to bear in mind that biodiversity consists of plants, animals, microorganisms and ecosystems of which they are part, and that 'ecosystem' means a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting together as a functional unit.

The activities of all sectors affect biodiversity and can contribute to, or detract from, the conservation of biodiversity, the sustainable use of its components and ecosystem services, and the fair and equitable services from the utilization of genetic resources. Thus, most problems relating to biodiversity management are complex, with many interests from various stakeholders, a wide range of interactions among the ecosystem components, and side-effects and implications, and should therefore involve the necessary expertise and stakeholders at the local, national, regional and international level, as appropriate. Principle 12 of the ecosystem approach provides a framework for fostering greater involvement of all the relevant stakeholders, fostering technical expertise in planning and carrying out coordinated activities, sharing management resources, or simply exchanging information. In addition, in accordance with Principle 1 of the ecosystem approach, different sectors of society view ecosystems in terms of their own economic, cultural and societal needs. Thus the integrated management of land, water and living resources requires increased communication, cooperation and coordination (i) between sectors, including in particular agriculture, fisheries, forestry, garments, tourism, energy, transport and judicial sectors in Cambodia, (ii) at various levels of the Government (national, provincial, local), (iii) among and within ministries, (iv) with civil society and private sector stakeholders, and (v) at the regional and international levels. Procedures and mechanisms should be established to ensure the effective participation of all the relevant stakeholders and actors during the consultation processes, decision making on management goals and actions, and in implementing these goals and actions.

It is also important to bear in mind that ecosystems are open systems and that they are often connected to other ecosystems. This open structure and connectedness of ecosystems ensures that effects on ecosystem functioning are seldom confined to the point of impact or only to one system. Thus in accordance with Principle 3 of the ecosystem approach, the effects of management interventions or of any decisions not to intervene will not be confined solely to the point of impact, they will be felt in adjacent areas, downstream, at great distances linked by migratory species systems, and even well into the future.

Bearing in mind that the ecosystem approach is based upon the hierarchical nature of biological diversity, characterized by the interaction and integration of genes, species and ecosystems, which function at a range of spatial and temporal scales, according to Principle 7 of the ecosystem approach, management will be defined operationally within the boundaries of this nested hierarchy by users, managers, scientists and indigenous and local peoples. Connectivity between areas should be promoted where necessary. Management processes and institutions should be designed to match the scales of the aspects of the ecosystem being managed. More importantly, perhaps, given that ecosystem components and processes are linked across scales of both space and time, management interventions need to be planned to transcend these scales.

Given that the definition of ecosystem approach does not specify any particular spatial unit or scale, it has been difficult for many to capture the concept in their work on the ground. Therefore, some organizations put forward other approaches in line with the ecosystem approach that are more familiar to people working on the ground, such as the landscape approach.

Landscape⁷¹ including seascape comprises the visible features of an area of land, including the physical elements of landforms such as mountains or hills, rivers, lakes, ponds and the sea; and living elements of land cover including indigenous vegetation, different forms of land-uses including agricultural lands, buildings and other structures. Combining both their physical origins and the cultural overlay of human presence, often created over millennia, landscapes reflect the living synthesis of people and place vital to local and national identity. In other words, landscapes and seascapes⁷² can be described as dynamic

mosaics of habitats and land-uses where the interaction between people and nature is necessary for the harmonious maintenance of biodiversity, while providing humans with the goods and services needed for their livelihoods, survival and well-being in a sustainable manner. Landscape and seascape provide a wide range of provisioning, regulating, cultural and supporting services. They also root the identities of indigenous peoples and local communities, who are keepers and managers of biodiversity.

Land constitutes Cambodia's most precious resource. Land reform has been vital to enhancing social stability, developing an efficient land market, achieving environmental sustainability, and increasing agricultural productivity. It is agreed that security of land tenure in a transparent and equitable manner allows for proper land management and poverty reduction by giving citizens access to financial markets by using their land titles as collateral. The intrinsic, aesthetic and intangible values of Cambodia's biodiversity through its rural landscape, with environmental and natural resources are high. The rural landscape is heavily represented in much of the local artwork from the bas-reliefs of the Angkorian-era to the artists of today. This landscape is also a cornerstone of Khmer proverbs, especially as they relate to the Tonle Sap's ecosystem role as the 'beating heart' of the country.

Thus, a landscape approach⁷³ looks across large, connected geographic areas to more fully recognize natural resource conditions and trends, natural and human influences, and opportunities for resource conservation, restoration, and development. It seeks to identify important ecological values and patterns of environmental change that may not be evident when managing smaller, local land areas. It provides an important foundation for developing coordinated management strategies with partner agencies and stakeholders, and should thus be applied from the planning stage through to monitoring and reporting. The landscape and seascape approach encompasses the concepts of integrated watershed management, river basin management, and coastal area management, which integrate multidisciplinary approaches to the management of biophysical, social, and economic issues affecting water resources and their uses. The widely adopted Integrated Natural Resource Management (INRM) approach, including the Integrated Production and Protection (IPP) crop management, and Integrated Pest Management (IPM), is conceptually defined as "the responsible and broad-based management of the land, water, forest and biological resource base-including genes-needed to sustain agricultural productivity and avert degradation of potential productivity."

At the landscape/seascape level, management of biodiversity will typically require cooperation and collaboration among many line ministries including the Ministry of Environment (MOE), the Ministry of Agriculture, Forestry, and Fisheries (MAFF), the Ministry of Water Resources and Meteorology (MOWRM), the Ministry of Mines, and Energy (MME), the Ministry of Land Management, Urban Planning and Construction (MLMUPC), the Ministry of Rural Development (MRD), the Ministry of Women's Affairs (MOWA), the Ministry of Interior (MOI), the Ministry of Health (MOH), the Ministry of Commerce (MOC), the Ministry of Economy and Finance (MEF), Cambodia's Chamber of Commerce (CCoC), and the Ministry of Tourism (MOT). As noted in the Green Growth roadmap, environmental and social issues are cross-cutting and thereby require multi-sectoral cooperation.

Good governance is essential for the successful application of landscape and seascape management. It will ensure intersectoral cooperation. Good governance includes sound environmental, resource and economic policies and administrative institutions that are responsive to the needs of the people. Robust and sound resource management systems and practices are required to support these policies and institutions. Decision-making should account for societal choices, be transparent and accountable and involve society (Based on Ecosystem Approach decision VII/11).

As a member of the International Partnership on the Satoyama Initiative, Cambodia supports the Satoyama Initiative dealing with socioecological production landscapes and seascapes (SEPLS) found in many places in the world under different names and deeply linked to local culture and knowledge.

2. Issues

The following key issues were identified:

- (a) Loss of native species;
- (b) Habitat fragmentation;
- (c) Limited coordination among stakeholders;
- (d) Ecosystem approach and its 12 principles are not widely known and applied;

- (e) Coordination and cooperation among stakeholders and indigenous and local communities are limited; and
- (f) Information about landscapes and seascapes is limited.

3. Strategic objectives

The following strategic objective was adopted to address the identified issues.

Strategic Objective 1: Improve landscape and seascape management and coordination for efficient, enhanced and synergistic conservation and sustainable use of biodiversity components

The implementation of actions relating to ‘Landscape and Seascape Management and Coordination’ (Table 27) will benefit from the activities carried out to enhance community participation and participatory approach, supported by legislation and institutional structures such as the National Biodiversity Steering Committee. These actions will also benefit from the CHM that is facilitating technical and scientific cooperation, knowledge sharing and information exchange and from actions under many other themes, in particular the theme of ‘Awareness, Education, Research Coordination and Development’. These actions will also contribute to the design and implementation of protected area systems, adequate management of mining, wise use of biological resources, as well as water resources including in the tourism sector.

Table 27: Key actions and relevant ministries as well as agencies responsible for their implementation under the theme on “Landscape and Seascap Management and Coordination”

Strategic Objectives	Key Actions	Coordinating and participating ministries and agencies
<p>Strategic Objective 1: Improve landscape and seascape management and coordination for efficient, enhanced and synergistic conservation and sustainable use of biodiversity components.</p>	<p>1.1. Map landscapes/seascapes and characterize their structures, functions and management practices used. Mapping of landscapes/seascapes includes an assessment of their socioeconomic and cultural values and identification of the main stakeholders, as well as making the information available on the CHM, as appropriate.</p>	<p>MOE, GSSD, MAFF, MRD, MOWRAM, MOEYS, MME, MTC, MOT, MLUP, RUPP</p>
	<p>1.2. Facilitate the development of partnerships and engagement among the main stakeholders and sectors, and facilitate the full and effective participation of indigenous peoples and local communities and other stakeholders including experts.</p>	<p>MOE, GSSD, MAFF, MRD, MOWRAM, MOEYS, MME, MTC, MOT, MLUP, RUPP</p>
	<p>1.3. Mobilize adequate financial resources and technologies needed for assessing and effectively managing landscapes/seascapes.</p>	<p>MOE, GSSD, MAFF, MRD, MOWRAM, MOEYS, MME, MTC, MOT, MLUP, RUPP</p>
	<p>1.4. Promote better understanding of the ecosystem approach through programmes of communication, education and public awareness.</p>	<p>MOE, MAFF, MRD, MOWRAM, MOEYS, MME, MTC, MOT, MLUP, RUPP</p>
	<p>1.5. Initiate and facilitate as appropriate capacity-building, technology transfer, and awareness-raising to assist in landscape/seascape management.</p>	<p>MOE, GSSD, MAFF, MRD, MWRM, MOEYS, MME, MTC, MOT, MLUP, RUPP</p>
	<p>1.6. Monitor and review to allow adaptive management.</p>	<p>MOE, MAFF, MRD, MWRM, MOEYS, MME, MTC, MOT, MLUP, RUPP</p>
	<p>1.7. Develop the capacity to broker negotiations and trade-offs, and manage conflicts among relevant stakeholder groups in reaching decisions about management, use and conservation of biological resources.</p>	<p>MOE, GSSD, MAFF, MRD, MWRM, MOEYS, MME, MTC, MOT, MLUP, RUPP</p>

Theme 24: Clearing-House Mechanism for Technical and Scientific Cooperation, Knowledge Sharing and Information Exchange

1. Background

Paragraph 3 of Article 18 of the CBD calls for the establishment of a clearing-house mechanism (CHM), at the first meeting of the Conference of the Parties, to promote and facilitate technical and scientific cooperation. The CHM mission has been further specified, in decision X/15 of the CBD Conference of the Parties, as that of a tool that will significantly facilitate the implementation of the Convention on Biological Diversity and its Strategic Plan for Biodiversity 2011-2020. It will do so through effective information services and other appropriate means that promote and facilitate scientific and technical cooperation, knowledge sharing and information exchange, and by establishing a fully operational network of national clearing-house mechanisms for the effective provision of information services that will facilitate the implementation of the national biodiversity strategies and action plans, and partners.

Cambodia established its CHM in 2011 with the mandate “to provide the efficient exchange of information on biodiversity in Cambodia between involved persons and institutions”, and to “facilitate international access to information on the status of biodiversity studies and biodiversity management in Cambodia”. Thus the Cambodia CHM contains:

- (a) A few publications relating to the Convention on Biological Diversity including the 2002 NBSAP, national reports under the CBD, and a few laws in both English and Khmer on Environmental Protection and Management of Natural Resources, on Protected Areas, Fisheries, Forestry, Land, and on the Control of Air Pollution and Noise Disturbances. The following are available in English-only: the 2007 Law on Water Resources Management, and the Sub-decree on Environmental Impact Assessment Process;
- (b) A frame for lists of events and for activities (not yet operational);
- (c) Links (not yet operational) to the Convention on Biological Diversity, the Strategic Plan for Biodiversity 2011-2020, the Aichi Biodiversity Targets, the Nagoya Protocol, The Cartagena Protocol on Biosafety, the Nagoya-Kuala Lumpur Supplementary Protocol;
- (d) Biodiversity information about Cambodia consisting of a country profile, ecosystem profile, species database (to be updated) and national reports; and
- (e) Links to the websites of collaborators: only the Asian Center for Biodiversity (ACB) and Partnerships in Environmental Management for the Seas of East Asia (PEMSEA).

2. Issues

The following key issues were identified regarding the Clearing-House Mechanism of Cambodia:

- (a) Not clearly needs-driven and not updated regularly;
- (b) Not structurally decentralized and little structure to promote scientific and technical cooperation;
- (c) Limited information stored;
- (d) Apparently, no BCH or Nagoya Protocol clearing-house; and
- (e) No Khmer language.

3. Strategic objectives

The following strategic objectives were adopted to address the identified issues

- (a) **Strategic Objective 1:** Improve access to and generation of information;
- (b) **Strategic Objective 2:** Improve the use of information and knowledge; and
- (c) **Strategic Objective 3:** Increase the availability of financial, technical and human resources for the clearing-house mechanism.

Table 28: Key actions and relevant ministries as well as agencies under the theme on “Clearing-House Mechanism for Technical and Scientific Cooperation, Knowledge Sharing and Information Exchange”

Strategic Objectives	Key Actions	Coordinating and participating ministries and agencies
<p>Strategic Objective 1: Improve access to and generation of information.</p>	1.1. Develop a harmonized information management system.	MOE, GSSD, MAF, MI
	1.2. Develop a common clearing-house mechanism.	MOE, GSSD, MI
	1.3. Strengthen existing stakeholder platforms in order to increase stakeholder engagement.	MOE, GSSD, MAF
	1.4. Increase contents to include, in addition to national reports and NBSAPs, country profiles, biodiversity values, status and trends, as well as appropriate legislations, including those regarding the operation and functioning of the CHM such as ownership of information made available, scientific and technological information such as on the management of biodiversity, traditional knowledge with the prior consent of the holders, financial sources, expertise and human resources in general, also information of relevance to Biosafety Clearing-House (BCH) and Nagoya Protocol clearing-house.	MOE, GSSD, MAF
	1.5. Increase the interactivity and interoperability of the CHM.	MOE, GSSD, MAF
	1.6. Ensure translation in Khmer.	MOE, GSSD, MAF
<p>Strategic Objective 2: Improve the use of information and knowledge.</p>	2.1 Pilot innovative tools for decision-making using the economic valuation of the use of natural resources.	MOE, GSSD, MAF
	2.2 Strengthen the capacity of existing national implementing institutions on negotiation skills.	MOE, GSSD, MAF

<p><u>Strategic Objective 3:</u> Increase the availability of financial, technical and human resources for the clearing-house mechanism</p>	2.3 Develop and disseminate a unified reporting process on the implementation status and common format for information input.	MOE, GSSD, MAFF
	2.4 Develop the CHM in a way that it serves decision-makers at all levels well.	MOE, GSSD, MAFF
	2.5 Increase the amount and nature of data stored in the CHM and their transformation into knowledge for users.	MOE, GSSD, MAFF
	3.1 Create and support CHM nodes in participating institutions.	MOE, GSSD, MAFF
	3.2 Enhance awareness about CHM and its usefulness for planning and decision-making on biodiversity use and management.	MOE, GSSD, MAFF
	3.3 Build human capacity <i>inter alia</i> through training on information systems technologies, including training of local communities and indigenous ethnic minorities.	MOE, GSSD, MAFF, MOEYS
3.4 Promote research projects, including inventories and taxonomic work, and publications on biodiversity issues.	MOEYS, MOE, GSSD, MAFF	
3.5 Assess financial needs and mobilize the needed funds through various means, internal as well as external.	MOE, GSSD, MAFF, MEF	
3.6 Increase the multidisciplinary of the CHM steering committee.	MOE, GSSD, MAFF	

Implementing this strategic objective will:

- (a) Support the implementation of the objectives under all the other themes and the Cambodia Biodiversity Targets. The Clearing-House Mechanism will gather, organize and facilitate the wide access and use of data, information and knowledge relating to all aspects of biodiversity including enabling measures;
- (b) Also support the achievement of Cambodia Target 19, through which by 2020, an interoperable and user-friendly information system containing data and information on biodiversity values, functions, status and trends, threats, and the consequences of its loss will have to be established and maintained for wide sharing among stakeholders.

V. SUPPORT MECHANISMS FOR IMPLEMENTATION

In order to have an effective, sustained and successful implementation of the NBSAP, there is a need to create a favorable political, legal, administrative and socio economic environment and to strengthen the country's human, technological, institutional and financial capacity relating to biodiversity issues. The main overarching frameworks that are laying the groundwork to ensure a successful NBSAP include: the Government's Rectangular Strategy (2009-2013), the 2003 Cambodian MDGs and forthcoming sustainable development goals, the National Strategic Development Plan for 2006-2010, the 2009 National Sustainable Development Strategy, the National Environmental Action Plan and the 2009 Green Growth Roadmap. These frameworks include, for example, systems and processes built on decentralization, deconcentration, rule of law, and incentives for performance. They support accountability, transparency, participation, responsiveness, marginalized and disadvantaged societal groups, and encourage investment, coordination across agencies and sectors, as well as capacity building. In addition, in the past decade, Cambodia adopted strategies, plans of action and laws (see Annex 1) of relevance to the conservation and sustainable use of biodiversity and sustainable development.

5.1 Cambodia Biodiversity Targets 2015 – 2020

The NBSAP consists of 498 identified key actions to achieve 78 strategic objectives under 24 themes. The targets were developed by the Technical Working Group prior to the updating of the 2002 NBSAP and were revised during the process of finalization of the updated NBSAP.

While it is necessary to implement all these actions to ensure that, “by 2050, Cambodia's biodiversity and its ecosystem services would have been valued, conserved, restored where necessary, wisely used and managed so as to ensure equitable economic prosperity and improved quality of life for all in the country”, the management of such a large number of key actions can be problematic. Twenty specific targets, some of which are measurable, were defined to streamline the implementation of the NBSAP. The Cambodia Biodiversity Targets presented in Table 29 should therefore serve as a platform that promotes coherence, coordination, cooperation, co-evolution and synergy, while maximizing resource use and efficiency in implementing the key actions. The set of Cambodia Biodiversity Targets encourages a concerted implementation of actions, many of which have already been adopted as part of strategies and plans for sustainable development and as part of various sectoral plans and programmes. In view of creating synergies and partnerships in the implementation of the NBSAP, the Cambodia Biodiversity Targets will facilitate cooperation and the creation of concrete collaborative programmes and activities among the different Ministries and their Departments, and among different actors (including members of local communities and indigenous ethnic minorities, representatives of the private sector, or local authorities) within and across sectors, and among organizations at the national, regional and international levels..

5.2 Roles and responsibilities in the implementation of the targets and the NBSAP

In consultation and agreement with all the NBSAP stakeholder groups, MOE will build an institutional framework that will govern partnerships, cooperation, coordination and synergies among partners, with a clear description of their accepted roles, responsibilities and expectations. Existing institutional structures will be identified and strengthened and new ones established, as needed, for the implementation of the NBSAP.

Interministerial Biodiversity Steering Committee and National Secretariat for Biodiversity

As a starting point, MOE will mandate and support the Interministerial Biodiversity Steering Committee (IBSC) and the National Secretariat for Biodiversity (NSB) to:

- (a) Guide and coordinate the implementation of the NBSAP, focusing on the Biodiversity Targets, including monitoring, reviewing and reporting as well as providing recommendations for NBSAP revision. The Committee could guide on priorities in the implementation of the targets based on effectiveness of action (i.e. prioritizing actions with immediate impacts on the ground); costs and impact (starting with actions having zero or negative costs, then actions having a

relatively low cost but high impact, and finally actions that are expensive to carry out especially if their impact is limited); or multiplying effect (starting with actions that can simultaneously help achieve other targets);

- (b) Propose the clarification of ministerial jurisdictions, and of the roles and responsibilities of various institutional actors, ways and means to reduce responsibility overlaps while promoting coordination, collaboration and synergy in an ecosystem approach or landscape / seascape perspective, for the consideration and agreement by partners, including other national committees and inter-ministerial committees established to support strategies and plans of action of relevance to biodiversity;
- (c) Clarify the relationships of the NBSAP including the Biodiversity Targets to other strategies and plans and other agreements and propose ways to enhance complementarity and synergy for more efficient use of resources and successful implementation; and
- (d) Agree with partners on baselines and common sets of indicators to be used for monitoring and assessing progress in implementation of the Biodiversity Targets and NBSAP in general.

The Steering Committee could be organized in, or recommend the establishment of, subcommittees in charge of guiding, overseeing and sustaining efforts for the achievement of each of the targets.

MOE and a communication and outreach strategy

The MOE and line Ministries have a facilitating and implementing role for the Cambodia Biodiversity Targets and the NBSAP. As the coordinator of the NBSAP, MOE is expected to develop and implement a communication and outreach strategy to raise awareness and preparedness about the NBSAP. A good communication strategy will promote a wide participation and enhance the participation of all groups of stakeholders, including by recognizing their values, the importance of their contribution and the possible synergies and win-win situations in which such participation would result.

The communication strategy will target primarily other Ministries involved in the management of biodiversity components, their departments and administrations, and the interdepartmental and/or inter-ministerial committees established to achieve some inter-agency coordination of activities at the government level in the fields of biodiversity and sustainable development including poverty reduction. These bodies/committees include the National Biodiversity Steering Committee (NBSC), the National Committee for Forest Management Policy, the National Coastal Zone Steering Committee, the Provincial/ Municipal Rural Development Committee and the National Committee for the Conflicts Resolution on Protected Areas Management.

The communication strategy will also aim at bringing on board all the other stakeholder groups, including local communities and indigenous ethnic minorities, in addition to the civil society, the business and private sector and knowledge institutions. Participation of local communities and indigenous ethnic minorities implies that the value of traditional ecological knowledge is recognized, so that this knowledge is integrated with modern science to promote innovations. A participatory approach is enshrined in the Rectangular Strategy, other national strategies relating to sustainable development, and in the ecosystem approach, which is the primary framework for the implementation of the Convention on Biological Diversity.

As a matter of priority, MOE will endeavor to involve all key players so as to ensure the **widest ownership** possible of this NBSAP and the Biodiversity Targets, particularly by all relevant authorities, as well as their active participation in implementing the identified actions. Also, as part of the communication strategy, MOE will regularly **organize meetings relating to NBSAP** and the Biodiversity Targets involving other relevant ministries, government institutions and agencies, local communities and indigenous ethnic minorities, as well as civil society, the private sector, knowledge institutions and development partners.

Ministries and their respective Departments

Each ministry will identify **actions already described** in its policy and programmes of work, against each target and under each of the 24 themes and the overall strategic objectives, and inform about **plans for implementation and reporting on progress**, and thus how it will contribute to the implementation of the targets and this NBSAP in general.

Partnerships among the Ministries and among their respective Departments will be established for leveraging actions and mainstreaming biodiversity across sectors of government, society and the economy, and to foster synergies for the national implementation of multilateral environmental agreements at the right scale. Partnerships are essential to support the implementation of Cambodia Biodiversity Targets and the NBSAP and should be established with the programmes, funds and specialized agencies of the United Nations system, as well as with other conventions and multilateral and bilateral funding agencies, women's and youth's groups, local communities, indigenous ethnic minorities and non-governmental organizations. In particular, every effort shall be made to ensure that the achievement of the targets and the implementation of the NBSAP are always in harmony with the implementation of the other international and regional agreements already adopted by Cambodia, including the United Nations Convention to Combat Desertification (UNCCD), the United Nations Framework Convention on Climate Change (UNFCCC), the Ramsar Convention on Wetlands, the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), the World Heritage Convention (WHC), the Man and Biosphere (MAB) programme and the 1995 Agreement on Cooperation for the Sustainable Development of the Mekong River Basin.

A **common framework and timetable for reporting** will be agreed with partners. While sets of indicators will be agreed upon taking into account the performance indicators listed in Table 29: "Cambodia Biodiversity Targets 2015-2020 and elements for a plan of action for their implementation", baselines will have to be defined as well as milestones for each target, building on ongoing initiatives in the relevant ministries and sectors.

Using the findings from the reporting exercises and actions undertaken to achieve the targets, the **NBSAP will be periodically evaluated, revised and improved**, as needed, so that they can respond effectively to evolving situations in the future.

MOE will provide the **clearing-house mechanism** for technical and scientific cooperation, knowledge sharing and information exchange with additional resources to enhance data mobilization and access to data by, for example as recommended in the 4th Global Biodiversity Outlook, encouraging the use of common informatics standards and protocols, promoting a culture of data sharing, investing in the digitization of natural history collections and promoting citizen scientists' contributions to the body of biodiversity observations. National and regional experiences will be regularly compiled in the clearing-house mechanism, such as the successes and failures on all aspects of biodiversity conservation and sustainable use. These compilations may lead to the development of **guidelines for biodiversity management** or the adaptation of existing ones to the conditions of Cambodia.

As reported in various reports of the Council for the Development of Cambodia (CDC), a coordination mechanism for government and donors was developed to increase aid effectiveness. This mechanism needs to be strengthened while ensuring coherence in the actions of all the technical and financial partners.

Provincial and Local Authorities

In order to achieve the targets and implement the NBSAP, many actions will have to be carried out at the local level. The development of local BSAPs and more specific site relevant targets will be encouraged. Provincial and Local Authorities will be encouraged and supported in the development and implementation of local BSAPs and related targets.

5.3 Enabling conditions

Progress towards the achievement of the Cambodia Biodiversity Targets and in general the NBSAP will greatly depend on the conditions facilitating those actions.

Provisions under the themes

Group 3 themes and a few other themes in this NBSAP consist of strategies and actions that are meant to enhance and maintain the favorable and enabling conditions for the implementation of the NBSAP and the achievement of the targets. They are Themes 6 (Land-Use Planning), 15 (Access and Benefit-Sharing), 16 (Customary sustainable use and Traditional Knowledge), 17 (Manufacturing Industry, Biotechnology and Biosafety, and Tourism), 18 (Resource mobilization including an incentive system that encourages environmentally responsible behavior), 19 (Community participation), 20 (Awareness, education, research coordination and development), 21 (Legislation and institutional structure), 22 (Quality of life and poverty reduction), 23 (Landscape and seascape management and coordination), and 24 (CHM for technical and scientific cooperation, knowledge sharing and information exchange).

Limited financial resources were found as one of the most critical obstacles to the implementation of the 2002 NBSAP. Resource mobilization is thus essential for operationalizing the updated NBSAP and achieving the associated targets. A diversified source of financing is recommended, including in particular a strong engagement of the business sector.

VI. MONITORING, EVALUATION AND REPORTING

Monitoring and evaluation are critical components of the NBSAP and of the Cambodia Biodiversity Targets. They are useful in reporting on implementation progress, and on the resulting status and trends of biodiversity and their value. Indicators should be defined and used in the process. Monitoring and evaluation also allow for an adaptive management capability to be mainstreamed into the strategy and ensure the flexible nature that characterizes effective and efficient NBSAPs. Periodic assessments and reviews of indicators will serve to inform about performance and whether strategies or actions need to be modified depending upon the findings.

The Technical Working Group proposed a list of indicators for the national biodiversity targets (Table 29). The IBSC can develop a list of additional indicators, including biological, ecological, social and economic indicators as appropriate, for each action adopted in the NBSAP and for each target, building on the lists of indicators existing in the country (e.g. in the 2002 NBSAP, the Agricultural Sector Strategic Development Plan 2006 – 2010 and the PRSP document) and, if needed, in the region and at the global level. There are basically two categories of indicators for monitoring progress in implementing the NBSAP and associated targets. The first category of indicators includes input, process, and output indicators referred to as performance indicators. Such indicators are calculated from data that are routinely collected, maintained and analyzed by the various line ministries and agencies. The second category of indicators includes outcome and impact indicators.

Bearing in mind that the NBSAP and the national biodiversity targets contain actions to be implemented under various sectoral departments and agencies, and by a wide range of stakeholders at various sites or in different landscapes/ecosystems and at different times, in line with the ecosystem or landscape approaches, monitoring and evaluation will require the broad participation of all stakeholder groups and a strong coordination mechanism established to enhance efficiency and avoid unnecessary duplications. Stakeholders typically consist of members of local communities and indigenous ethnic minorities, government institutions and agencies at the national and subnational levels, civil society, the business/private sector, knowledge institutions, development partners and partners from regional agreements. In addition to the wide range of actors who will be implementing the NBSAP, many actions identified in the NBSAP and the associated biodiversity targets will be undertaken as part of the implementation of national development strategies and relevant strategies, plans and programmes under line ministries (in particular MAFF, the Ministry of Water Resources and Meteorology (MOWRM), or the Ministry of Mines and Energy (MME)) other than the MOE, which is coordinating the NBSAP. The Interministerial Biodiversity Steering Committee (IBSC) and the National Secretariat for Biodiversity (serving as the IBSC Secretariat) have been established to coordinate the implementation of the national biodiversity targets and the NBSAP, including monitoring, evaluation and reporting.

While monitoring should be a continuous process so that it can detect unexpected changes and any biodiversity change requiring urgent attention, reporting can be done annually and, necessarily, in response to the obligations already agreed upon by Cambodia, such as national reporting under the MEA or obligations vis a vis a funding agency. Under the CBD, national reports are due every 4 or 5 years, and the next report is likely due for 2018. The National Secretariat for Biodiversity should agree with other stakeholders on a schedule/timetable for collecting information for the national reports, indicators to be used, the responsibilities of individual organizations, and a data validation mechanism.

The clearing-house mechanism should be a suitable tool for collecting such information, while promoting and facilitating technical and scientific cooperation. As a prerequisite, the clearing-house mechanism should be made sufficiently interactive so as to be interoperable with other databases in the country and allow that other stakeholders can access it, input and manage their own data. Complete transparency in the clearing-house mechanism can promote a wide participation in the mechanism and strengthen cooperation. Moreover, the international community and international investors increasingly require transparent and accurate information.

The monitoring and evaluation process should be agreed upon during the NBSAP development phase or during the initial phase of implementation. It requires the establishment and strengthening of relevant institutional and technological capacities, and adequate human and financial resources. The monitoring and evaluating process should be made coherent through the adoption of guidelines applicable throughout the implementation of the NBSAP. Monitoring procedures need to be taken into account and be mainstreamed in the planning process. Biodiversity baselines and targets will be useful in the analysis of the data and information collected. While Cambodia adopted 20 biodiversity targets, there is a need to agree on baselines for these.

The National Biodiversity Steering Committee will have to:

- (a) Develop a strategy for obtaining information from the various ministerial departments and NGOs, particularly when the data is not part of the routine collections of those ministerial departments, or when the data is being collected under other multilateral environmental agreements (MEA) or under other strategies and plans that do not correspond exactly to the data needed within the NBSAP;
- (b) Develop a strategy for strengthening technical skills among national managerial personnel responsible for collecting and processing; and
- (c) Ensure the best coordination between the monitoring processes under the NBSAP and other monitoring activities in the country so that there is no unnecessary duplication of effort, but rather complementarity, synergy and coordination are built into the process.

Table 29: Cambodia Biodiversity Targets 2015-2020 and elements for a plan of action for their implementation

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
<p>Target 1 (Aichi Target 1⁷⁴): By 2020, every Cambodian</p> <p>(i) is conscious about the environmental, economic, health, social and cultural value of the services derived from ecosystems, in particular the value of protected area systems as well as the value of terrestrial and aquatic animal and plant resources including animal wildlife, livestock, agricultural, forest, freshwater and marine resources, and the biomass used for energy production, and</p> <p>(ii) integrates this knowledge in the way they deal with these ecosystems and resources.</p> <p><i>This target is in line with Theme 20 on Awareness, Education, Research Coordination and Development. Raising awareness about biodiversity and its multiple values is considered as one of the highest priorities for the implementation of the NBSAP. Activities considered under this target will contribute to the achievement of most, if not all, of the other targets. In addition, many actions planned under the other strategic themes (in particular Theme 24 on clearing-house mechanism and information exchange, and the themes in Group 1 on the Protection of Biodiversity and Group 2 on Sustainable use of Biodiversity) will contribute to the implementation of this target in more specific sectors or situations.</i></p>	<p>1.1. Gather information on the value of biodiversity (at the genetic, species and ecosystem/landscape levels) found in Cambodia;</p> <p>1.2. Gather methods for assessing awareness and assess the current level of biodiversity awareness in the country; and thus identify gaps in knowledge and awareness, and those groups (i.e. priority groups for awareness-raising programmes) whose awareness of biodiversity values is most important to the status of biodiversity;</p> <p>1.3. Gather information on (i) methods of communication, awareness-raising and education actions, (ii) messages regarding biodiversity in Cambodia, and (iii) organizations/agencies, involved in communication, education and public awareness identify any gaps;</p> <p>1.4. Gather all partners to identify and prioritize the types of needed awareness-raising, communication, education and other actions to strengthen awareness of biodiversity values and/or fill the gaps as part of a communication, education and public awareness strategy;</p> <p>1.5. Carry out the identified actions so as to ensure the integration of biodiversity knowledge in the way people deal with genetic resources, species and ecosystems/land- and sea-scapes while operating in various sectors (agriculture, mining, forestry etc.); and</p> <p>1.6. Mainstream the CEPA strategy on biodiversity into the curricula of all levels of education.</p>	<ul style="list-style-type: none"> • Biodiversity barometer: increase in the number of people who are conscious about the environmental, economic, health, social or cultural value of the services derived from ecosystems, and people who are integrating or have integrated this knowledge in the way they deal with ecosystems and biological resources. • Increase in the number of educational and media materials and programs that have been provided to educators and learners. • Biodiversity CEPA strategy document developed. • Nature and number of Biodiversity CEPA tools developed. • Number of schools with incorporated elements of biodiversity conservation in curricula. • Number of School Programs on biodiversity.

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
<p>Target 2 (Aichi Target 20⁷⁵): By 2020, at the latest, the national budget allocation for biodiversity conservation and sustainable use (including NBSAP implementation) has increased by 20 % through the development and implementation of a resource mobilization strategy based on identified needs and taking into account international and national guidance and policies</p> <p><i>This target is in line with Theme 18 on Resource Mobilization, Strategic Objective 2. Achievement of Target 1 and all the other targets will depend greatly on financial resources that will be mobilized.</i></p>	<p>2.1 Develop, following the guidance in CBD COP decision X/3 on resource mobilization, a framework and guidelines for reporting on biodiversity related expenditures;</p> <p>2.2 Estimate past and current budget allocation for biodiversity conservation and sustainable use and the main sources of this financing, taking into account resources from government, the private sector, and nongovernmental organizations, and including resources from domestic as well as international sources; and identify NBSAP activities that are currently funded;</p> <p>2.3 Assess financial needs for additional activities from the NBSAPs and their relative priority; and</p> <p>2.4 Calculate 20% of the amount currently allocated for biodiversity conservation and sustainable use, and, with the involvement of key stakeholders, develop, disseminate and implement a strategy to mobilize that amount in addition to the current allocation.</p>	<ul style="list-style-type: none"> Increase, within the national budget, in the number of items clearly relating to the wide range of actions dealing with biodiversity conservation and sustainable use; and an increase in amounts of financial resources allocated. Biodiversity Trust Fund, including the protected areas fund⁷⁶ has been established in line with the Environment Endowment Fund⁷⁷ and the National Forestry Development Fund⁷⁸, and amount of resources in the trust fund. Increase in total bilateral biodiversity-related ODA commitments by members of the OECD DAC, GEF funding and funds from other sources (conventional and innovative sources) allocated to biodiversity.
<p>Target 3 (Aichi Target 2⁷⁹): By 2020, at the latest, biodiversity values have been integrated into national and sub-national development and poverty reduction strategies and planning processes.</p> <p><i>This target is in line with Strategic Objective 1 under Theme 20 on Awareness, Education, Research Coordination and Development.</i></p> <p><i>Raising awareness about biodiversity and its multiple values is considered as one of the highest priorities for the implementation of the NBSAP. Activities considered under this target will contribute to the achievement of most of the other targets.</i></p>	<p>3.1 Gather information from all sources on the value⁸⁰ of biodiversity in the country and thus on the most important components of biodiversity and their ecosystem services, starting with the critical values of “flagship” species and ecosystems. Methods for biodiversity valuation have been published, but the country will develop national guidelines for biodiversity valuation to ensure coherence in the values allocated to components of biodiversity;</p> <p>3.2 Raise awareness on opportunities and constraints for integrating biodiversity values into local and national planning, decision-making and reporting processes, based on experiences in Cambodia and in other countries;</p> <p>3.3 Identify groups of people to be in charge of</p>	<ul style="list-style-type: none"> Number of assessments of biodiversity values, in accordance with the Convention. Extent of integration of values and functions of biodiversity into development plans, and sectoral and development policies including EIA and SEA, at national and sub-national levels. Amounts of resources allocated to the management of biodiversity in relevant sectoral budgets.

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
<p>Target 4 (Aichi Target 6⁸³): By 2020, freshwater fisheries and aquaculture are managed sustainably by addressing their constraints, and by reducing and preventing their possible negative impact on fish stocks and on aquatic threatened species and vulnerable ecosystems⁸³</p> <p><i>This target is directly in line with Theme 10 on Freshwater Fisheries and Aquaculture, Theme 2 on Threatened Species, Theme 7 on Water Resources, Theme 8 on Biodiversity and Climate</i></p>	<p>integrating into national and sub-national development and poverty reduction strategies and planning processes. Mobilize them and develop guidelines to assist them, first, in the inclusion of those values of biodiversity that are easiest to account for.</p> <p>Development of national guidelines for the application of biodiversity-inclusive environmental impact assessment (EIA) and strategic environmental assessment (SEA) using the voluntary guideline developed under the Convention on Biological Diversity (CBD COP decision VIII/28) would be among the first areas for integrating biodiversity values;</p> <p>3.4 Building on the National Green Growth Roadmap⁸¹, which has been developed for furthering development to benefit the people and conserve and restore the natural capital base to continue economic growth within the limits posed by the ecosystem carrying capacity, enhance consideration of biodiversity in key economic sector development plans and landscape level planning. Coordination among government ministries and different levels of government at the national and local levels. In addition, time, financial resources and both technical and administrative capacity will be needed.</p>	<ul style="list-style-type: none"> • From NSDS: <ul style="list-style-type: none"> > High diversity of fish species. > Fish populations with sustainable reproduction. > Favorable habitats for spawning and feeding. > Good water quality without pollution > Protection of fish species during spawning period. > Rules for avoiding over-fishing and

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
<p><i>Change, and Theme 16 on Customary use and Traditional Knowledge. Progress toward the achievement of this target will benefit from the implementation of a number of targets such as targets 1, 2, 3, 6 to 10, 12, and 16 to 19.</i></p>	<p>of conservation areas or recovery plans, and other measures that will rebuild fisheries stocks that have been overexploited or depleted, taking into account the status and trends of fish stocks, aquaculture, fishing methods used, the law on fisheries, and the ecosystem approach, and bearing in mind that a target in the 2009 NSDS stated that by 2015, the use of sustainable fishery practices was to be achieved in 70% of the fishing waters of the country.</p> <p>4.3 Support decision-making with research in particular on fish stock sustainability and harvesting within safe ecological limits.</p> <p>4.4 Establish and support community-based fisheries and fish sanctuaries/conservation areas; and expand aquaculture.</p>	<ul style="list-style-type: none"> • destructive fishing practices. ➢ Strict enforcement of rules ➢ Sustainable fishing practices ➢ Sustainable aquaculture practice • Reduction in illegal fishing levels • Numbers and areas of fish sanctuaries: Increase in numbers and areas. • Management effectiveness of fish sanctuaries: improvement in management effectiveness. • Fish stock levels and status of aquatic ecosystem: their maintenance or restoration to levels that are sustainable. • Proportion of fish stocks within safe biological limits. • Management plans addressing illegal fishing: existence of plans and status of their effective implementation. Species management and conservation action plans produced for freshwater fish, in particular endangered species⁸⁴, existence of plans and status of their effective implementation. • Reduction in number and levels of constraints listed under NBSAP theme 10, key actions 1.2 and 2.1. • Implementation of other key actions, including relevant legislation relating to the impact of fisheries on aquatic biodiversity components under theme 10. • IUCN Red List Index and its trend.

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
<p>Target 5 (Aichi Target 7⁸⁵): By 2020 the majority of areas under agriculture⁸⁶, animal production, aquaculture⁸⁷ and forestry⁸⁸ are managed sustainably, ensuring conservation of biodiversity, sustainable development, poverty eradication and improved well-being.</p> <p><i>This target goes with themes 10 on aquaculture, 12 on forest resources, and 13 on agriculture and animal production. Relevant actions are derived from the programmes of work developed under the Convention on Biological Diversity and actions already adopted by the country under other relevant strategies and actions plans (see Annex 1 for list of strategies and plans).</i></p> <p><i>It is important to note that there may be a link between forestry, agriculture, aquaculture and animal production, like in socioecological production landscape under the Satoyama Initiative.</i></p> <p><i>This target is linked to target 4 (regarding aquaculture), target 8 on protected areas and conservation areas, particularly protected forests and a few other targets. Indeed, reducing forest loss and degradation is essential for sustainable forest management, which in turn contributes to the reduction and elimination of habitat loss by both deforestation and degradation. In addition, sustainably managed forests also provide, by definition, ecosystem conservation.</i></p> <p><i>Restoration of agro-ecosystems and forest ecosystems including mangroves that have been under a lot of pressures in recent years (target 6) can be an important step towards the sustainable management of these ecosystems. The sustainable</i></p>	<p>5.1 Assess the main areas in the country used for agriculture, including animal production, aquaculture and forestry;</p> <p>5.2 Demarcate clear agriculture, aquaculture and forest management unit boundaries, and ensure enforcement of legal frameworks for the protection of resources in these areas;</p> <p>5.3 Identify measures that are in place to ensure sustainability and describe their effectiveness. Encourage successful measures and scale them up as needed;</p> <p>5.4 Undertake research to describe and agree on national sustainability criteria (building on Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity developed under the Convention on Biological Diversity) for agro-ecosystems and aquaculture as there is no universally-agreed sustainability criteria except for sustainable forest management;</p> <p>5.5 Carry out research to describe the opportunities and constraints to enhancing sustainable management of agriculture, including animal production, aquaculture and forestry; bearing in mind that the 2009 NSDS targeted a minimum of 60% forest cover managed in a sustainable way, with the participation of the local community by 2015;</p> <p>5.6 Increase education, practical training and awareness-raising activities to promote involvement/engagement of all, including local communities and indigenous ethnic minorities, public and private sectors, and civil and religious societies;</p> <p>5.7 Carry out research on the role of modern biotechnology in agriculture including animal production, aquaculture and forestry;</p>	<ul style="list-style-type: none"> • Area of forests certified by Forest Stewardship Council (FSC) and the Program for the Endorsement of Forest Certification (PEFC): increase in coverage of certified forest areas. • Areas under agriculture, animal production and aquaculture where management is sustainable (including in the type of farming). • Systems/practices, soil management, harvesting being within ecological limits on a long term). Harvested products may also be certified. • Percent of forest area certified for sustainable forestry. • Aquaculture production, and production over time. • Number of capacity building workshops and of people informed and/or trained in sustainable management practices and monitoring. • Enforcement of laws and measures relating to the sustainable use of biological resources. • Trend and projections in biodiversity harvested for food and medicine (in relation to agriculture, forestry, animal production and aquaculture). • Demands of products from agriculture, animal production, aquaculture and forestry, and their yields.

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
<p>management of ecosystems sought through this Target 5 will (i) maintain at an appropriate level or improve the status of threatened species of fauna and flora, and thus contribute to the achievement of Target 10, (ii) enhance the resilience of the ecosystems that are being managed sustainably, and may contribute to carbon stocks and thus to climate change mitigation and adaptation and to combating desertification (Target 11). In addition, in agro-ecosystems, enhancing organic carbon contents of soils can improve land productivity. Soils with increased carbon stocks have better retention of water and, hence, climate resilience. Increased soil carbon sequestration can make farming a net carbon sink and hence mitigate GHGs, and (iii) contribute to the halving of the rate of loss of natural forests, and the reduction of the degradation and fragmentation of the ecosystems under consideration, as well as the reduction/prevention of pollution, overharvesting, introduction of invasive alien species and their impacts. The respect of traditional knowledge, innovations and practices (Target 18), resource mobilization (Target 2), reduction of pollutants (Target 16), control and eradication of invasive alien species (Target 18), database and information systems (Target 19), the protection of genetic diversity of cultivated plants and farmed and domesticated animals, as well as their in-situ and ex-situ conservation (Target 20) will all support the achievement of Target 5.</p>	<p>5.8 Enhance cooperation with CGIAR centers, ITTO, FAO and other organizations working on sustainable management in agro-ecosystems, forestry and aquaculture; and</p> <p>5.9 Improve enabling environment:</p> <ul style="list-style-type: none"> ➢ Improve water management for agriculture, forestry, animal production and aquaculture; ➢ Improve tenure security and land markets; and ➢ Improve infrastructure for market accessibility and promote marketability of the products. 	<ul style="list-style-type: none"> • Number of demarcated areas under the responsibility / management of local communities (assuming that management
<p>Target 6 (Aichi Target 14⁸⁹): By 2020, 10% of the protected areas, conservation areas, agro-ecosystems and forest ecosystems, including</p>	<p>6.1 Identify protected areas and conservation areas (including Ramsar sites and biosphere reserves), agro-ecosystems and forest ecosystems that have been</p>	

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
<p>mangroves, that have been under a lot of pressures in recent years are in an advanced state of restoration and are providing enhanced services, particularly to women, elders and children of local communities and indigenous ethnic minority groups.</p> <p><i>This target is relevant to the themes on protected area system (theme 1), agriculture (theme 13) and forest resources (theme 12) and its implementation should be in synergy or at least coordinated with the achievement of targets 1, 2, 3, 8, 11, 12, 15, 16 and 20. Finally, the achievement of Targets 9, 17 and 19 will provide incentives, knowledge and data / information that can facilitate the implementation of this Target 6. Restoration of forest ecosystems will be made having in mind the strategic indicators for NFP long-term monitoring, in particular that, by 2029, (i) forest cover will have to be increased to 60% of the total land area; (ii) Sustainable forest management with prescribed silviculture will have to be implemented on 2.4 million hectares of production forest; (iii) Protected Forest covers should reach 3 million hectares, 500,000 hectares of high value commercial plantation should be established and 10 million tree seedlings distributed per year; and (iv)</i></p> <p><i>2 million ha of forest land should be set aside for Community Forestry (CF) groups (approximately 1,000 CF) fully recognized with CF agreements.</i></p>	<p>degraded and require restoration, in order to recover the lost ecosystem services;</p> <p>6.2 Identify and assess the pressures and underlying factors supporting these pressures;</p> <p>6.3 Identify and demarcate 10% of these areas that can be considered as priorities areas for reasons such as urgency: they can be lost forever or they are having the most significantly adverse impact on women, elders and children of the local and indigenous communities, or because their restoration can have the most significant benefits and yield the most significant secondary benefits for the ecosystems and the populations depending on them, and for the country's economy and development;</p> <p>6.4 Undertake restoration activities and follow up on them to ensure their success, while controlling the pressures that led to the degradation of the ecosystems and their constrained provision of ecosystem services, including through the removal of negative incentives and the promotion of positive ones;</p> <p>6.5 Put in place mechanisms for monitoring the improvement of ecosystem services and their impact particularly on women, elders and children from local communities and indigenous ethnic minority groups;</p> <p>6.6 Strengthen the enabling environment (policy, financial resources); and</p> <p>6.7 In order to succeed, it is important that local communities, indigenous ethnic minorities, the private sector and other stakeholders are involved as much as possible in every step; also that awareness is raised among populations at all levels of the society regarding the value of ecosystems and their services, so that there is a transformational change in the way people consider biodiversity and ecosystem services</p>	<p>of local communities has more chances of being sustainable and of contributing to the needs of local communities, women, elders, children and indigenous peoples. Thus an increase could indicate positive steps toward achieving the target.</p> <ul style="list-style-type: none"> • Red list index for biodiversity in protected areas, conservation areas and forest ecosystems. • Trend and projections in biodiversity harvested for food and medicine (in relation to agro-ecosystems, forestry, and animal production). • Demand for products from agriculture, animal production, aquaculture and forestry, and their yields. • Indicators can be expressed based on the services provided by the ecosystems e.g. crop yields in agro-ecosystem, amount of medicinal products harvested sustainably; number of projects focusing on sustainable use of biological resources, women, elders, children, indigenous peoples and local communities. • Flow of funds for the restoration of protected areas, conservation areas, agro-ecosystems and forest ecosystems including mangroves that have been under a lot of pressures. • Number of participants have involved in conservation programmes.

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
<p>Target 7 (Aichi Target 4⁹⁰): By 2020, the Government, the private sector and other stakeholders have taken steps to reduce the negative impacts on ecosystems and their services caused by unsustainable production and consumption activities.</p> <p><i>This target is particularly relevant to Themes 17 on Industry and other themes where reference is made to production and consumption, and the management of biological resources.</i></p> <p><i>Issues and opportunities regarding production and consumption of biological resources in Cambodia are described under the Theme 4 on mining above.</i></p> <p><i>Achievement of Target 7 will be in synergy and coordination with the achievement of Target 5 (sustainable management of agricultural, animal, aquaculture and forestry productions), Target 6 (regarding the provision of enhanced services (e.g. food, water, wood and non-timber forest products) from protected areas, conservation areas, agro-ecosystems and forest ecosystems that have been under a lot of pressures in recent years), Target 10 (on species of fauna and flora threatened by unsustainable production and consumption), Target 11 (in the sense that sustainable production and consumption e.g. through the promotion of low carbon technology will contribute to enhanced carbon stocks), Target 12 (reduction of habitat degradation, pollution and overharvesting from unsustainable production and consumption), Targets 15 and 16 (reduction of pollution and exploitation from anthropogenic pressures), Target 17 (on</i></p>	<p>as national capital/assets.</p> <p><i>Bearing in mind that although Cambodia currently has a relatively small ecological footprint, its small biocapacity results in a deficit of about 0.1 global hectares per person⁹¹. Cambodia has adopted strategies and plans (including the National Strategic Development Plan Update and the Green Growth Roadmap) that are favorable to the well-being of the people of Cambodia in a sustainable manner. In order to meet Target 7: to develop an ecologically sustainable system of production and consumption in all economic sectors (agriculture, food production, garments, energy, mining, fisheries, forestry, transport, transformation), the country will:</i></p> <p>7.1 Compile information and undertake research on the impact of current production methods and consumption patterns on ecosystems and their services;</p> <p>7.2 Assess the ecological footprint of industries operating in Cambodia;</p> <p>7.3 Raise awareness of the Government, the private sector and other stakeholders regarding the negative impacts of unsustainable production and consumption;</p> <p>7.4 Formulate and implement a national strategy for sustainable production and consumption building on best practices, the voluntary 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns adopted at the Rio+20 Conference, the Green Growth Roadmap and other development strategies adopted earlier by the country. The strategy will contain <i>inter alia</i>: standards for sustainable production and consumption, and for a better quality of life: for the protection of natural resources and the promotion of a more efficient use of natural resources, products and recovered materials; for the promotion of the life cycle approaches,</p>	<ul style="list-style-type: none"> • Reports on impact of current production methods and consumption patterns on ecosystems and their services. • Data on ecological footprint of industries operating in Cambodia • A national strategy for sustainable production and consumption • Market based incentives (such as taxes and prices) developed for sustainable production and consumption⁹². • Legislations and other programs (green growth development, <i>Satoyama</i> Initiative) supporting sustainable development established and implemented. • Number of certified products commercialized, in relation to sustainable production • Trend in degraded state of ecosystems caused by production and consumption activities • Trend in biological diversity as affected by production and consumption • Number of enterprises applying sustainable production methods based on developed standards; • New technologies adopted or adapted

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
<p><i>Traditional knowledge and customary use that can be used to ensure sustainable production and consumption), and Target 19 (on information system/clearing-house mechanism for cooperation and exchange of relevant information and technologies). The Protected area system (Target 8) and the protection of genetic diversity (Target 20) will contribute to sustainable production and consumption of biological resources. Target 9 on Payment for ecosystem services can serve as an incentive.</i></p>	<p>including resource efficiency and sustainable use of resources; as well as science-based and traditional knowledge-based approaches, and the 3-R concept (reduce, reuse and recycle) and other related methodologies, as needed.</p> <p>The Strategy will call for the engagement of all, in particular the private sector, along the life cycle of products in efforts to achieve a shift towards sustainable consumption and production, particularly sectors with a high environmental and social impact.</p> <p>The national strategy for sustainable production and consumption will be supported by the promulgation of legislations or regulations on sustainable production and consumption in line with existing laws; a strong information system at the interface of science and policy that will facilitate the exchange of information and cooperation; a programme on communication, education, and public awareness building on ongoing initiatives, and on scientific and technological capacity building for the acquisition and adaptation of green technology; and the establishment of financial mechanisms to support investments for the recycling of wastes, adoption of cleaner production methods and, in general, sustainable consumption and production patterns;</p> <p>7.5 The creation of green jobs and market opportunities will serve as incentives for the adoption of sustainable production and consumption.</p>	<ul style="list-style-type: none"> • Report on the conclusion of the rapid assessments of management effectiveness. • Strategic Management Plan for PAs and conservation areas. • Number of updated and new management plans.
<p>Target 8 (Aichi Target 11³): In 2020, at the latest, existing protected areas and conservation areas, including community-based natural resource management areas, have management plans and have started effective implementation.</p>	<p><i>Regarding the development and implementation of management plans for each protected area and each conservation area</i></p> <p>8.1 Conduct a rapid/coarse assessment of management effectiveness such as the WWF Rapid Assessment and Prioritization of Protected Areas Management (RAPPAM), so as to identify strategic actions with</p>	<ul style="list-style-type: none"> • Report on the conclusion of the rapid assessments of management effectiveness. • Strategic Management Plan for PAs and conservation areas. • Number of updated and new management plans.

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
<p>By 2020,</p> <p>(iv) the coverage of marine and coastal protected areas and freshwater protected areas has at least doubled as compared to the 2010 levels;</p> <p>(v) Currently unprotected areas of particular importance for biodiversity and ecosystem services that are under a lot of pressures from human activities are identified and integrated in the protected area system; and</p> <p>(vi) Protected areas and conservation areas have been valued, are part of a well-connected protected area system and have been integrated in national sustainable development goals and national green growth strategies, plans and programmes;</p> <p>By 2029, protected forest covers 3.0 million hectares, in line with the objectives of the National Forest Programme 2010-2029</p> <p><i>This target supports targets 10 and 11 because PAs are among measures that can be taken to (i) address factors affecting threatened fauna and flora species, and (ii) enhance ecosystem resilience and the contribution of biodiversity to carbon stock, and thus contribute to climate change mitigation and adaptation, respectively.</i></p> <p><i>In addition, PAs are mechanisms that can be used to (i) reduce the rate of loss of natural forests, coral reefs and other natural habitats (Target 12), (ii) halve the anthropogenic pressures on coral reefs and vulnerable ecosystems impacted by climate change (Target 15), and (iii) protect wild</i></p>	<p>regards to protected areas, conservation areas and their network for achieving national conservation and development objectives more surely and effectively;</p> <p>8.2 Develop subsequently the strategic management plan called for in the 2008 Protected Area Law, which should include <i>inter alia</i>:</p> <ul style="list-style-type: none"> > A time schedule for conducting (rapid and more comprehensive) assessments of management effectiveness of protected areas and other conservation areas; > Plans for identifying an agreed set of standards, baselines and best practices for management methods and methods for ensuring effective and efficient management of protected areas and other conservation areas, taking into account regional experiences; > Plans for setting in place a mechanism for monitoring and reporting on protected areas, conservation areas and the whole national protected areas system; > A proposed budget or a strategy for mobilizing financial resources for all these activities and ways and means for the mobilization of funds and other resources needed. <p>8.3 Develop management plans for respective PAs and conservation areas.</p> <p>For doubling marine and coastal PAs and freshwater PAs from the 2010 levels:</p> <p>8.4 Assess the 2010 coverage of marine and coastal PAs and freshwater i.e. the Gulf of Thailand MPA (covering 9,210 ha, as per 2014 WDDPA data) and four of the seven national parks, and one of the three multiple use protected areas, which are coastal and marine protected areas. When planning to double this area, it is useful to consider connecting with the MPA</p>	<ul style="list-style-type: none"> • Number of PAME assessments. • Number of PAs and conservation areas where management plans are being implemented. • Number of rangers in protected areas, their number per area, and their Equipment. • Plan for doubling marine and coastal PAs from 2010 level. • Establishment of the MPA that will protect the coral reefs around Koh Rong and Koh Rong Samloem islands and along Preah Sihanouk province's coast. • Plan for the expansion of the protection of the Tonle Sap-Mekong peat swamp forests. • Studies, plans and implementation of the plans for establishing protected areas or conservation areas in Kampong Trach, Lomphat, Sesan River, Stung / Chi Kreng / Kampong Svay and Western Stiem Pang IBAs, and management plans for these protected areas/conservation areas. • Studies for ensuring connectivity, as needed, among PAs and conservation areas, and establishment of corridors or additional PAs that will establish the needed connections • Studies on valuation of PAs and conservation areas • Strategies and actions for integrating PAs in wider landscapes and seascapes and in sustainable development goals, as well as monitoring, evaluating and adapting

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<p><i>relatives of genetic resources (Target 20). Marine protected areas would specifically protect coral reefs (Targets 12 and 15) and be used as a tool for fisheries sustainable management (Target 4). Similarly, forest protected areas and conservation areas are tools for sustainable forest management (Target 5).</i></p> <p><i>This target 8 is complemented by target 6 (By 2020, 10% of those protected areas [...] that have been under a lot of pressures in recent years are in an advanced state of restoration and are providing enhanced services, particularly to local communities women, elders, children and indigenous peoples).</i></p> <p><i>Achievement of Target 9 on Payment for Ecosystem Services can serve as a source of funding for activities under PAs and thus serve as an incentive.</i></p>	<p>planned for the protection of the coral reefs around Koh Rong and Koh Rong Samloem islands⁹⁴ and along Preah Sihanouk province's coast;</p> <p>8.5 Regarding freshwater protection, it is necessary to bear in mind that Cambodia adopted the Strategic Planning Framework 2010-2019 for Fisheries with the following targets:</p> <ul style="list-style-type: none"> ➢ At least 35% of the area of inland flooded forest and at least 75% of the area of coastal flooded forest are protected through physical demarcations by the end of 2019. ➢ At least 40 of the 97 Upper Mekong deep pools are effectively protected and conserved and at least 80% of the Great Lake fish sanctuaries are improved through boundary demarcation, protection and public awareness by the end of 2019. ➢ Post-2019, it will be a goal to complete the protection of all flooded forest, deep pools, sanctuaries and other critical habitats. <p><i>Regarding integration in the protected area system of currently unprotected areas of particular importance for biodiversity and ecosystem services that are under a lot of pressures.</i></p> <p>8.6 Bearing in mind that all terrestrial ecoregions are under protection (20 to 62% coverage of the respective ecoregions) except the Tonle Sap-Mekong peat swamp forests, of which only 0.6% are protected, while a significant portion (> 90%) of this ecoregion is under human pressure adversely affecting the remaining native vegetation, a study will be carried out urgently to demarcate an area of this ecoregion for designation as a protected area. A management plan containing, among other points, guidelines for the participation of local communities and indigenous</p>	<ul style="list-style-type: none"> • Plans for expanding protected forest cover from the current coverage to 3.0 million hectares by 2029, and steps in implementing the plans <p>mechanisms</p>

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
	<p>ethnic minorities, and an assessment of the resources required to ensure the protection and restoration of this ecoregion will be developed and used;</p> <p>8.7 In addition, although most Important Bird Areas (IBA) are covered by protected areas, the following five sites are in critical situations due essentially to agricultural expansion and intensification, human intrusions and disturbances, energy production and mining, overexploitation of some species, in particular wood harvesting and collection of non-timber products: <u>Kampong Tracl, Lomphat, Sesan River, Stung / Chi Kreng / Kampone Svay and Western Siem Pang</u>. Studies and consultations will be undertaken urgently to demarcate areas for protection, assess the resources needed as well as the value and possible revenues from these protected areas. Plans will be developed for the effective management of these areas, including guidelines for the participation of local communities and indigenous ethnic minorities as well as plans for strengthening institutions and human capacities;</p> <p>8.8 Both these IBAs and the Tonle Sap-Mekong peat swamp forests ecoregions include wetlands/freshwater that will also be protected (as part of the first part of sub-paragraph (i) of this target).</p> <p>It should be noted that, in order to ensure connectivity among protected areas and conservation areas, corridors may be considered for addition to the protected area system. A study will be conducted to assess the needs for establishing corridors among protected areas and conservation areas.</p> <p>Regarding valuation of PAs and conservation areas.</p> <p>8.9 Carry out an assessment of the full range of ecosystem services provided by PAs that are critical to the economy and social well-being of the population. This</p>	

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	<p>assessment will also estimate the costs associated with the loss of these services, and the costs of managing the PAs.</p> <p><i>Regarding integration in national sustainable development goals and national green growth strategies, plans and programmes.</i></p> <p>8.10 Complete information on the integration of PAs in national sustainable development goals from relevant initiatives such as the landscape integration project, called “CALM”⁹. Building on those experiences:</p> <ul style="list-style-type: none"> ➢ create a group of partners and decide on a core group; and set the goals to achieve by integrating PAs in sustainable development goals, as well as parameters; ➢ assess the broader context consisting of a review of the protection context (existing PAs and their effectiveness, additional PAs needed), the ecological context (ecosystems/habitats and their value; key biodiversity and connectivity gaps in ecosystems and PAs), the socio-economic, policy and sectoral opportunities and constraints; ➢ develop and implement strategies and actions taking into account the gaps and opportunities ➢ establish monitoring, evaluating and adapting mechanisms <p>8.11 Also see actions under Target 3 for additional actions.</p> <p><i>Regarding achievement of the objective of the National Forest Programme 2010-2029 to have 3.0 million hectares of protected forest cover by 2029, and bearing in mind that currently, the surface area of protected forests is about 1.63 million ha,</i></p> <p>8.12 A study will be carried out to identify forest areas of significant ecological, biological and socioeconomic importance requiring protection or restoration. These</p>	

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<p>Target 9 (Aichi Target 3⁹⁶): By 2020, Payment for Ecosystem Services (PES) is used throughout the country as an incentive for the conservation and sustainable use of biodiversity.</p> <p><i>This target is relating to Theme 18 on Resource mobilization. Its implementation will benefit all the other targets dealing directly or indirectly with ecosystems and biological resources as an incentive for conservation and sustainable use</i></p>	<p>9.1 Raise awareness about PES schemes, opportunities, requirements, risks and constraints, and build/strengthen capacity for valuation of ecosystem services;</p> <p>9.2 Identify ecosystem service prospects including their marketable value, and potential buyers / beneficiaries in the country and region;</p> <p>9.3 Assess and build/strengthen institutional (including legal, policy, land ownership context and existing rules for PES markets and deals) and technical capacity;</p> <p>9.4 Review options for payment and contract types, and develop PES agreements;</p> <p>9.5 Implement PES agreements, and set in place mechanisms for monitoring, as well as ensuring compliance and enforcement, and for evaluating the deal/agreement; and</p> <p>9.6 Compile experiences/case studies in the national clearing—house mechanism for awareness-raising and education programmes.</p>	<ul style="list-style-type: none"> • Number of biodiversity friendly incentives and PES programs or projects developed and implemented. • Number of legislations regarding Payment for Ecosystem Service (PES) developed and implemented. • Status of key ecosystem services and their benefits in areas targeted by PES.
<p>Target 10 (Aichi Target 12⁹⁷): By 2020, all species of fauna and flora threatened at national level have been identified and their status has been improved significantly as a</p>	<p>10.1 Compile a list of threatened species of fauna and flora, assess their status and trends, and describe their ecological and socioeconomic importance;</p> <p>10.2 Identify and describe their direct and underlying</p>	<ul style="list-style-type: none"> • National Red List of threatened species. This list could be updated every two years and automatically aligned with wildlife legislation.

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
<p>result of applying measures to address their respective threats.</p> <p><i>This target is relevant to Theme 2 on endangered species. Also, actions required for the conservation of threatened species of fauna and flora under this Target 10 will likely include designation and effective management of protected areas and conservation areas (Theme 1 and target 8). Ex-situ conservation (Theme 3) can complement these actions. Mining (Theme 4), unsustainable tourism (Theme 17), forest conversion to agricultural lands (Themes 12 and 13), pollution and wastes from manufacturing industries (Theme 17), unsustainable energy production (Theme 14) and climate change (Theme 8) can be cited among the direct threats posed to species of flora and fauna.</i></p> <p><i>In addition, actions necessary to meet this Target 10 will also deliver substantial contributions to other Cambodia Biodiversity Targets. For example, (i) an effectively managed protected area system will contribute to the reduction in the rate of loss of natural habitats (Target 8); (ii) aquaculture can relieve the stress of fishing on fish stocks and well managed fisheries, agriculture, animal production and forestry (Targets 4 and 5) will ensure that these sectors have no significant adverse impacts on threatened species. Similarly, actions taken to achieve other targets (e.g., Target 1 on raising awareness about the value of components of biodiversity; Targets 6 and 11 putting forward ecosystem restoration, Target 7 for the sustainable production and consumption of biological resources and ecosystem services; Target 15 to reduce anthropogenic pressures on biodiversity</i></p>	<p>10.3 threats; In a participatory way and taking into account the knowledge, know-how and practices of local communities and indigenous ethnic minorities, put forward and implement measures to address the direct and underlying threats. Some of the direct threats were considered under other strategic themes in this NBSAP, such as mining (Theme 4), climate change (Theme 8), overharvesting and ecosystem degradation (Themes 9 to 14), pollution (e.g., Themes 17 and 22), invasive alien species (Themes 12 and 13), and manufacturing industries, biotechnology / biosafety and tourism (Theme 17), while the themes in Group 3 dealt in general with underlying threats. Both <i>ex-situ</i> and <i>in-situ</i> conservation or establishment and effective management of PAs are among actions required to conserve and improve the status of threatened species;</p> <p>10.4 Raise awareness about threatened species; and</p> <p>10.5 Monitor and assess effectiveness of measures taken</p>	<ul style="list-style-type: none"> • Other lists of threatened species include CITES appendices. • Description of the ecological and socioeconomic importance of threatened species, and possibly the consequences of their loss, for awareness-raising programmes. • Awareness-raising programmes integrating sections on threatened species. • Number of habitat restoration programmes and species recovery action plans: the goal of these programmes and action plans is to enable the best management and conservation of threatened species. • Size and distribution of habitats for threatened species identified. • Species Action Plans produced for all Asian Species Action Plan (ASAP) Critically Endangered Vertebrates. • All ASAP species protected within Cambodian protected area network • Number and size of habitats hosting endangered species. • Number of illegal activities on the threatened species: decline in the number and size indicates progress toward achievement of the target. • Occurrence of threats: reduction in the occurrence and impact of threats/pressures is a sign of progress towards the recovery of threatened fauna and flora species.

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
<p>components impacted by climate change, Target 16 for the reduction of pollutant pressures on ecosystems, and Target 18 for controlling invasive alien species) will support actions towards the achievement of this Target 10..</p> <p>Target 11 (Aichi Target 15⁹⁸): By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks have been enhanced, through the conservation and restoration of degraded ecosystems, focusing in particular on degraded forests, protected areas and conservation areas, thereby contributing to climate change mitigation and adaptation and to combating desertification.</p> <p>This target is in</p> <p><i>This target is applicable to all degraded ecosystems but it is particularly relevant to Theme 1 on protected area system, Theme 8 on biodiversity and climate change, Theme 9 on forests, Theme 13 on agricultural lands, and Theme 4 on mining. Actions envisaged under many other themes will support actions for this target; for example, under Theme 6 and Group 3 themes.</i></p> <p><i>As such, this target will reinforce progress toward the achievement of Target 5 (Sustainable management of forests and agricultural lands), Target 6 (for 10 % ecosystem restoration), Target 8 (on PA system), Target 15 (on controlling anthropogenic pressures) and will benefit from actions undertaken for Targets 19 (on clearing – house mechanism), 17 (traditional knowledge).</i></p>	<p>11.1 Identify and assess the status and trends of degraded forests including mangroves, degraded PAs, degraded conservation areas and other degraded ecosystems such as agro-ecosystems and wetlands;</p> <p>11.2 Identify and assess the direct and underlying causes of ecosystem degradation;</p> <p>11.3 Enhance awareness about climate change mitigation and adaptation measures in the country;</p> <p>11.4 Undertake studies on ecosystems resilience and restoration in Cambodia and in the region;</p> <p>11.5 Apply best practices to identified degraded ecosystems for their restoration and resilience, and assess their contribution to carbon stocks, taking into account ongoing initiatives implementing, among other national strategies and plans, the 2006 National Adaptation Programme of Action on Climate Change, and the Cambodia Climate Change Strategic Plan 2014-2023, and in synergy with ongoing initiatives in the context of the Clean Development Mechanism (CDM), REDD⁺ and other carbon financing mechanisms for climate change mitigation and adaptation;</p> <p>11.6 Legislation and incentives; and</p> <p>11.7 Strengthen human, institutional, technological and financial capacities building.</p> <p>Actions identified for Target 8 are also relevant here.</p>	<ul style="list-style-type: none"> • Number and extent (area) of restoration and rehabilitation programmes • Legislations on forestry and other natural resources, revised as needed to ensure adequate integration of biodiversity and its associated ecosystem services, and their enforcement. • REDD⁺ projects • Number of ecosystems represented within Cambodian protected area system / network of well managed protected areas with zonation, management plans, and adequate staff • Level of species, genetic and habitat diversity: the higher the level, the higher the chances of having resilience
<p>Target 12 (Aichi Target 5⁹⁹): By 2020, the rate of loss of natural forests¹⁰⁰, coral reefs and</p>	<p>12.1 Conduct biodiversity assessments/inventories of natural habitats, with emphasis on natural forests</p>	<ul style="list-style-type: none"> • Number of persons/Institutions carrying out inventories and biodiversity assessment of

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<p>other natural habitats is at least halved; and habitat degradation and fragmentation, pollution, overharvesting, introduction of invasive alien species and their impacts are significantly reduced.</p> <p><i>This target is applicable to all natural habitats with some focus on natural forests and coral reefs, and also applicable to all direct causes of biodiversity loss. As such, implementation of actions under all the other themes will support the achievement of this target. In addition, co-benefits associated with many other Targets, especially with respect to Targets 5, 6 (ecosystem restoration), 7 (sustainable production and consumption), 8 (protected area system), 11 (ecosystem resilience), 15 (reducing anthropogenic pressures) and 18 (control of invasive alien species).</i></p>	<p>including mangroves, coral reefs, wetlands, areas around river banks, lake shores, and un-protected biodiversity hotspots;</p> <p>12.2 Compile information on their status and trends from diverse sources including scientists, local communities, indigenous ethnic minorities and citizens at large, bearing in mind that information on forests has been submitted regularly in the context of the FAO Forest Resource Assessment;</p> <p>12.3 Conduct studies to assess the rate of loss of these natural habitats / ecosystems and calculate the end point to half the rate of loss;</p> <p>12.4 Identify the direct and indirect causes of loss of these natural habitats / ecosystems. Among these, document and assess in particular the impact of the following drivers: habitat degradation and fragmentation, pollution, overharvesting, introduction of invasive alien species. Other drivers of biodiversity loss should be kept in mind, including coastal development, agricultural conversion, water diversions, channelization, construction of dams and roads, and climate induced sea level rise;</p> <p>12.5 Describe and assess the effectiveness of measures taken to address the causes of habitat / ecosystem loss, in particular habitat degradation and fragmentation, pollution, overharvesting, introduction of invasive alien species, and document best practices. Measures to be considered will include actions to be taken under other targets such as Targets 1 and 3 (valuation of biodiversity, awareness of the values and integration in development plans), Target 5 (sustainable aquaculture to reduce the stress on fisheries, and sustainable forest management), Target 7 (sustainable production and consumption and emphasis on efficiency and the 3-R concept), Target 8</p>	<p>natural habitats</p> <ul style="list-style-type: none"> • Number of natural habitats under protection with functional management plans • Plans of habitat loss prevention, and for habitat restoration. • Size of habitat restored and/or protected. • Number and capacity of rangers and operational equipment and facilities for preventing habitat losses. • Coverage/Extent of natural habitats. • (Annual) rate of loss of natural habitats.

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
	<p>(Protected area system) including designation of heritage sites under UNESCO or wetlands under the Ramsar Convention, Target 10 (protection of threatened species), Target 15 (reducing anthropogenic pressures on natural habitats impacted by climate change), and Target 18 (control of invasive alien species). These measures can be prioritized using such criteria as (i) measures with immediate impacts on the ground in addressing the drivers of change, (ii) starting with actions having zero or negative costs; then actions having a relatively low cost but high impact; and finally actions that are expensive to carry out especially if their impact is limited; and (iii) actions that can simultaneously help achieve other Targets;</p> <p>12.6 Develop plans to control the causes of loss, in particular habitat degradation and fragmentation, pollution, overharvesting, introduction of invasive alien species, including through the strengthening of some of the measures taken and application of new ones;</p> <p>12.7 Build and strengthen the capacities, including human, institutional, technological and financial capacities, needed for the implementation of the plans.</p> <ul style="list-style-type: none"> ➢ Develop and implement communication plans and integrate consideration of natural habitats/ecosystem issues in education and awareness-raising programmes; ➢ Enhance the enabling conditions including by strengthening participation, cooperation and coordination (within the country, at the regional and international level) and other actions described under the NBSAP themes in Group 3; ➢ Law enforcement is of fundamental importance to stop illegal activities such as illegal logging 	

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
<p>Target 13 (Aichi Target 16⁽¹⁰⁾): By 2015, Cambodia has designated a national focal point and one or more competent national authorities for the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS), and established a functional ABS Clearing-House as part of the clearing-house mechanism;</p> <p>By 2020, Cambodia has developed and is enforcing a legislation and national policies on access to genetic resources and the fair and equitable sharing of benefits arising from their utilization.</p> <p><i>Actions under Theme 15 on Access and Benefit-Sharing are relevant for achieving this target</i></p>	<p>and fishing methods;</p> <ul style="list-style-type: none"> > Apply biodiversity-inclusive environmental impact assessments on all projects, and design and implement mitigation measures; and > Participation in REDD+ and application of payment for ecosystem services and product certification can support the actions identified in the plans. <p>12.8 Implement the plans; and</p> <p>12.9 Monitor and evaluate progress and adapt the plans as needed for improved effectiveness.</p>	<ul style="list-style-type: none"> • Relevant Laws and policy frameworks on ABS have been established. • Education and capacity building programs on the Nagoya Protocol on ABS have been organized and implemented. • Case study on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS).
<p>Target 14 (Aichi Target 17⁽¹⁰⁾):</p> <p>By 2015, the National Biodiversity Strategy and Action Plan (NBSAP) have been updated and adopted, and have commenced to be implemented effectively.</p> <p><i>This is an overall target for the updated strategy</i></p>	<p>14.1 Update National Biodiversity Status Report (NBSR-2001) to use as input for updating NBSAP.</p> <p>14.2 Update National Biodiversity Strategy and Action Plan (NBSAP-2002) to align with Global Strategy for Biodiversity 2010-2020 and national circumstances.</p>	<ul style="list-style-type: none"> • National Biodiversity Strategy and Action Plan have been updated on time and published. • Number of national, sub-national and sectoral plans in which biodiversity

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
<p><i>and have achieved in 2016</i></p> <p>Target 15 (Aichi Target 10⁽¹⁰⁾): By 2020, anthropogenic pressures (pollution, exploitation, sedimentation...) on coral reefs and vulnerable ecosystems impacted by climate change have been significantly reduced.</p> <p><i>This target goes essentially with strategic objective 1 under Theme 11 on marine and coastal resources and actions under Themes 7 (Water resources), 8 (Biodiversity and climate change), 9 (Forest resources), 11 (Coastal and marine resources) and 13 (Agriculture and animal production). There are also a lot of co-benefits in achieving this target with other targets, in particular for the sustainable management of fisheries and aquaculture (Target 4), the sustainable management of areas under agriculture, aquaculture and forestry (Target 5), sustainable production and consumption (Target 7), an effectively managed protected area system (Target 8), the reduction of the loss of natural habitats (Target 12) and the reduction of pollutant pressures on ecosystems (Target 16).</i></p>	<p>15.1 Inventory annually and describe ecosystems that are vulnerable to climate change in Cambodia, including in particular coral reefs, and describe factors determining vulnerability;</p> <p>15.2 Identify and assess the impact of anthropogenic pressures on these vulnerable ecosystems;</p> <p>15.3 Develop plans to reduce these pressures and restore the degraded ecosystem and enhance management to build up ecosystem resilience. Generic measures are identified essentially under Targets 8, 11 and 12 above, but also under many other Targets;</p> <p>15.4 Implement plans; and</p> <p>15.5 Monitor impact of measures taken, evaluate progress and adapt the plans as needed for improved effectiveness.</p>	<ul style="list-style-type: none"> • conservation has been integrated. • The level of participation of all the Ministries highlighted. • Actions taken to demonstrate outcomes of implementation of NBSAP. • Location, status and trends of coral reef and other ecosystems vulnerable to climate change have been determined and updated annually. • Number of studies on anthropogenic pressures (including in particular pollution and sedimentation affecting coral reefs) and their impact on vulnerable ecosystems. • Plans to address the pressures on vulnerable ecosystems. • Project submitted or funded to address the pressures on vulnerable ecosystems and to restore degraded ecosystems and enhance management to build up ecosystem resilience. • Number of ongoing and/or planned programmes for reducing anthropogenic activities on coral reef and other vulnerable ecosystems. • Extent of healthy and/or recovering coral reefs and other vulnerable ecosystems. • Number and extent of protected areas/conservation areas covering coral reefs and other vulnerable ecosystems impacted by climate change. • Laws on management, exploitation, pollution of ecosystems, existing, being reviewed or updated, and status of their

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
<p>Target 16 (Aichi Target 8^{10d}): By 2020, pollutant pressures on terrestrial and aquatic ecosystems are substantially reduced to levels that are not detrimental to ecosystem function and biodiversity.</p> <p><i>Actions under Themes 4 on mining, 5 on Environmental Security, 7 on water resources, 11 on marine and coastal resources, 17 on industry and, and 8 on climate change will support the achievement of this target. There are potential synergies in implementing this Target activities and the activities planned under Targets 5 for sustainable management of areas under agriculture, forestry and aquaculture, 6 on sustainable fisheries and aquaculture, 9 (because payment for ecosystem services will discourage anthropogenic pressures on ecosystems), 15 for the reduction of anthropogenic pressures on vulnerable ecosystems impacted by climate change, and 18 for the control and eradication of invasive alien species.</i></p>	<p><i>Bearing in mind that Cambodia is undergoing rapid development and industrial growth, that, as a result, air quality is deteriorating from industrial and handicraft processes as well as fossil fuel combustion, that soils and waters are polluted by chemicals used in agriculture and mining and various types of wastes, and that marine and coastal areas are being degraded from land-based activities as well as from ships, Cambodia can carry out the following activities to meet its target of significantly reducing pollutant pressures on terrestrial and aquatic ecosystems:</i></p> <p>16.1 Map out areas in terrestrial and aquatic ecosystems that are polluted, document the nature and sources of the pollutants, and assess the levels, impacts and costs;</p> <p>16.2 Identify measures taken, including promulgated laws and subdecrees to address the current pollution, assess their effectiveness and identify gaps;</p> <p>16.3 Formulate and implement plans for integrated management to address current and possible future pollution, taking into account experiences in the country and region, and best practices, drawing also from treaties ratified by Cambodia and international plans such as the International Convention for the Prevention of Pollution from Ships (MARPOL) and the Global Programme of Action for the Protection</p>	<ul style="list-style-type: none"> • enforcement. • Number of people, in particular fishers and representatives of the private sector, government staff who have received education, training or who have participated in awareness-raising workshops on coral reef and environmental protection law. • Assessment reports on public awareness on coral reef protection. • Map of polluted areas and studies documenting the nature, sources levels, as well as the environmental/ecological and socioeconomic impacts of the pollutants. • Studies compiling the measures taken to address the current and possible future pollution, including promulgated laws and subdecrees, and their effectiveness. • Plans to address current and possible future pollutions. • Implementation of international treaties and plans having provisions to control pollution. • Water quality standards such as Total Suspended Solids (physical), Oxygen levels (chemical) are adopted and implemented. • Adoption of green management strategies and approaches in organizations/industries that are sources of pollutants. • Educational programs on water pollutants. • Proportion of agricultural areas with high use of pesticides and chemical fertilizers. • Proportion of water areas seriously

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
<p>Target 17 (Aichi Target 18⁽⁶⁾): By 2020, the traditional knowledge, innovations and practices of indigenous ethnic minorities and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are</p> <p>(a) respected, subject to national legislation and relevant international obligations, and</p> <p>(b) fully integrated and reflected in the</p>	<p>of the Marine Environment from Land-based Activities. It should be noted that actions identified for the achievement of other targets, such as actions for sustainable production and consumption are applicable here; for example, industrial pollution can be controlled by using cleaner production. Organic agriculture can solve to some extent the question of excessive chemical input in modern agriculture. Recycling can reduce the amount of industrial or domestic wastes. Perverse subsidies leading to excess nutrient use in agricultural lands can be removed;</p> <p>164 Prioritize interventions on the basis of their impact, feasibility and cost;</p> <p>165 Put in place mechanisms for monitoring pollution against agreed guidelines and adopted national standards, and the effectiveness of measures taken;</p> <p>166 Develop and carry out communication, education and awareness-raising programmes;</p> <p>167 Strengthen human and technological capacity, and institutional structures, including in particular the facilities¹⁰⁵ under MOE established to control pollution; and</p> <p>168 Mobilize the necessary funds from diverse sources.</p> <p><i>Building on the guidance provided in various CBD COP decisions on Article 8(j) and related provisions, and also building on actions being carried out under various strategic themes, in particular theme 16 and 19,</i></p> <p>17.1 Develop and strengthen national level strategies, including <i>sui generis</i> systems, for promoting and protecting traditional knowledge and the customary sustainable use of biological diversity, taking into account the standards adopted by the CBD COP including the Akwé: Kon Guidelines for</p>	<ul style="list-style-type: none"> • polluted. • Proportion of fish stocks contaminated by Persistent Organic Pollutants (POPs) and heavy metals. • Proportion of untreated wastewater disposed into the coast and ocean area • Proportion of industries including mining with environmental policy adopted and used. • Amount of wastes an hazardous wastes generated. • Area of land contaminated by hazardous waste (hectare) • Assessment reports on changing behavior of people in usage, storage and management of solid waste and waste water. • Pollution monitoring reports (including nitrogen deposition, wastes etc.) and EIA practices. • Strengthening of MOE Department in charge of pollution control. <ul style="list-style-type: none"> • Rights, traditional knowledge and customary usage of biodiversity have been written in national policy on Indigenous Ethnic Minorities and local communities Development. • Laws relating to the respect of traditional knowledge, innovations and practices of indigenous ethnic minorities and local communities are being enforced both at national and sub-national levels.

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
<p>Implementation of the Convention and the NBSAP with the full and effective participation of these communities, at all relevant levels.</p> <p>This target is linked to <i>Theme 16 on Customary use and Traditional knowledge and Theme 19 on Community Participation and other related themes such as Theme 20 on awareness-raising.</i> This Target is relevant to the overall Strategic Objective A and Cambodia Target 1 because <i>assessment of the status and trends of biodiversity and its value usually includes assessment of the associated traditional knowledge.</i></p> <p>This Target is also cross-cutting under a number of other themes¹⁰⁷ and as an essential element of the “enabling” cluster, required for the achievement of other Cambodia Biodiversity Targets. <i>Indigenous and local communities have been acknowledged as key partners in achieving the goals of the CBD and other biodiversity-related conventions, and their knowledge, innovations and practices are essential for the sustainable management of biodiversity.</i></p> <p>Given the broad nature of this target, progress towards its fulfillment will contribute to several other targets, in particular targets 4, 5, 6, 8, 13 and 15.</p> <p>Target 18 (Aichi Target 9¹⁰⁸): By 2020, major invasive alien species (IAS) and their pathways have been identified and prioritized, and the prioritized IAS and pathways are controlled.</p> <p><i>This target is a cross-cutting issue particularly relevant to Themes 1, 2, 9 to 13. It is important to note that ecosystem degradation and climate change impacts are particularly favorable to the</i></p>	<p>Environmental Assessment, the Code of Ethical Conduct;</p> <p>17.2 Strengthen capacity building initiatives to foster effective participation of indigenous ethnic minorities and local communities in the implementation of the CBD, in particular Articles 8(j), 10(c) and related provisions, and the NBSAP whenever relevant traditional knowledge, innovation and practices are required; and</p> <p>17.3 Strengthen capacities for the implementation of Articles 8(j), 10(c) and related provisions under the CBD, including for co-managing protected areas and conservation areas.</p> <p><i>Bearing in mind that: As stated in the 5th National Report under the CBD, there are undocumented cases of detrimental effects of invasive alien species (IAS) in Cambodia: However, a number of known aggressive invaders have been reported, and According to IUCN¹⁰⁹,</i></p> <p>> many IAS have been introduced into the Lower Mekong Basin (LMB) region for economic and aesthetic reasons, and several others have entered</p>	<ul style="list-style-type: none"> • Number of local communities and indigenous ethnic minorities involved in planning processes. • Number of certified traditional products. • Children from local communities and indigenous ethnic minorities have been provided with at least primary and secondary education. • Local communities and indigenous ethnic minorities have opportunities to receive relevant professional training according to their needs and locations. • Culture of local communities and indigenous ethnic minorities is better protected and conserved. • The different indigenous cultural groups have been or are being identified. • Local communities and indigenous ethnic minorities have been provided legal rights to own and use their lands. <ul style="list-style-type: none"> • Number of studies and programmes to monitor potentially invasive alien species present in Cambodia • Number of invasive aliens species identified. • Number of invasive aliens species for which pathways have been described as well as factors facilitating their

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
<p><i>establishment and spread of invasive alien species.</i></p> <p><i>Implementation of Target 18 can be in synergy particularly with implementation of activities under Targets 1 (awareness-raising about causes of biodiversity loss), 4 (sustainable management of fisheries and aquaculture), 5 (sustainable management of areas under agriculture, forestry and aquaculture), 6 (ecosystem restoration), 8 (protected area system), 10 (protection of threatened species), 11 (ecosystem restoration and resilience), 12 (reducing the rate of loss of natural habitats), and 15 (reducing anthropogenic pressures including IAS on vulnerable ecosystems impacted by climate change)</i></p>	<p>accidentally;</p> <p>> at present, the major pathways for introduction of IAS in the region include aquaculture development, horticulture, aquariums and ornamental fish trades, bearing in mind that other pathways include mariculture, agriculture, forest plantation, transport systems (e.g. ship ballast water, fouling on the hulls of ships and other boats, transport of raw goods such as timber), and tourists;</p> <p>> the spread of IAS in the region has been aggravated by development activities such as construction of dams, water stream diversions, urbanization, agricultural expansion,</p> <p><i>Cambodia will undertake the following actions to achieve the target by preventing the introduction, spread and establishment of IAS:</i></p> <p>18.1 Monitor the behavior of potential IAS and set a mechanism in place for this monitoring;</p> <p>18.2 Monitor the known pathways for introduction of possible IAS in the LMB region (in particular trade of species introduced for aquaculture, horticulture and as pets);</p> <p>18.3 Reinforce the quarantine services at borders and regional cooperation and coordination to ensure that effective mechanisms are in place for inspection at borders, rapid detection and enforcement of quarantine regulations, so as to prevent introduction of invasive alien species;</p> <p>18.4 Develop and disseminate national policies on the management and prevention of IAS, building on existing legal frameworks and ongoing work in the context of the CBD and other international and regional agreements¹¹⁰ ratified by Cambodia;</p> <p>18.5 Develop education and awareness-raising</p>	<p>establishment and spread</p> <ul style="list-style-type: none"> • Laws and policy frameworks developed for the prevention and control of IAS and their enforcement. • Areas affected by invasive aliens species identified. • Trends in habitat conversion caused by IAS. • Number of invasive aliens species control programs under management programs. • Protection and eradication measures on the IAS. • Support given to strengthen quarantine services in the country. • Mechanisms in place to boost regional cooperation and coordination. • Popular publications of laws, regulations addressing IAS issues, and their dissemination. • Education, informal training and awareness-raising materials, and their uses on occasion of training workshops for example. • Amount of information in the clearing-house mechanisms.

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
<p>Target 19 (Aichi Target 19¹¹¹): By 2020, an interoperable and user-friendly information system containing data and information on biodiversity (including its associated ecosystem services) values, functions, status and trends, and threats, and the consequences of its loss has been established and maintained in the responsible institutions for wide sharing among stakeholders.</p> <p><i>Activities under this target contribute to practically all the strategic objectives</i></p>	<p>programmes for decision-makers, administrators, researchers, the private sector and the general public, so that informed decisions can be taken at every stage about how to limit introductions and their spread. Education and awareness-raising materials will include impact of IAS on human health and socio-economies, information on the spread and impacts of IAS in the LMB,</p> <p>18.6 Enhance preparedness of the country to face IAS when they have been introduced by acquiring the knowledge and technology for halting IAS spreads, e.g. through their containment and control of their density and abundance, preventing their re-introduction, mitigating their damage, eradicating them if they have been introduced and have established, and restoring damaged ecosystems; and</p> <p>18.7 Develop and implement a financial mobilization plan.</p>	<ul style="list-style-type: none"> National biodiversity information/database system has been strengthened and is operational. Coordination mechanisms have been established for information gathering and sharing among relevant institutions. Biodiversity status reports have been developed and shared through the Clearing-House Mechanism including information on threats to, and value of, biodiversity and ecosystems. Educational programs, workshops and training activities are being carried out on the use of informational technology for biodiversity management. The clearing-house mechanism carries some e-modules for training on aspects of

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
<p>Target 20 (Aichi Target 13¹¹²): By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals, as well as the genetic diversity of their wild relatives is protected and conserved in-situ and ex-situ.</p> <p><i>This target is in line with themes 1 to 3 and 9 to 14 but the other themes are also relevant. It is also linked to many other targets, in particular Target 1 on raising awareness about the status, trends and values of biodiversity components; Targets 4 and 5 on sustainable management of ecosystems that include the protection of genetic resources and genetic diversity in those ecosystems; Target 8 on establishment of effectively managed protected areas and conservation areas that will protect, particularly in their core areas, representative components of biodiversity; Target 10 for the protection of threatened species and thus the genetic diversity of these species; and Target 12 for the reduction of the loss of natural habitats where wild relatives of genetic resources can be found.</i></p>	<p><i>Drawing essentially on the Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture¹¹³, the Global Plan of Action for Animal Genetic Resources and the Interlaken Declaration¹¹⁴ and the International Initiative on Biodiversity for Food and Nutrition adopted by the Conference of the Parties to the CBD¹¹⁵, Cambodia can undertake the following actions to achieve its target on the protection of genetic diversity of cultivated plants and farmed and domesticated animals, as well as the genetic diversity of their wild relatives:</i></p> <p>20.1 Survey and inventory</p> <ul style="list-style-type: none"> ➢ plant genetic resources for food and agriculture and genetic varieties of other cultivated plants (e.g. ornamental); and ➢ animal genetic resources for food and agriculture; <p>20.2 Collect the wild relatives of plant genetic resources including in particular landraces on the verge of extinction, and related scientific information, including traditional knowledge with the consent of local communities and indigenous ethnic minorities in accordance with national legislation and policies;</p> <p>20.3 Characterize and classify</p> <ul style="list-style-type: none"> ➢ the genetic diversity of cultivated plants and their wild relatives for morphological and agronomic traits, including at the molecular level if possible, ➢ the genetic diversity of farmed and domesticated 	<ul style="list-style-type: none"> • Lists of (i) plant genetic resources for food and agriculture and genetic varieties of other cultivated plants (e.g. ornamental); and (ii) animal genetic resources for food and agriculture found in Cambodia • Herbarium and collections of seeds or other planting materials of wild relatives of plant genetic resources • Databases of traditional plant breeders, animal breeders and curators of <i>ex-situ</i> collections • Plant nurseries, germplasm facilities, botanical and zoological gardens for researching protection, conservation, germination, breeding and local genetic pools. • Laws on Genetic Resources (standard) for internal and external investments. • Germination, transplantation, reproduction and conservation of threatened flora species, and reproduction of threatened fauna. • Number of local genetic pools has been established. • Number of relevant national legislations and policy frameworks has been

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
	<p>animals, and organize the results in user-friendly databases;</p> <p>20.4 Inventory gene and seed banks existing in the country and in the region;</p> <p>20.5 Undertake an inventory of traditional plant breeders, animal breeders and curators of <i>ex-situ</i> collections, and involve them in the activities identified under this target;</p> <p>20.6 Review plans and strategies that are in place to maintain the plant and animal genetic diversity for food and agriculture and genetic diversity of other planted species <i>in-situ</i> and <i>ex-situ</i>.</p> <p>20.7 Develop and implement plans and policies for <i>ex-situ</i> and <i>in-situ</i> conservation, and for the distribution of germplasm (seed, tissues etc.).</p> <ul style="list-style-type: none"> ➢ For <i>in-situ</i> conservation, support farmers' in situ conservation of traditional and local plant varieties, animal breeds, and efforts to conserve crop wild relatives. Support farmers' in situ conservation of traditional and local plant varieties, animal breeds, and efforts to conserve crop wild relatives; ➢ For <i>ex-situ</i> conservation, expand existing facilities and establish new ones (seed banks, gene banks, botanical and zoological gardens etc.) at the local, provincial and national level for maintaining, evaluating, documenting and the distribution of germplasm. Maintain genetic materials in ways that will preserve viability and genetic stability over long periods of time and evaluate them regularly. Support collections and exploration for the collection of wild relatives with emphasis on threatened genetic resources. Consider opportunity of placing some accession in-trust with FAO so that they can be maintained 	<p>established.</p> <ul style="list-style-type: none"> • Development and strengthening of capacity for using DNA based methods for species identification and genetic diversity studies, and for parentage, population structure and ecosystem health studies. • Plans and policies to support <i>ex-situ</i> and <i>in-situ</i> conservation, in particular conservation of traditional and local plant varieties, animal breeds; and plans, policies and means to support farmers involved in these activities • Support to existing <i>ex-situ</i> facilities and their expansion • Number of taxonomists and parataxonomists • Number of university research programmes relating to the conservation of genetic resources • Collaboration with/agreements with FAO and CGIAR centers for the long-term conservation of selected accessions at international standards. • Markets created for local wild plants and animals, for rare and threatened plant species and animal breeds and for underutilized species in ways that will promote conservation and sustainable use of these species. • Amount of seeds and other planting materials. • Biodiversity-friendly breeding and seed laws, regulations and standards.

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
	<p>20.8 Enhance the protection of the genetic diversity of cultivated plants and farmed and domesticated animals, as well as the genetic diversity of their wild relatives by ensuring their sustainable use through:</p> <ul style="list-style-type: none"> ➢ the sustainable use of economically valuable local wild plants and animals, as an income generating activity for local inhabitants; ➢ the marketing of products from rare and threatened plant species and animal breeds; ➢ the development and commercialization of all varieties, primarily farmers' varieties/landraces and underutilized species; ➢ seed production and distribution; ➢ promotion of traditional knowledge and customary sustainable uses; and ➢ the establishment and strengthening of national sustainable use policies. <p>20.9 Enhance the enabling conditions, including by:</p> <ul style="list-style-type: none"> ➢ fostering collaboration and coordination at the national, regional and international levels with universities and research institutions, and the Consultative Group of International Agricultural Research Centres for examples; ➢ strengthening the national clearing-house mechanism to handle data and information on plant genetic resources for food and agriculture, other plant genetic diversity and animal genetic diversity; ➢ developing and strengthening systems for monitoring; ➢ creating economic incentives for in situ conservation by farmers; 	

Cambodia Biodiversity Target	Specific actions	Indicators of progress towards the achievement of the targets
	<ul style="list-style-type: none"> ➤ developing and strengthening biodiversity-friendly breeding and seed laws, regulations and standards; ➤ strengthening public awareness of the importance of plant and animal genetic resources for food and agriculture and other cultivated plant varieties; and ➤ Mobilizing funds from diverse sources. 	

ANNEX I

Indicative list of laws, strategies and plans of relevance to the National Biodiversity Strategy and Action Plan adopted by Cambodia since 2002

Year	Law, strategy or plan	Relevance to biodiversity
<i>Laws</i>		
2015	Law on Production and Animal health ¹¹⁶ ,	A draft law on animal health and production is expected to be approved by the December 2015 deadline of the Asean Economic Community (AEC). The law includes better management of livestock production and health, and protections for consumer health and local breeds to ensure a sustainable livestock production in Cambodia. http://www.cambodianews gazette.com/2902/livestock-law-near-approval
2012	Law on the Management of Pesticides and Fertilizers	This law aims to define the management of all pesticides and fertilizers in the Kingdom of Cambodia in a way that reduces possible risks from their uses for food security, food safety, public health, and the sustainability of environment; To enhance public awareness (Articles 1 and 2) https://view.officeapps.live.com/od/view.aspx?src=http%3A%2F%2Fwww.worldsbestrice.biz%2FLaw%2520on%2520management%2520of%2520pesticides%2520and%2520fertilizers%2520Eng.doc
2009	Law on Tourism	The purpose of this law is: Govern the development of the tourism sector in a sustainable manner, effectively and qualitatively, with a view of reducing poverty; protect and conserve the natural resources, culture and customs, which serve as the foundation of the tourism sector; minimize the negative impacts of the tourism sector, while maximizing the positive impacts (Article 2). http://www.tourismcambodia.org/cantourismlaw/index.php
2008	Protected Areas Law	The objectives of this law are to ensure the management, conservation of biodiversity, and sustainable use of natural resources in protected areas (Article 1). http://www.cambodiainvestment.gov.kh/law-on-nature-protection-area-protected-areas-law_080104_080104.html
2008	Law on Biosafety	[...] Prevent adverse impact on the conservation of biodiversity and natural resources in the Kingdom of Cambodia caused by the transboundary movement, development, handling, transfer, use, storage, and release of living modified organisms resulting from modern biotechnology; Ensure the effective conservation of biodiversity and the sustainable use of biological resources, taking into account risks to human health (Article 1). http://www.bch-moe.gov.kh/userfiles/image/document/National%20Law%20on%20Biosafety.pdf
2008	Law on Seed Management and Plant Breeder's Right	The purpose of this Law is to manage and control the breeding, release for use, production, processing, registration, distribution, import and export of seeds, and to protect new plant varieties in the Kingdom of Cambodia (Article 1). Also to secure the management and sustainable development of varieties and to encourage the development thereof for social,

		economic, and environmental benefits (Article 2). http://capvp.org/library/member/pdf/Khmer_UPOV_Act-Eng-Final.pdf
2008	Law on Administrative Management of the Capital, Provinces, Municipalities, Districts and Khams, <i>Royal Kram No. NS/RKM/0508/017</i> , Kingdom of Cambodia	Among others, functioning, roles and duties of authorities at the provincial and lower levels. http://www.cedc-erdb.gov.kh/cdc/lwg_network/country_systems_cambodia/strengthening_national_systems/documents_for_reform/sndd/organic_law_2008_en.pdf
2007	Law on Water Resources Management of the Kingdom of Cambodia	Water and water resources shall be managed and developed based on an integrated water resources management (IWRM). The principle of Integrated Water Resource Management requires coordinated multi-sectoral water use planning, including the need for conservation of biodiversity and ecosystems.
2006	Law on Fisheries	The purpose is to ensure fisheries and fishery resource management, enhance aquaculture development, the management of production and processing, and promote the livelihood of people in local communities for the social-economic and environmental benefits, including the sustainability of the conservation of biodiversity and natural culture heritages in the Kingdom of Cambodia (Article 1). http://faolex.fao.org/docs/pdf/cam82001.pdf
2006	Law on Administration of Factory and Handicraft	This law has provisions on pollution, wastes, environmental safety and the like. http://www.cambodiainvestment.gov.kh/law-on-administration-of-factory-and-handicraft_060623.html
2003	Sub-Decree NO.79 on Community Forestry Management_031202	Article 1: This sub-decree aims at determining rules for the establishment, management and use of community forests throughout the Kingdom of Cambodia. http://www.cambodiainvestment.gov.kh/sub-decree-79-on-community-forestry-management_031202.html
2002	Law on Forestry	For management, harvesting, use, development and conservation of the forests in the Kingdom of Cambodia. The objective of this law is to ensure the sustainable management of these forests for their social, economic and environmental benefits, including conservation of biological diversity and cultural heritage (Article 1). http://www.forestry.gov.kh/Documents/Forestry%20Law_Eng.pdf
Approaches, strategies and plans		
2013	Cambodia Climate Change Strategic Plan 2014 – 2023	The RGC has launched the CCCSP as a continuation of national policy response, in providing a framework for climate change responses and guiding the transition to low-carbon and climate resilient development. The CCCSP supports national preparedness in responding to climate risks and disaster management, and in capitalizing on emerging opportunities such as green growth, mobilizing climate funds from bilateral and multilateral sources, and enhancing effective participation in international dialogues and negotiations on climate change, both at regional and global levels.

2010	National Strategic Development Plan update (2009-2013)	The National Strategic Development Plan (NSDP) (2009-2013) serves as the 'roadmap' for implementing the RS-Phase II (explained above) and it aims to support the sustainable use of all natural resources in the country. The NSDP outlines the importance of conserving Cambodia's unique natural heritage and biodiversity, along with enhancing environmental sustainability, sustainable economic growth, poverty reduction, and improvements in the lives of rural communities. In addition, the NSDP sets a national target of 60% forest cover, 450 approved Community Forests and reducing fuel-wood dependence by 2013. It also recognizes the importance of REDD+ and greenhouse gas mitigation projects in mitigating climate change (http://www.4cmr.group.cam.ac.uk/filecab/redd-law-project/20140819%20Introduction%20to%20REDD-%20Governance%20in%20Cambodia.pdf).
2010	National Forest Programme 2010 - 2029	The National Forest Programme (NFP) 2010-2029 aims to achieve sustainable forest management and also to alleviate poverty in Cambodia. Specifically, it identifies objectives and goals in developing and managing forests to improve livelihoods, environmental services and overall economic development. Importantly, it aims to ensure that the management and exploitation of forests generates benefits for government entities, local communities, the private sector and individuals. The NFP has aims to register 1,000 community forestry groups nationally, and for community forest programmes to cover 2.0 million hectares by 2030. The NFP has also identified REDD+ as an important source of sustainable forest financing (http://www.4cmr.group.cam.ac.uk/filecab/redd-law-project/20140819%20Introduction%20to%20REDD-%20Governance%20in%20Cambodia.pdf).
2010	National Strategic Development Plan Update 2009-2013 (NSDP Update, 2009-2013)	Covers all aspects of sustainable development. Also chapters on Enhancement of the Agricultural Sector I. Improving Agricultural Productivity and Diversification; II. Land Reform and De-Mining; III. Fisheries Reform; and IV. Forestry Reform. And Chapters on capacity building and human resources and on investments. http://www.paris21.org/sites/default/files/Cambodia_NSDP_Update_2009-2013-English.pdf
2010	Strategy For Agriculture And Water 2010-2013	Objectives: The Strategy is intended to rapidly improve food security status and reducing the poverty rates in Cambodia. It is intended as a national framework to guide the planning and programming of interventions for this purpose by concerned cooperating national and international agencies in Cambodia. The Program is identified as being instrumental for contributing to achieving the overall development goal of the NSDP, with its particular focus on improving the institutional and management capacity of MAF and MOWRAM. At the same time, the Program will also benefit farmers and the agricultural sector by providing an effective means of improving the success rates of agricultural and water sector programs, promoting greater diversity in agricultural production, and improving the competitiveness of the agricultural sector (http://www.foodsecurity.gov.kh/node/550).
2010	Cambodia REDD+ National Roadmap	The Cambodia REDD+ National Roadmap outlines a national plan for 'REDD+ Readiness' activities. According to this document, all forestlands are Public State Property (except forests under indigenous land titles and private forests), and therefore the majority of forest carbon is owned by the State with the forest carbon in private forests belonging to their owners (http://www.4cmr.group.cam.ac.uk/filecab/redd-law-project/20140819%20Introduction%20to%20REDD-%20Governance%20in%20Cambodia.pdf).
2010	The Rural Water Supply,	This Strategy Paper defines the water supply, sanitation and hygiene services to be made available to people living in rural

	Sanitation and Hygiene Strategy 2010 – 2025	areas and the institutional arrangements and the financial, human and other resources necessary to sustainably provide these services.
2009	The National Green Growth Roadmap 2013-2030	Cambodia was the first LDC in the region to develop a National Green Growth Roadmap in 2010. The National Green Growth Roadmap is produced by Cambodia for furthering development to benefit the people and conserve and restore the natural capital base to continue economic growth within the limits posed by the environmental carrying capacity. The Roadmap proposes possible paths for short, medium, and longterm implementation of green growth in Cambodia. In doing so it suggests win-win situations between economy, environment and society to show that economic growth, environmental sustainability and human well-being can be achieved. Adopting a holistic approach to development will help the country improve resilience and decrease vulnerability to climate change. The National Green Growth Roadmap focuses on addressing the following seven goals: Access to clean water and sanitation, Access to renewable energy, Access to information and knowledge, Access to means for better mobility, Access to finance and investments, Access to food security (agriculture) and non-chemical products, and Access to sustainable landuse. http://www.greengrowth.org/sites/default/files/pictures/Final%20Draft%20Roadmap%2C%20Feb26-2010.pdf
2009	National Sustainable Development Strategy	The NSDS document provides a conceptual framework for formulation of the comprehensive sustainable development strategy for the Royal Kingdom of Cambodia. There are sections on Sustainability of the national resources and environment and on sustainable economic sectors and infrastructure with subsections on Sustainable Land Use and Agriculture, Sustainable Forestry, Sustainable Water Resource Management, Sustainable Fishery, Sustainable Mining, Private Sector and Sustainable Business Development, Sustainable Tourism, Sustainable Energy, Sustainable Water Supply and Sanitation. http://www.rrcap.at:asia/nsds/uploadedfiles/file/Publication%20-NSDS%20Cambodia.pdf
2009	Declaration on Land Policy (2009)	The Declaration on Land Policy (2009) focuses on three sub-sectors: 18 land administration, land management, and land distribution. The objective of land management is to ensure management, protection and use of land and natural resources with transparency and efficiency in order to preserve environmental sustainability and equitable socio-economic development in rural and urban areas as well as to prevent disputes over land-use by regulating land development, land conversion, land readjustment, construction, and resettlement (http://www.4cmr.group.cam.ac.uk/filecab/redd-law-project/20140819%20Introduction%20to%20REDD-%20Governance%20in%20Cambodia.pdf).
2008	The Rectangular Strategy Phase II	The Rectangular Strategy (RS)-Phase II (2008-2013) is a national socio-economic development policy agenda. This strategy focuses on four main components, including (1) agriculture development, (2) infrastructure rehabilitation development, (3) private sector development and employment creation, and (4) capacity building and human resource development. The key priorities for forestry reform include law enforcement, effective management of protected areas, climate change actions and the promotion of community forestry programs. Also, the RS-Phase II contains provisions aiming to ensure sustainable forest management, protect biodiversity and promote community forestry programs in the country.
2008	Health Strategic Plan 2005-2015 Follow-up to "Health Strategic Plan 2003-	To address health needs of the population during the eight coming years by using the opportunity offered by the Royal Government of Cambodia to maximum extent possible, as the improvement in health status of all Cambodians is recognized by the Royal Government of Cambodia (RGC) as a priority for investing national resources in the social sector. Vision: "to enhance sustainable development of the health sector for better health and well-being of all Cambodian, especially

	2007”	<i>of the poor, women and children, thereby contributing to poverty alleviation and socio-economic development.”</i> http://www.wpro.who.int/health_services/cambodia_nationalhealthplan.pdf
2008	The Royal Government of Cambodia’s Rectangular Strategy 2009-2013, 117	the Royal Government of Cambodia’s Rectangular Strategy 2009-2013, 118 which includes: Land Reform and De-mining (Distribution of land, Land management and utilization including Land registration and tenure security); Fishery Reform (Transformation of additional fishing lots as fishery conservation areas and community fishing grounds); and Forestry Reform (Sustainable forest management policy, Protected Areas System, and Community forestry). A focus of the Rectangular Strategy is on addressing enhancement of the agricultural sector by improving productivity and intensifying the agricultural sector. The strategy states the need to maximize agricultural production and ensure sustainable use and management of natural resources and maintaining biodiversity.
2007	Strategic Framework for Food Security and Nutrition in Cambodia 2007-2010 (SFFSN).	Agriculture and agricultural production and productivity. http://s3.amazonaws.com/zanran_storage/www.foodsecurity.gov.kh/ContentPages/2447607584.pdf
2006	The National Strategic Development Plan (NSDP), 2006- 2010	The National Strategic Development Plan (NSDP) 2006-2010 aims to ensure that land and natural resources are used in an efficient manner to support sustainable and equitable socioeconomic development for all Cambodian citizens. The Plan The NSDP incorporates the Cambodia Millennium Development Goals (CMDGs), formulated with UN support in 2003, updated in 2005 and published as the Cambodian Millennium Development Goals Report. The NSDP provides the framework and compass for growth, employment, equity and efficiency to reach the CMDGs.
2006	National Adaptation Programme of Action to Climate Change (NAPA)	From http://www.adaptationlearning.net/cambodia-napa or http://unfccc.int/resource/docs/napa/khm01.pdf The NAPA identifies priority activities that respond to urgent and immediate needs to adapt to climate change – those for which further delay would increase vulnerability and/or costs at a later stage. The Programme document includes: (i) the main characteristics of climate hazards in Cambodia (flood, drought, windstorm, high tide, salt water intrusion and malaria); (ii) coping mechanisms to climate hazards and climate change at the grassroots level; (iii) existing programmes and institutional arrangements for addressing climate hazards and climate change; and (iv) prioritized adaptation activities to climate hazards and climate change.
2005	Integrated Water Resources Management Strategy and Roadmaps in Cambodia	This document sets out strategic directions for development of water resources in Cambodia for the next 20 years. It is intended to lend guidance to sustainable water resource development and management in Cambodia, and is relevant to all stakeholders. It aims to synthesize directions identified in national plans and strategies and add a basin dimension, and to promote the approach of Integrated Water Resources Management (IWRM) within the Basin. http://siteresources.worldbank.org/INT/PRSI/Resources/Country-Papers-and-JSAs/cambodia_PRSP2.pdf
2004	The Rectangular Strategy for Growth, Employment, Equity and Efficiency in Cambodia	⁴¹ It provides a clear and focused framework for the country’s socio economic development and, at the same time, serves as the Economic Policy Agenda of the Political Platform of the Royal Government in its Third Legislature of the National Assembly, 2004-08. Founded on good governance, peace, political stability, social order, macroeconomic stability, partnership and economic integration, the Rectangular Strategy focuses on critical development issues such as the enhancement of the

		agricultural sector, rehabilitation and construction of physical infrastructure, private sector development and employment generation, and capacity building and human resource development. [...] The National Strategic Development Plan (NSDP) is the operationalization of the Rectangular Strategy”
2003	Cambodia Millennium Development Goals	“The Cambodia Millennium Development Goals (CMDGs) were formulated with UN support in 2003, updated in 2005 and published as the Cambodian Millennium Development Goals Report. The NSDP provides the framework and compass for growth, employment, equity and efficiency to reach the CMDGs. Each of the nine CMDGs has been disaggregated into several sub-CMDGs with 25 overall targets and 106 specific targets for 2005, 2010 and 2015.” http://www.mop.gov.kh/Default.aspx?tabid=156
2002	National Poverty Reduction Strategy (NPRS: 2003-2005)	The Strategy describes the country’s macroeconomic, structural and social policies and programs to promote growth and reduce poverty, as well as associated external financing needs and major sources of financing. It is a comprehensive approach, outlining pro-poor actions to improve rural livelihoods (including through improved access to land, promoting agricultural development, water resource management and irrigation and drainage development, roads and transport, promoting job opportunities, ensuring better health, nutrition and education outcomes, and promoting sustainable management and use of natural resources and the environment.

ENDNOTES

- ¹ In decision X/2, the Conference of the Parties urged Parties to review, revise and update, as appropriate, their NBSAPs in line with the Strategic Plan for Biodiversity 2011-2020. In addition, Aichi Biodiversity Target 17 calls for Parties to develop, adopt as a policy instrument, and commence implementing an effective, participatory and updated NBSAP by 2015.
- ² Laws, strategies and plans consulted are listed in Annex 1
- ³ 5th National Report
- ⁴ Greater Mekong-Economic Analysis of Ecosystem Services, November-2013, WWF
- ⁵ See e.g., paragraph 7 of Decision XI/30 of the CBD Conference of the Parties
- ⁶ In line with the Royal Government principle of national solidarity
- ⁷ From CCCSP
- ⁸ NSDP Update 2009-2013
- ⁹ MAFF Annual Report 2012-2013
- ¹⁰ National Forest Programme (2010)
- ¹¹ The Third National Report to CBD (2006)
- ¹² National Ecotourism Policy and Strategic Plan; MOT; SNV and the SRC, USC, 2010
- ¹³ The Fifth National Report to CBD (2014)
- ¹⁴ See in particular Cambodia Biodiversity Target 8 in Table 29 below.
- ¹⁵ World Bank
- ¹⁶ <http://www.unep.org/10yfp/About/tabid/106242/Default.aspx>
- ¹⁷ http://www.unep.org/resourceefficiency/Portals/24147/scp/marrakech/dialogue/pdf/1_Present_SCP_CAMBODIA_SAM.pdf
- ¹⁸ from CMDG/Goal 9
- ¹⁹ <http://www.wepa-db.net/policies/law/cambodia/02.htm>
- ²⁰ http://www.gmac-cambodia.org/legal/data/Sub_Degree_on_Solid_Waste_Management.pdf
- ²¹ Forestry Administration, 2007 and 2010
- ²² <http://www.fadinap.org/cambodia>
- ²³ The Fifth National Report under the CBD (2014)
- ²⁴ The Fifth National Report to CBD (2014)
- ²⁵ NSDP Update 2009-2013
- ²⁶ <http://faolex.fao.org/docs/pdf/cam82965.pdf>
- ²⁷ <http://faolex.fao.org/docs/pdf/cam85864.pdf>
- ²⁸ The Fourth National Report to CBD (2010)
- ²⁹ Sub-decree on Community Fisheries (2005)
- ³⁰ The Fifth National Report to CBD (2014)
- ³¹ Fourth National Report to CBD
- ³² The Fifth National Report to CBD (2014)
- ³³ NSDP Update 2009-2013
- ³⁴ MAFF Annual Report 2009-2013
- ³⁵ The Third National Report to CBD (2006)
- ³⁶ Also see MAFF strategic goals
- ³⁷ Text essentially from CBD
- ³⁸ An account of these instruments and tools are accessible at <http://www.cbd.int/abs/instruments/default.shtml>
- ³⁹ Article 5 on “Cooperation”; Article 7 on “Identification and Monitoring”; Article 8 on “In-situ Conservation”, in particular [Article 8\(j\)](#) with its provision to encourage the equitable sharing of the benefits arising from the utilization of knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for conservation and sustainable use of biological diversity; Article 9 on “Ex-situ Conservation”; Article 10 on “Sustainable Use of Components of Biological Diversity”; Article 11 on “Incentive Measures”; Article 12 on “Research and Training”; Article 13 on “Public Education and Awareness”; [Article 16](#) on “Access to and Transfer of Technology”; Article 17 on “Exchange of Information”; Article 18 on “Technical and Scientific Cooperation”; and Article 19 on “Handling of Biotechnology and Distribution of its Benefits” (particularly in its paragraphs 1 and 2); Articles 20 and 21 on financial resources and financial mechanism respectively.
- ⁴⁰ UNEP/CBD/NP/COP-MOP/1/L.6
- ⁴¹ UNEP/CBD/NP/COP-MOP/1/L.7
- ⁴² <http://satoyama-initiative.org/en/>
- ⁴³ Indicators: <http://www.cbd.int/doc/meetings/tk/wg8j-08/official/wg8j-08-09-en.pdf>
- ⁴⁴ UNEP/CBD/COP/12/L.7
- ⁴⁵ Mainly drawn from the Annex to document UNEP/CBD/COP/12/5
- ⁴⁶ <http://www.cbd.int/ecosystem/>
- ⁴⁷ <http://www.cbd.int/sustainable/addis.shtml>
- ⁴⁸ UNEP 2011, Manufacturing - Investing in energy and resource efficiency. Green Economy Report
- ⁴⁹ Rio + 20 and manufacturing and green industries (from <http://unep.org/greeneconomy/Portals/88/GETReport/pdf/Chapitre%205%20Manufacturing.pdf>)
- ⁵⁰ The Training Manual on Risk Assessment and Risk Management was developed and published in December 2008 as part of technical assistance project facilitated by the UNEP and financed by the GEF through a project on Cambodia
- ⁵¹ National Law on Biosafety (2008): the objective of this law is to prevent adverse impact on the conservation of biodiversity and natural resources in the Kingdom of Cambodia caused by the transboundary movement, development, handling, transfer, use, storage, and release of LMOs resulting from modern biotechnology
- ⁵² www.cambodiabiosafety.org

- ⁵³ In Cambodia Climate Change Strategic Plan
- ⁵⁴ Projection from Cambodia Climate Change Strategic Plan
- ⁵⁵ See Green Growth Roadmap
- ⁵⁶ See Green Growth Roadmap
- ⁵⁷ Cambodia acceded to the Supplementary Protocol on Aug 30, 2013
- ⁵⁸ COP 12 request in decision on tourism
- ⁵⁹ developed under the Convention on Biological Diversity (CBD COP decision VIII/28)
- ⁶⁰ E.g. <http://www.cbd.int/doc/publications/ecotour-brochure-en.pdf>
- ⁶¹ E.g. <http://www.treeseedfa.org/uploaddocuments/CapacityNeedsassessment.pdf>
- ⁶² See <http://www.cbd.int/financial/doc/id482-se-asia-financial-planning-en.pdf>
- ⁶³ Fifth National Report
- ⁶⁴ The Fifth National Report to CBD (2014)
- ⁶⁵ As described in the [Green Growth Roadmap](#), eco-villages are urban or rural communities of people, who strive to integrate a supportive social environment with a low-impact way of life. To achieve this, they integrate various aspects of ecological design, permaculture, ecological building, green production, alternative energy, community building practices, and much more
- ⁶⁶ Fourth National Report to CBD.
- ⁶⁷ The Fourth National Report to CBD (2010)
- ⁶⁸ <http://www.tematea.org/>
- ⁶⁹ <http://www.millenniumassessment.org/documents/document.765.aspx.pdf> and <http://ipbes.net/>
- ⁷⁰ Under the Convention on Biological Diversity. Decisions V/6 and VII/11
- ⁷¹ based on <http://en.wikipedia.org/wiki/Landscape>
- ⁷² From the Satoyama Initiative accessible at <http://satoyama-initiative.org/en>
- ⁷³ http://www.blm.gov/wo/st/en/prog/more/Landscape_Approach/landscapequestions.html
- ⁷⁴ Aichi Target 1: By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.
- ⁷⁵ Aichi Target 20: By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.
- ⁷⁶ Article 32 of the 2008 Protected Areas Law
- ⁷⁷ Environment endowment fund Article 19 in the 1996 Law on Environmental Protection and Natural Resource Management
- ⁷⁸ Article 62 National Forestry Development Fund in 2002 Law on Forestry. Also see CT's experience in setting up the Cardamoms Protected Forest trust fund
- ⁷⁹ By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategy and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.
- ⁸⁰ Decision X/3 of the CBD Conference of the Parties: All Parties provided with adequate financial resources, will have, by 2015 assessed and/or evaluated the intrinsic value, ecological, genetic, social economic, scientific, educational, cultural, recreational and aesthetic values of biological diversity and its components
- ⁸¹ <http://www.greengrowth.org/?q=publication/national-green-growth-roadmap-cambodia#sthash.2XqbfMJ7.dpuf>
- ⁸² Aichi Target 6: By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.
- ⁸³ For more detailed targets and indicators, see the Strategic Planning Framework for Fisheries: 2010-2019 Cambodia (http://www.issueelab.org/resource/strategic_planning_framework_for_fisheries_2010_2019_cambodia). Annex1 contains concrete targets, milestones and indicators
- ⁸⁴ These could be supported by Asian Species Action Partnership (ASAP)
- ⁸⁵ Aichi Target 7: By 2020, areas under agriculture, aquaculture and forestry are managed sustainably, ensuring the conservation of biodiversity.
- ⁸⁶ Agriculture is a broad term that encompasses the cultivation of animals, plants, fungi, and other life forms for the purposes of providing food, fiber, and other products used to sustain life. The variety and variability of animals, plants and microorganisms used in agriculture is an important aspect of biodiversity. However some agricultural practices are also a major cause of biodiversity loss (<http://www.cbd.int/doc/strategic-plan/targets/T7-quick-guide-en.pdf>).
- ⁸⁷ Aquaculture refers to the cultivation of fish, crustaceans, mollusks and aquatic plants. It can occur in both inland water and marine environments. Aquaculture can be contrasted with commercial fishing which is the harvest of wild aquatic organisms (<http://www.cbd.int/doc/strategic-plan/targets/T7-quick-guide-en.pdf>).
- ⁸⁸ Forestry refers to the interdisciplinary process of establishing, managing, using, and conserving forests and their associated resources. As such, forestry encompasses not just trees, but the multitude of plants, animals and micro-organisms that inhabit forest areas and the ways in which they are used. Forestry can occur in all types of forests from plantations to primary forests.
- ⁸⁹ Aichi Target 14: By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.
- ⁹⁰ Aichi Target 4: By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.
- ⁹¹ Recently, Cambodia was found to have an ecological footprint of 1.0 (2010) and a biological capacity of 0.9 (2010). This means the country has a deficit of 0.1 (<http://11saekre.wordpress.com/2010/11/15/cambodia-ecological-footprint/>).
- ⁹² The existence, development and application of these incentives is a sign that Government has taken steps.
- ⁹³ Aichi Target 11: By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

⁹⁴ <http://www.phnompenhpost.com/national/coral-reef-areas-gain-protection-cambodia>

⁹⁵ <http://www.cbd.int/doc/pa/tools/Making%20Protected%20Areas%20Relevant%20A%20guide%20to%20Integrating%20Protected%20Areas.pdf>

⁹⁶ Aichi Target 3: By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.

⁹⁷ Aichi Target 12: By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained

⁹⁸ Aichi Target 15: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15% of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.

⁹⁹ Aichi Target 5: By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.

¹⁰⁰ Some target for 2029 in the National Forest Programme document

¹⁰¹ Aichi Target 16: By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.

¹⁰² Aichi Target 17: By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.

¹⁰³ Aichi Target 10: By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.

¹⁰⁴ Aichi Target 8: By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.

¹⁰⁵ In 5th National report : MoE has one department responsible for environment pollution control with one Lab for polluted water analysis

¹⁰⁶ Aichi Target 18: By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.

¹⁰⁷ Namely themes 1, 2, 10, 11, 12, 15 and 24

¹⁰⁸ Aichi Target 9: By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.

¹⁰⁹ http://cmsdata.iucn.org/downloads/mlb_ias_current_state_of_play.pdf

¹¹⁰ See an indicative list at <http://www.cbd.int/invasive/done.shtml>

¹¹¹ Aichi Target 19: By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied

¹¹² Aichi Target 13: By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.

¹¹³ www.fao.org/agriculture/crops/core-themes/theme/seeds-pgr/gpa/en/

¹¹⁴ www.fao.org/docrep/010/a1404e/a1404e00.htm

¹¹⁵ <http://www.cbd.int/agro/food-nutrition/elements.shtml>

¹¹⁶ <http://www.cambodianewsgazette.com/2902/livestock-law-near-approval>

¹¹⁷ Royal Government of Cambodia's Rectangular Strategy 2009-2013 (2004)



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