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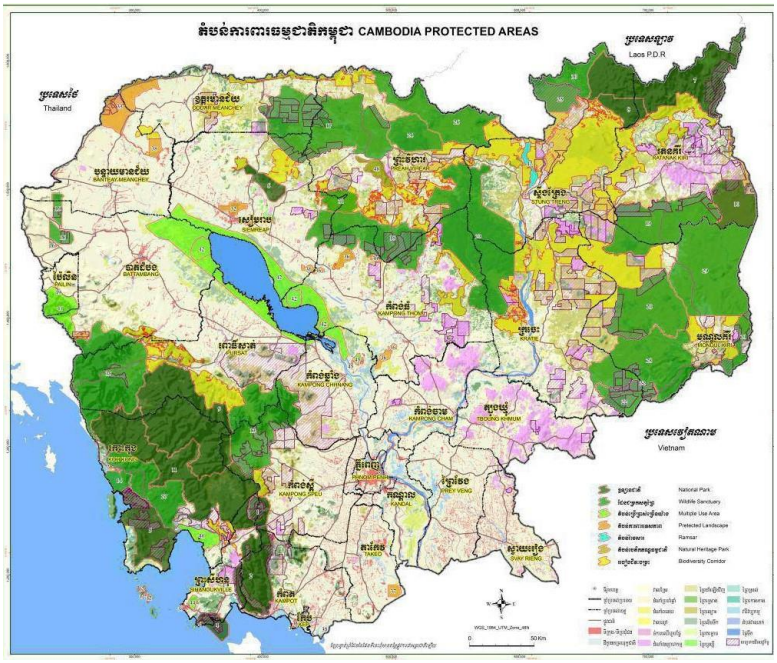
Cambodia

Biodiversity Finance Initiative

Biodiversity Finance Policy and Institutional Review



December 2020

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ABBREVIATIONS

ABS	Access and Benefit Sharing
ADB	Asian Development Bank
AFD	Agence Française de Développpment
AFSC	American Friends Services Committee
ASEAN	Association of Southeast Asian Nations
BAF	Blue Action Fund
BER	Biodiversity Expenditure Review
BFP	Biodiversity Finance Plan
BIOFIN	Biodiversity Financing
BI	Birdlife International
CBD	Convention on Biological Diversity
CBO	Community-Based Organization
CBT	Community-Based Tourism
CDC	Council for the Development of Cambodia
CDM	Clean Development Mechanism
CF	Community Forestry
CFi	Community Fisheries
CHM	Clearing-House Mechanism
CI	Conservation International
CIF	Climate Investment Funds
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CPA	Community Protected Area
CSOs	Civil Society Organizations
CSR	Corporate Social Responsibility
DPs	Development Partners
EIA	Environmental Impact Assessment
ELC	Economic Land Concession
EU	European Union
FA	Forestry Administration
FAO	Food and Agriculture Organization
FCPF	Forest Carbon Partnership Facility
FFI	Fauna and Flora International
FiA	Fisheries Administration
FNA	Finance Needs Assessment
GDANCP	General Directorate of Administration for Nature Conservation and Protection
GDE	General Department of Energy
GDLC	General Directorate for Local Community
GDP	Gross Domestic Product

GEF	Global Environment Facility
GHG	Greenhouse gas
GSSD	General Secretariat for Sustainable Development
IPBES	Inter-governmental Science-Policy Platform on Biodiversity and Ecosystem Services
IUCN	International Union for Conservation of Nature
JICA	Japan International Cooperation Agency
KHR	Khmer Riel
KSWS	Keo Seima Wildlife Sanctuary
MAFF	Ministry of Agriculture Forestry and Fisheries
MCFA	Ministry of Culture and Fine Arts
MEAs	Multilateral Environmental Agreements
MEF	Ministry of Economy and Finance
MOEYS	Ministry of Education, Youth and Sports
MIH	Ministry of Industry and Handicraft
MLMUPC	Ministry of Land Management Urban Planning and Construction
MME	Ministry of Mines and Energy
MoC	Ministry of Commerce
MoE	Ministry of Environment
MoH	Ministry of Health
MoI	Ministry of Interior
MoT	Ministry of Tourism
MOWRAM	Ministry of Water Resource and Meteorology
MPWT	Ministry of Public Works and Transport
MRD	Ministry of Rural Development
NBC	National Bank of Cambodia
NBSAP	National Biodiversity Strategy and Action Plan
NCDD	National Committee for Sub-National Democratic Development
NCDM	National Committee for Disaster Management
NCSD	National Council for Sustainable Development
NGO	Non-Governmental Organization
NRS	National REDD+ Strategy
NSDP	National Strategic Development Plan
NTFP	Non-Timber Forest Products
ODA	Official Development Assistance
PA	Protected Area
PES	Payment for Ecosystem Services
PIR	Policy and Institutional Review
REDD	Reducing Emissions from Deforestation and Forest Degradation
RGC	Royal Government of Cambodia
SLC	Social Land Concession

UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
WA	Wildlife Alliance
WB	World Bank
WCS	Wildlife Conservation Society
WWF	World Wildlife Fund

EXECUTIVE SUMMARY

United Nations Development Programme (UNDP) and European Commission (EC) launched the Biodiversity Finance Initiative (BIOFIN) in the Conference of Parties 11 (COP11) in 2012, and reaffirmed by COP12 Decision in PyeongChang, Korea to mobilize towards global and national biodiversity goals. In 2019, BIOFIN was joined by five more countries to make a total of 35working on efforts to come up with finance solutions.

As one of the five additional countries, Cambodia's BIOFIN project works under the leadership of the Ministry of Environment (MoE) and is implemented by the General Secretariat of National Council for Sustainable Development (GSSD) to bring together a core group of national stakeholders, including the private sector, to work on the most suitable finance modalities for biodiversity. The BIOFIN preparatory analyses contributing to the development of a biodiversity finance plan and implementation of finance solutions include the Policy and Institutional Review (PIR), Biodiversity Expenditure Review (BER), and Finance Needs Assessment (FNA).

The objectives of this PIR are to understand the general context of the past and current institutional arrangements and finance polies, and to identify finance solutions for effective conservation and management of biodiversity. Guided by BIOFIN Workbook 2018, PIR consists of two main parts: part 1 is desk review of legal, policy and strategy instruments related to biodiversity and environment in Cambodia, and part 2 is made up of consultative workshops and meetings with stakeholders from key sectors.

Among others, the National Biodiversity Strategy and Action Plan (NBSAP) is the foremost key policy document for the PIR review process, as it presents policy objectives and priority actions for conservation of the country's biodiversity. NBSAP contains 498 key actions, categorized under 24 themes and is classified into three main groups with respective responsibilities by Ministry of Environment (MoE), Ministry of Agriculture, Forest and Fisheries (MAFF), Ministry of Education, Youth and Sport (MoEYS), Ministry of Tourism (MoT), Ministry of Interior (MoI), Ministry of Economy and Finance (MEF), Ministry of Rural Development (MRD) and General Secretariat of the National Council for Sustainable Development (GSSD), with participation by concerned stakeholders at the national and sub-national levels. An Inter-ministerial Technical Working Group was formulated to implement NBSAP. This working group developed five-year national biodiversity targets 2015-2020, in line with the Aichi Biodiversity Targets in four themes of education, legal framework and strategy, conservation and community, and sustainable use. However, the NBSAP activities are not costed. Hence, BIOFIN provides finance mechanisms and solutions with possible and feasible project proposals and finance plans to follow.

Cambodia consists of seven eco-regions, with the current records of 4,016 angiosperm and gymnosperm species, 326 lycophyte and fern taxa, 301 mushroom species, 671 invertebrate taxa, 214 tiger moths, 73 amphibian species, 194 reptile species, 1,357 fish species, 629 bird species and 162 mammal species. Cambodia's forest cover has been declining from 73% in 1973 to 48.14% in 2016, due to several key driving factors - forest concessions, large scale agro-industrial development, rapid settlement and urbanization, and issues of forest management governance.

The Royal Government of Cambodia (RGC) has had many laws and strategic plans in different sectors in relation to sustainable development and biodiversity conservation. The Rectangular Strategy (RS) and National Strategic Development Plan (NSDP) are the highest-level national policy documents to guide sustainable socio-economic development strategies. Directly related to biodiversity are the National Strategic Plan on Green Growth, Cambodia's Road Map for Sustainable Development, and NBSAP. Most line ministries developed a 10-20-year strategic plan such as National Protected Area Strategic Management Plan 2017-2031, Agricultural Sector Strategic Development Plan 2019-2023 (ASDP), Strategic Planning Framework for Fisheries 2015-2024 (SPFF), National Forest Programme 2010-2029 (NFP), National Policy on Mineral Resources 2018-2028 (NPMR).

Cambodia has had many biodiversity-related legal frameworks such as the Law on Environmental Protection and Natural Resource Management (1996), Land Law (2001), Law on Mineral Resource Management and Exploration (2001), Forestry Law (2002), Fisheries Law (2006), Law on Water Resources Management (2007), Law on Protected Areas (2008), Biosafety Law (2008), Law on Seed Management and Plant Breeder's Right (2008), Law on Tourism (2009). However, the implementation of these laws is still limited and sometimes not well communicated. Hence, there is a need to establish and strengthen a coordination mechanism, mobilize adequate resources, and review and amend some laws to make them more coherent.

In Cambodia, 11 sectors have been identified to generate revenue for economic development but with concerning impacts on biodiversity. Of these, sectors such as mining, energy and transport are identified to cause biodiversity threats directly or indirectly, while agriculture and tourism are also found to pose potential threats to biodiversity. Moreover, subsidies in the form of tax exemptions, concessions and agriculture input materials, as well as financial support in agriculture and mining sectors, may promote deforestation and forest degradation. Invasive alien species and climate change, which are the result of human actions, are also among sources of biodiversity threats.

While Cambodia has faced many challenges in threats to biodiversity and ecosystems, positive initiatives that contribute to biodiversity conservation have been adopted. These include jurisdictional reform in biodiversity governance, new Protected Area (PA) establishment, REDD^{+} programme, community-based natural resource management and payment for ecosystem services.

The PIR has identified the sources of funds for biodiversity conservation in Cambodia as follows:

- Official Development Assistance (ODA)
- Taxes, fee, royalties and charges for activities and businesses relating to biodiversity and environment
- Funds for biodiversity conservation as part of government fund
- Private donations
- Community Finance
- Biodiversity Fines and Penalties

- Corporate and Corporate Foundations
- Carbon market through REDD+ programme
- Voluntary Climate Financing
- Payment for Ecosystem Services
- Sustainability Standards and Certification
- The Association of Banks in Cambodia

RGC has a strong commitment to biodiversity conservation through the expansion of PAs to 40.9% of the country's territory, and the creation of National Council for Sustainable Development with participation of 36 key and line agencies and 25 capital/provincial governors to bring harmonization. However, the success in biodiversity conservation has been limited due to lack of finance, lack of PA's boundary demarcation, weak law enforcement, limited participation from grass root authorities. It is expected that with more incentive programmes and financial increase as well as participation from all concern stakeholders, biodiversity restoration and conservation will be better achieved.

In order to accomplish biodiversity conservation, a number of actions should be considered.

- Legal and policy aspects: harmonize development and conservation sectors, assurance of sufficient budget for PA management, clearly defined working mechanism between national and sub-national level institutions.
- Changes in sectoral policies and practices to avoid and minimize biodiversity loss, and/or include biodiversity finance: mainstreaming biodiversity concerns in other sectors with potential impacts, reinforce eco-agriculture, promotion of solar energy, wind power and bioenergy, and stakeholder engagement in project development at the early stage to mitigate any adverse impact.
- Institutional/organization and capacity development: training in law enforcement, biodiversity management, agriculture intensification and diversification and eco-friendly development for all sectors.
- Enhancement of biodiversity financing: increase of innovative biodiversity finance from the government budget, and international cooperation. The potential financial source for biodiversity conservation in the future can be from PES, carbon market, corporation foundations and community trust fund.
- Entry points include upscaling of successful biodiversity-friendly agriculture model (e.g. Ibis Rice and conservation agriculture), exploring new approaches for community-based forest management such as fast tracking process and agro-forestry implementation at degraded site within Community Forestry (CF) and Community Protected Areas (CPAs), involving local community and private sector in sustainable use and biodiversity conservation within PAs to benefit both livelihood development or biodiversity conservation.

Cambodia

Biodiversity Finance Initiative

Biodiversity Finance

Policy and Institutional Review

1. INTRODUCTION TO THE POLICY AND INSTITUTIONAL REVIEW

1.1 Background

In 2012, at the Conference of the Party 11 (COP11), of the Convention of Biological Diversity (CBD), the United Nations Development Programme (UNDP) and the European Commission (EC) launched 'The Biodiversity Finance Initiative' commonly known as BIOFIN, which is a global partnership addressing the biodiversity finance challenge in a comprehensive manner. The BIOFIN was reaffirmed by COP12 Decision XII/3 on Resource Mobilization in PyeongChang, Korea, in response to the urgent global need to divert more finance from all possible sources towards global and national biodiversity goals. BIOFIN was soon supported by the governments of Germany and Switzerland, followed by the Norway and Flanders in 2014. By 2015, the total number of participating countries implementing the BIOFIN methodology reached 30. In 2019, five more countries, including Cambodia, were added to the pool.

The project is coordinated by UNDP through a global team supporting country implementation. The global team works with interdisciplinary national teams, customizing the methodology to the national context in each country.

1.2 Objectives

Specific objectives of the PIR include:

- Establish and expand the common understanding of institutional arrangements and context, finance policy, strategic documents, trends, and legal frameworks in the area of environmental protection and biodiversity conservation as the enabling framework in which the national BIOFIN process is working to improve biodiversity finance in Cambodia.
- Strengthen the understanding of the current situation in the country on the economic and financial drivers of biodiversity, as well as existing enabling policies, plans, mechanisms and finance solutions.
- Map the national and sub-national budgeting processes.

- Identify entry points for mainstreaming biodiversity in national development plans and budgets and for private sector engagement.
- Formulate specific policy recommendations to initiate, improve, and scale up effective biodiversity finance solutions including the legal, policy, institutional, and operational aspects.
- Review and summarise national biodiversity vision, strategies and targets.

1.3 Approach

The development of Cambodia PIR was guided by the BIOFIN Workbook 2018 and adapted to factors and processes relevant to the Cambodian context. A two-step approach was taken:

Part 1: A desk review of legal, policy and strategy instruments related to biodiversity, finance and economy in Cambodia, includes national biodiversity visions, objectives and strategies. Furthermore, the desk work assesses biodiversity related trends and underlying drivers to biodiversity loss and outlines the national budgeting process, biodiversity finance laws and policies, existing biodiversity finance measure and solutions.

Part 2: One consultative workshop and several smaller meetings with relevant stakeholders were conducted. All relevant themes relating to biodiversity were brought to the discussion, in particular a) biodiversity mainstreaming, b) protection, restoration, and access and benefit sharing (ABS), and c) institutional review. Prioritization of key sectors based on the nation-wide development planning priorities were determined in order to build up and integrate into project implementation strategies. Figure 1 illustrates the process of the Cambodia PIR.

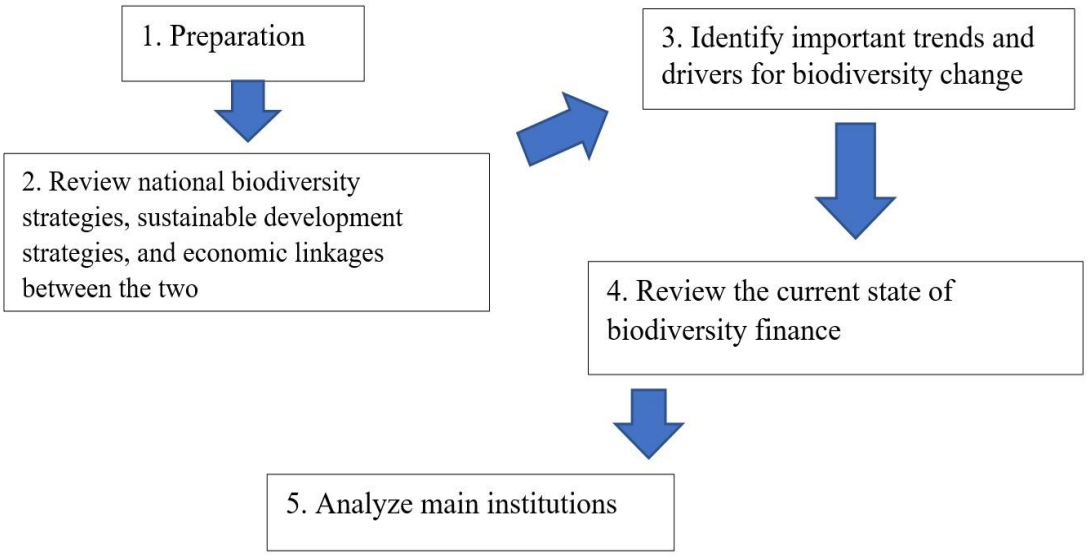

Figure 1: PIR Implementation Steps

The General Secretariat of the National Council for Sustainable Development (GSSD) and MoE are the hosting agencies for BIOFIN Cambodia, with technical guidance from the BIOFIN's Steering Committee.

Like most countries, in addition to legislation, policies and strategies, the National Biodiversity Strategic and Action Plan (NBSAP) is the foremost document for the PIR review process, and the main basis for determining biodiversity financing needs and the responses formulated in the Biodiversity Finance Plans (BFP).

Below are key considerations for the PIR process on policy, finance solution and institutional analysis to draw opinions, views, measures and actions for BIOFIN:

- **The Policy and Institutional Review (PIR):** Analysis of the policy and institutional architecture for biodiversity finance and existing finance solutions.
- **Biodiversity Expenditure Review (BER):** Analysis of public and private expenditures affecting biodiversity.
- **Finance Needs Assessment (FNA):** Estimates of the investment required to implement national biodiversity plans and achieve national biodiversity targets and results.
- **Biodiversity Finance Plan (BFP):** Analysis of options to optimize current and expand future investments (public, private, national, international, traditional and innovative) in biodiversity management.
- **Implementing Finance Solutions:** Support for implementation of policy recommendations emerging from BIOFIN, such as the improvement or creation of finance mechanisms and the integration of finance solutions into national planning cycles.

2. BIODIVERSITY VISION, STRATEGIES AND TRENDS

2.1 Vision and Strategies from Cambodia NBSAP

Cambodia is a party to the Convention on Biological Diversity (CBD) since 1995. The first NBSAP was developed and adopted in 2002 as the principle instrument to implement the Convention at the national level.

The second update of the NBSAP in 2016 was developed based on the Rectangular Strategy 2009-2013. The 2016 NBSAP envisioned that "*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 NBSAP 2016 consists of 37 key actions of four strategic objectives. These actions are implemented by seven key ministries and one institution, and participated in by other line agencies.

As presented in Table 1, the 2016 NBSAP contains a total of 498 key actions, distributed under 24 themes, and classified into 3 main groups with responsible ministries and institutions at national and sub-national levels. However, the 2016 NBSAP activities are not costed. Therefore, the next step taken up by BIOFIN is finance needs assessment (FNA) to cost the actions,

defining financial needs for resources mobilization through proposing potential biodiversity finance plans.

Table 1: Number of Themes by Group

Groups	Themes	No. action
1. Protection of biodiversity (themes 1-8)	1. Protection area system 2. Threatened species 3. Ex-situ conservation 4. Sustainable mining 5. Environment security 6. Sustainable land-use planning 7. Sustainable water resources 8. Biodiversity and climate change	135
2. Sustainable use of biodiversity (Themes 9-16)	9. Sustainable forest resources management 10. Sustainable freshwater, fisheries and aquaculture 11. Sustainable coastal and marine resources management 12. Sustainable animal and wildlife resources management 13. Sustainable agriculture and animal production 14. Sustainable energy resources management 15. Access and benefit sharing 16. Customary sustainable use and traditional knowledge	221
3. Enabling environment and service (manufacturing, biotechnology and biosafety, and tourism) (Themes 17-24)	17. Industry, technology and services (manufacturing, biotechnology and biosafety and tourism) 18. Resource mobilization 19. Community participation 20. Awareness, education, and research coordination and development 21. Legislation and institutional structure 22. Quality of life and poverty reduction 23. Landscape and seascape management and coordination 24. Clearing-house mechanism for technical and scientific cooperation, knowledge sharing and information exchange	142

These NBSAP actions listed in Table 1 above have been partially or fully implemented by MoE, GSSD, MAFF, MoEYS, MoT, MRD and MoI, and other participating line ministries and agencies but without adequate resources (NCSD, 2016). Some key examples are, inter alia, the increase in number and size of PAs from around 3 to over 7.4 million ha; promotion of in situ and ex situ conservation; promotion of green energy (12% of 210 MW electricity comes from solar energy); increase of marine protected areas; increase of 20% budget allocation for biodiversity conservation; the creation of 644 fishery conservation areas, 516 CFi, 614 CF and 168 CPAs by 2019; mainstreaming biodiversity into curriculums of lower and higher education and awareness raising events; (GSSD, 2019; NCSD, 2016).

For NBSAP to be implemented effectively, an inter-ministerial Technical Working Group developed the five-year national biodiversity targets 2015-2020 along with their specific actions

and time-bound indicators. As shown in Table 2, the National Biodiversity Targets 2015-2020 are associated to the Aichi Biodiversity Targets, which fall within four themes: education, legal framework and strategy, conservation and community, and sustainable use. The 2019 Cambodian 6th National Report (6NR) to the CBD highlighted the progresses and achievement of the 20 targets (GSSD, 2019). The summary of the contribution of Cambodia's biodiversity targets to Aichi Biodiversity Targets is presented in the annex 3.

Table 2: Matching Aichi Biodiversity Targets and National Biodiversity Targets 2015-2020

No	Aichi Biodiversity Target	Cambodia Biodiversity Target
1	Aichi Target 1	Target 1
2	Aichi Target 2	Target 3
3	Aichi Target 3	Target 9
4	Aichi Target 4	Target 7
5	Aichi Target 5	Target 12
6	Aichi Target 6	Target 4
7	Aichi Target 7	Target 5
8	Aichi Target 8	Target 16
9	Aichi Target 9	Target 18
10	Aichi Target 10	Target 15
11	Aichi Target 11	Target 8
12	Aichi Target 12	Target 10
13	Aichi Target 13	Target 20
14	Aichi Target 14	Target 6
15	Aichi Target 15	Target 11
16	Aichi Target 16	Target 13
17	Aichi Target 17	Target 14
18	Aichi Target 18	Target 17
19	Aichi Target 19	Target 19
20	Aichi Target 20	Target 2

Source: GSSD, 2019

2.2 Overview of Cambodia's Biodiversity Status

Geographically, Cambodia has a tropical climate with an average rainfall around 1500 mm per annum, and is considered as an Indo-Burma biodiversity hotspot. Cambodia consists of a vast central plain area made up of Tonle Sap Lake, Mekong River and many main tributaries, and mountainous and plateau areas. Due to diverse geography, Cambodia's natural landscape is classified into seven ecoregions, namely, i) Cardamom Mountain rain forests, ii) Southern Annamites mountain rain forests, iii) Tonle Sap freshwater swamp forests, iv) Tonle Sap-Mekong peat swamp forests, v) Central Indochina dry forests, vi) Southeastern Indochina dry evergreen forests, and vii) Indo-china Mangroves. Figure 2 demonstrates the area of ecoregion across the Cambodian territory.

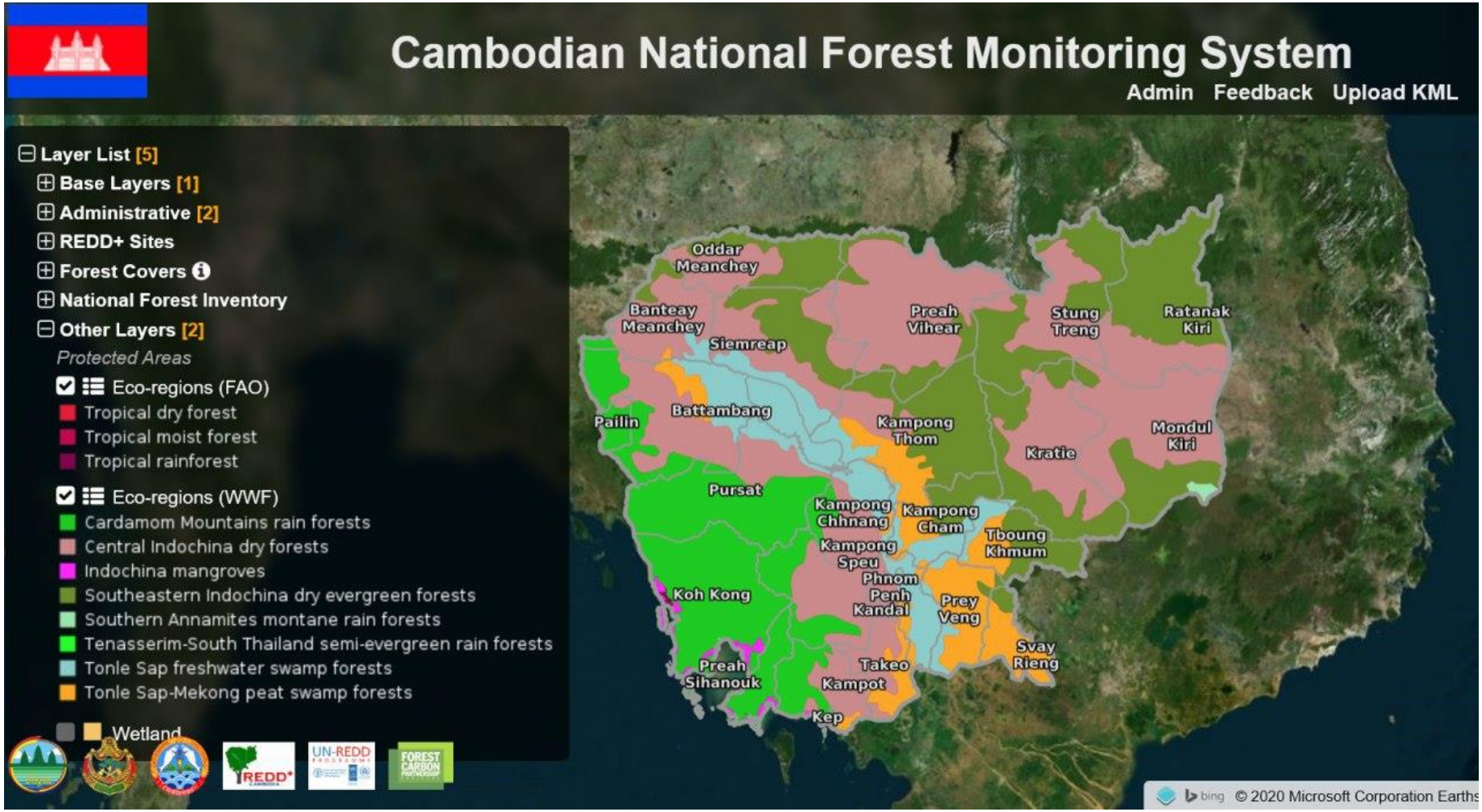

Figure 2: Map of Cambodia's Eco-regions
Source: http://cambodia-nfms.org/

The following is the overview of the 2016 National Biodiversity Status Report with status update.

2.2.1 Flora Species

Based on the data of Cambodian flora updated in the National Biodiversity Status Report in 2016, there were 3,113 species (NCSD, 2016). Notably, the checklist for Seed Plants of Cambodia, as shown in table 3 below listed 4,016 plant species (3,799 species, 156 varieties, 56 subspecies, 5 forms), belonging to 1,376 genera of 206 families, including 267 cultivated species and variety and 48 introduced species (Seong-Hyun, 2016), which showed over 22% higher than one in the National Biodiversity Status Report.

Table 3: Number of Species by Plant Group

Group	Families	Genera	Infraspecific taxa	Species	Total taxa
Gymnosperms	5	9	1	20	21
Angiosperms	201	1366	216	3,779	3,995
Total	206	1375	217	3,79	4,016

In addition to the Gymnosperm and Angiosperm, a recent study identified 326 taxa (317 species, 3 sub-species, 6 varieties) of lycophytes and ferns, belonging to 100 genera and 33 families (Sun Byung-Yun, 2014). The study of fungi in six provinces of Kratie, Mondulkiri, Stung Treng, Kampot, Preah Sihanouk and Koh Kong led by National Institute of Biological Resources (NIBR), Republic of Korea in collaboration with Cambodia's Forestry Administration recorded 301 mushroom species of 64 families (Lee, J.K., 2015).

2.2.2 Fauna species

Cambodia is also home to many fauna species and many of them are on the IUCN Red List, as shown below:

- **Invertebrate:** The record of this taxon group is still very limited. Based on NBSR, only 671 invertebrate taxa are recorded to 2016 (NCSD, 2016). The publication of *Tiger Moths* in the same year by the National Institute of Biological Resource contains 214 species of 79 genera (Lee W.S., 2015).
- **Amphibians and Reptiles:** As indicated in the National Biodiversity Status Report in 2016, 72 amphibian species and 173 reptile species were confirmed to be present in Cambodia (NCSD, 2016). With continuous researches, the list has been updated in 2019 to a total of 73 amphibian and 194 reptile species (T Neang., per comm., 2019). Seven out of 73 amphibian species are in the IUCN Red List - one endangered (EN) species, two vulnerable (VU) species and four near threatened species. For reptiles, a total of 16 out of 194 species are categorized as threatened species in the IUCN Red List - one critically endangered (CR) species, four endangered species, and 11 vulnerable species. More newly recorded or species new to the world have been constantly recorded by herpetologists.
- **Fish:** salt and freshwater fish in Cambodia account for 1,357 species (NCSD, 2016). At present, fish population has been reduced through a number of driven factors such as illegal fishing by electrofishing, poisoning, and fishing during spawning season; as well

as dam construction and climate change.

- **Birds:** Birds of Cambodia have been studied, documented and published three times - the first publication in 1998 described 261 species; second publication in 2003 updated to 535 species, and 601 species were listed in the 6th National Biodiversity Status Report in 2016 (NCSD, 2016). The most recent record of Cambodian bird species to be published in the third publication in 2020 confirmed 629 species, 450 species of which contain a detail taxonomic description along with illustration (WCS, 2019).
- **Mammals**: As listed in the National Biodiversity Status Report 2016 (NBSR), 162 mammals from inland freshwater and marine ecosystems were recorded (NCSD, 2016). Bats alone consists of about 80 species and more species are likely to be discovered if an ongoing survey is continued (Fury N., per comm, 2019). At present, two mammal species of Rhinos and Kouprey are likely extinct from the forest, whereby some other species such as tiger, gaur, banteng, eld deer, elephant, pangolin, Siamese crocodile are continuing to face extinction in the natural habitats of certain areas. Tigers have been confirmed extinct from Srepok and Phnom Prich Wildlife Sanctuary and other Pas, with a critical change of forest cover. Populations of Dugong and River Dolphins have dramatically declined from the coastal areas and Mekong River.

2.3 Biodiversity Trends in Cambodia

Forest biodiversity encompasses 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 (NBSAP, 2016). However, both habitat and biodiversity have declined as a result of overuse and conversion of forested areas for other purposes. Measurement, Reporting and Verification Technical Team (MRV) for the MoE's national $REDD^+$ programme in 2018 showed that Cambodia's forest cover of the total territory has been reduced from 13,227,100 ha (73% of total area) in 1965 to 8,181,901 ha (48.14%) in 2016. In summary, forest cover has been lost on 5,045,199 ha (24.86%) within 53 years, with average loss of around 95,192 ha per annum.

The continuous decline of forest cover in Cambodia is due to several drivers:

- **Forest Concessions**: Forest concessions located within permanent forest estates, which are basically non-protected areas, being granted to logging companies. Forest concessions were reported to increase from 2.2 million ha in 1994 to 6.9 million ha in early 1999 to then be reduced to 4.7 million ha in late 1999. By 1999, there were a total of 25 forest concessions, belonging to 21 logging companies countrywide (Sasaki, 2011). Wood production estimated in 1997 was 3.41 million m^3, with 2.32 million m^3 estimated to be from illegal logging. The study of forest concession management found that logging was not sustainable due to illegal logging that falls outside their forest concessions (Sasaki, 2011). In addition, many concessionaires are not be able to continue logging over the long run, with resultant adverse impacts on economy, society and environment. It is noted that a sub-decree on forest concession was enacted on 07 February 2000, and the *Prakas* (declaration) on suspension of forest concession made in December 2001. As a result all forest concessions

were claimed back to state property, with no more forest concessions being granted.

- **Large scale agro-industrial development**: with the aim of promoting agro-industrial plantations, RGC issued a sub-decree on another form of concessions, Economic Land Concession (ELC) in 2005 (RGC, 2005a). The ELCs covered a total area of 2.6 million ha in 2012 (Forest Trends, 2015) which dropped to 2.2 million ha in 2013 and 1.18 million ha in 2018 because many ELCs were revoked (MAFF, 2019). The current total size of ELCs is about one fourth of Cambodia's agricultural land and the annual forest loss contribution from ELCs rose from 12.1% in 2001 to 27.0% in 2012 (Davis et al., 2015). Village census data showed that 277 villages, home to 213,000 people, fall within ELC boundaries, and over 100 ELCs were estimated to have an impact on indigenous land (Davis et al., 2015). A moratorium of all new ELCs was declared in 2012 to halt further deforestation (Christoph & Andreas, 2014).

- Migration to the forested areas, unregulated new settlement and rapid urbanization, infrastructure development, population growth, and unsustainable harvest of forest products and by-products all severely impact forest ecosystems and biodiversity. Sand dredging along rivers and coastal area also provided serious impact on aquatic fauna and flora. The loss of terrestrial, inland and marine habitats results in adverse impact on biodiversity and ecosystems through diminishing population size and ecosystem function.

- **Lack of governance of protected areas, forest ecosystem and biodiversity**: The major challenges to PA governance are the limited number of enforcement officers; inadequate capacity building in law enforcement; the limited number of professional staff to support in technical aspects; insufficient government funding to safeguard biodiversity and other associated inputs for management of forest ecosystems; and a lack of management plans and boundary demarcation and zoning of each protected area (PA). These are all identified in the National Protected Area Strategic Management Plan 2017-2023 (NPASMP) as the biggest and most immediate challenges of PA governance (MoE, 2017). As presented in Annex 3, there have been 46 PAs with total area of over 7.4 million ha (40.9% of the territory) in Cambodia (NCSD, 2019). Only 1,173 rangers (1137 men, 33 women) are responsible for all the PAs (MoE, 2019), which means one ranger is on average responsible for 6,300 ha, far too large an area to be effectively managed. Female rangers only account for 2.8% of the total crew. Only two out of 46 PAs have so far developed management plans and another four are in the process of developing one. Assuming these are finalized, only 11.5% of all PAs have management plans. Management plans of these PAs have been developed with financial and technical supports from conservation NGOs. All forested areas face similar threats: new settlements, local reliance on natural resources, land conversion for agriculture or commercial purposes, with poaching and illegal practices including the collection of non-timber forest products also having an impact on protected areas. This is often aggravated by limited local community and local authority engagement in natural resource management. Most of Cambodia's PAs are easily accessible by different transport means like tillers, ox carts, motorbikes and even trucks, and it is therefore hard for rangers to manage the vast areas they are responsible for.

Overlapping jurisdictional authorities: The Ministry of Environment is in charge of conservation and management of forest ecosystem and biodiversity within the PAs. The 2008 PA Law provides the legal foundation for the management, conservation and development of the country's protected areas. Several other related laws, especially the Forestry Law (2002), the Fisheries Law (2006), the Law on Water Resources Management (2007), the Law on Tourism (2009), the Law on Mineral Resource Management and Exploitation (2001) and the Land Law (2001) influence the management of Cambodia's protected areas. Article 2 of Mineral Resource Management Law explicitly states that all mineral resources existing in the Kingdom of Cambodia are included in the state property and under jurisdiction of the Ministry of Mine and Energy (MME). The tourism law, as stipulated in article 3, applies and cover all tourism activities in the Kingdom of Cambodia. All agricultural activities are under the responsibility of the Ministry of Agriculture, Forestry and Fisheries. Whereby local authorities from provincial level down to village level oversee people residing within the PAs. In addition, most PAs have plenty of magnificent natural feature and non-living resources which create numerous opportunities for development which may fall under other competent ministries, especially the MME, Ministry of Tourism (MoT) and Ministry of Water Resources and Meteorology (MoWRAM) .

2.4 Biodiversity Valuation

The value of biodiversity and ecosystems are to be found in products derived from terrestrial and aquatic habitats, in the value of water and carbon credits and in the value of recreational centers. They all play an important role in socio-economic development and contribute to poverty alleviation in Cambodia.

2.4.1 Forestry and Fisheries Sector

Forest resources such as timber, fuelwood and Non Timber Forest Products (NTFPs) play a key role in contributing to poverty alleviation and national economic development. Households dwelling within or adjacent to forested areas directly and indirectly rely on forest products and by-products for their livelihoods. Key NTFPs include resin, gum, honey, rattan, bamboo, palm, fiber material, traditional medicine, and many food sources. Forestry's revenue sources were from transaction fines and penalties, property rental, and state property income, whereas fisheries' sources of income were derived from fish traps, marine fisheries service, fines, fixed asset rental, public service, remaining expenditure and contract revenue from the state's crocodile farm. A number of studies of NTFP economic values carried out in 2014 reported that resin alone was estimated to engage 100,000 people, and its trade valued at US$ 4.7 million to US$ 7.8 million (Prom, 2009), while wild honey collection involved around 31,000 households. Bamboo and rattan

sectors were estimated to employ 641,000 households with total values of US$ 6.81 million, whereas commercial trade of traditional medicine was worth a minimum of US$ 0.63 million. In addition, the National Forestry Development Fund has generated approximately US$ 1 million from the forestry sector[1].

In the fisheries sector, in 2014, fish catch from all sources were 600,000 tonnes, and aquaculture production was 120,000 tonnes, contributing to 8% of the national GDP. The government projects maintaining fish catch and its percentage of GDP, while increasing aquaculture-based production to 740,000 tonnes by 2024.

Carbon Credit

In order to simplify our understanding in forest cover assessment, this section divides land use into three broad categories:

1. Main forest includes evergreen forest, semi-evergreen forest and deciduous forests
2. Other forest includes flooded forest, regrowth forest, bamboo grove, mangrove forest, rear mangrove forest, pine forest, pine plantation, tree plantation, oil palm plantation, rubber plantation, and
3. Non forest area includes grassland, crop land, paddy field, rock, sand, village, built up areas, water and woody shrubs.

Based assessment of forest cover over 4-year intervals from 2002 to 2016, as shown in Table 4 and Figure 3, main forest cover has constantly declined, whereby other forest and non-forest have kept increasing in size.

Table 4: Change of Land Use from 2002 to 2016 in Cambodia

Type of land use		Main forest	Other forest	Non-forest	Total area
2002	Size (ha)	10,009,563	1,094,728	7,056,383	18,160,674
	%	55	6.03	38.85	100
2006	Size (ha)	9,723,638	1,007,143	7,429,893	18,160,674
	%	54	5.55	40.91	100
2010	Size (ha)	9,255,188	1,108,600	7,796,885	18,160,673
	%	51	6.1	42.93	100
2014	Size (ha)	7,562,755	1,423,409	9,175,510	18,161,674
	%	42	7.83	50.22	100

[1] https://www.dropbox.com/s/1t26u1zo3ba7oas/National%20Forestry%20Development%20Fund%20%28NFDF%29.pdf?dl=0

2016	Size (ha)	7,269,529	1,472,872	9,418,273	18,160,674
	%	40	8.1	51.86	100

Source: MoE 2018

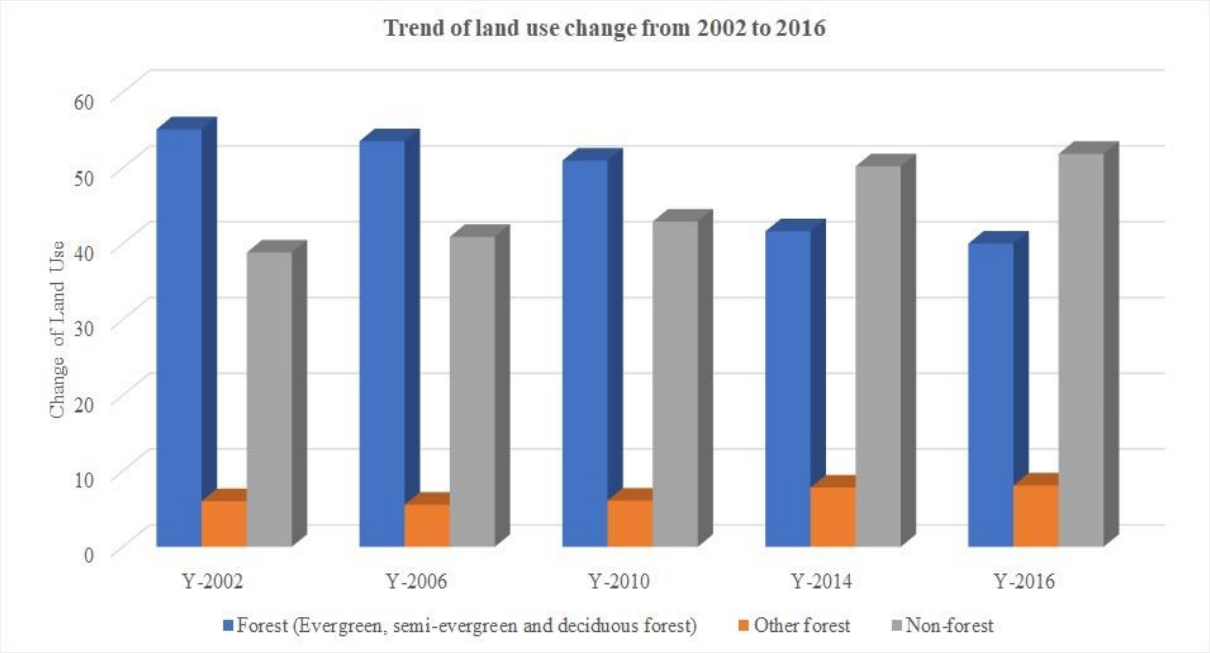

Figure 3: Trend of Land Use Change in Percentage from 2002 to 2016

The national REDD+ programme excludes oil palm and rubber plantations from forest cover, as they are part of drivers contributing to deforestation. It was estimated that, based on 2014 forest cover map, a total of 2.41 Gt of carbon dioxide are stored in the forest.

Based on Table 5, forest cover has changed from 8,519,173 ha (49.91%) in 2014 to 8,181,901 ha (45.05%) in 2016, with an average annual change of 0.93% (MoE, 2018). The rate of forest cover change in 2014-2016 is higher than 2006-2010 with an annual change rate of 0.52%, but much lower than 2010-2014 with an annual change rate of 2.66%.

Table 5: Forest Covers by Forest Types and Land Use

No.	Type forest/land use	Forest cover (hectares)				Change in %
		2014	Percent	2016	Percent	
	Main Forest	**7,562,755**	**42**	**7,269,529**	**40**	**-1.62**
1	Evergreen Forest	2,973,903	16.38	2,861,233	15.76	-0.62
2	Semi-evergreen Forest	1,108,320	6.10	1,071,947	5.90	-0.20
3	Deciduous Forest	3,480,532	19.17	3,336,349	18.37	-0.80
	Other Forest	**1,423,409**	**7.83**	**1,472,872**	**8.1**	**-0.24**

4	Flooded Forest	481,078	2.65	477,813	2.63	-0.02
5	Regrowth Forest	228,560	1.26	196,842	1.08	-0.18
6	Bamboo Grove	130,678	0.72	125,398	0.69	-0.03
7	Mangrove Forest	33,002	0.18	31,226	0.17	-0.01
8	Rear Mangrove Forest	25,906	0.14	25,906	0.14	0.00
9	Pine Forest	9,196	0.05	8,195	0.05	0.00
10	Pine Plantation	3,709	0.02	3,870	0.02	0.00
11	Tree Plantation	44,289	0.24	43,122	0.24	0.00
Total Forest Cover		**8,519,173**	**49.91**	**8,181,901**	**45.05**	**-1.86**

Source: MoE 2018

2.4.2 Tourism Sector

Tourism is one of the four pillars in the country's development. Figure 4 indicates that trend of international tourists visiting Cambodia had steadily rose from 118,183 individuals in 1993 to 6,201,077 individuals in 2018 (MoT, 2018). The average length of stays of international tourists in Cambodia is variable from 5.5-8 days, and 30-72.2% of them stay at hotels. The revenue generated from international tourism receipts has been increasing markedly from US$ 100 million in 1993 to US$ 4,375 million in 2018. As shown in Table 6, in 2016, Cambodia received 5 million international tourists, with gross revenue of US$ 3 billion, contributing 13% of the national GDP. By comparison, in 2017 more than 5.6 million tourists visited Cambodia, with average length of stay of 6.3 days and gross revenue at US$ 3.6 billion. The tourism sector in 2017 contributed to 12.3% to Cambodia's GDP, of which hotels and restaurants were estimated to contribute 4.4% percent of the GDP. In 2018, international tourists to Cambodia continued to increase to 6.2 million, creating 620,000 jobs and indirect employments of thousands through related services. Revenue collected from tourism in 2018 reached US$ 4 billion, and contributed 32.8% to the Cambodia's GDP (MoT, 2018).[2] As shown in Table 6, the number of ecosystem-based tourists are still very small.

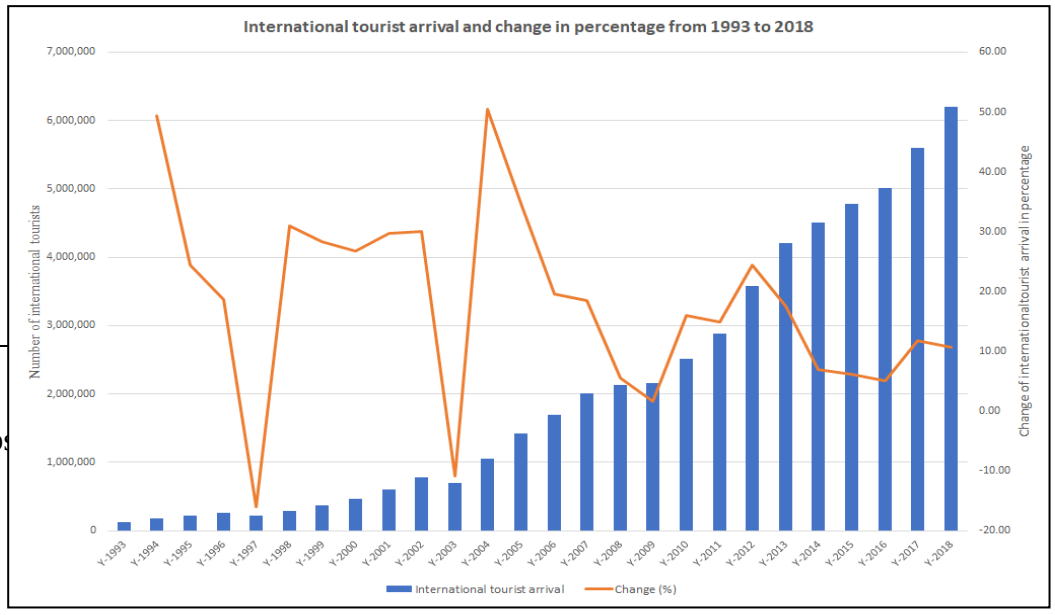

Figure 4: Trend of International Tourist Arrival to Cambodia from 1993 to 2018

[2] https

Table 6: International Tourist Arrivals in January - December in 2016, 2017 and 2018

Region/landscape	2016	2017	2018
Phnom Penh and surrounding area	2,806,438	3,114,875	3,610,262
Siem Reap - Angkor	2,205,274	2,457,282	2,590,815
Coastal Areas	643,289	739,884	877,236
Eco-tourism Areas	66,349	71,697	75,096
Total	**5,721,350**	**6,413,738**	**7,153,409**

Source: Tourism Statistics Report, 2018

Cambodia is rich in biodiversity and offers a wide range of natural landscape such as waterfalls, mountainous areas and rivers, as well as marine, mangrove and beach areas across the country. These can potentially be developed for eco-tourism for either income generation and biodiversity and ecosystem conservation. At present, the following PAs of Cambodia have potential to attract eco- tourism (Chamroeun, 2000).

Kulen National Park: Semi-evergreen and evergreen forest together with waterfalls, natural streams, landscape views and cultural features make the park attractive for in tourism. The park used to contract to a private company, with an entrance ticket fee of US$ 20/person for international tourist. However, RGC through MoE discontinued the contract with the company, and all tourists are now welcome to visit the site without a fee.

Kirirom National Park: This ecosystem is dominated by a two-needle pine forest at the plateau area, with evergreen forest on the slope and deciduous forest in the foothills. The top of the park contains waterfalls, streams, and natural lakes, providing an excellent natural environment for tourists to visit. In 2019, the park generated an annual revenue from entrance fees of KHR 175 million or US$ 43,264 (MoE, 2019b).

Bokor National Park: The park provides views over the Gulf of Thailand and Kampot Province, and is home to a famous waterfall. Its forest ecosystem of dwarf evergreens, grassland and wildlife along with high altitude and cool temperature makes this park most attractive among local and national tourists.

Ream National Park: This park is rich in biodiversity. The landscape of the park is mountainous with a range of ecosystems including with mangrove forests, coral reefs, islands and beaches makes it a spectacular place for visiting. Tourism activities range from hiking mountain tops to see evergreen forests, to boating and diving.

Tonle Sap Lake: This ecosystem is the largest refuge for migratory water birds and the largest tract of flooded forest in the ASEAN region. The traditional floating settlements make it a renowned site for tourism. The Lake itself also play important role in regulating water the Tonle Sap / Mekong river systems in the dry and rainy seasons.

Mekong River: Along the river a combination of sand bars, rapids and waterfalls are part of a flooded and terrestrial forest ecosystem. The Mekong dolphin is considered an enormous natural asset for attracting national and international tourists and contributes to socio-economic development in Kratie province.

Other protected landscapes, wildlife sanctuaries and multiple-use areas are potential targets for large-scale eco-tourism development. Currently, many tourism activities exist either formally or informally within these PAs in the form of private and community-based organization, and then generate a lot of revenue. To date, there have been some signs of successful high-end tourism, This includes privately-owned Song Saa Private Island on the Koh Rong island, Rainbow Lodge and 4-Rivers Floating Lodge in Tatai and Nature Lodge in Mondulkiri province. Wildlife-based eco-tourism at Thmat Peuy of Preah Vihear province, and community-based eco-tourism at Chambok, adjacent to the Kirirom National Park are good examples of eco-friendly tourism in the Kingdom.

Based on MoT's website, a total of 5 out of 15 tour packages - adventure tours, beach breaking holidays, cruise tours, birdwatching and other tours are directly linked to ecosystem and biodiversity-based tourism. As of November 2018, Cambodia had 400 entertainment venues, 56 licensed tourism and community-based ecotourism operators. In 2019, there were 79 sites of community-based tourism (CBT) in 19 provinces, including 77 natural sites, 1 cultural site and 1 mixed natural and cultural site. In order to boost ecotourism in sustainable manner, basic infrastructure and services such as roads, electricity, water and waste management, and efforts in ecosystem management, together with biodiversity conservation need to be taken into account.

2.4.3 Water resources

Water resources are part of the ecosystem and provide invaluable support for all development sectors. Water resources in Cambodia total around 289.4 billion m^3, and running water makes up approximately 45% on the basis of an average annual rainfall of 1,598.4mm. The Mekong River and Tonle Sap and their tributaries are the main sources of surface water in Cambodia. Based on MoRAM (2005), the total water volume utilized for all sectors was 7.894 billion m^3, of which supply for daily consumption was 235.9 million m^3, to industry was 71.4 million m^3, to agriculture was 7,586.7 m^3. (MoWRAM, 2012). Revenue generated from water resources are regulated in the Law on Water Resource Management (2017) according to the articles 36-37. Based on the report released by state-owned Phnom Penh Water Supply Authority (PPWSA) in 2015, revenue generated from water supply in Phnom Penh was US$ 56.44 million in 2015, with a net profit of US$ 12.392 million.

2.5 Biodiversity in Sustainable Development

2.5.1 Biodiversity in National Development Policy and Legislations

Over the last three decades Cambodia has developed several strategies and policies addressing issues related to biodiversity loss. The Rectangular Strategy and the National Strategic

Development Plan (NSDP) are developed every five years, aimed at guiding sustainable socio-economic development strategies and programmes by both Cambodia and development partners. With respect to biodiversity, the three most direct policy statements are the National Strategic Plan on Green Growth 2013-2030 (2013), Cambodia's Road Map for Sustainable Development 2016-2023 (2017), and the National Biodiversity Strategy and Action Plan (2016). The National Council for Sustainable Development (NCSD) was mandated to develop sustainable development-related policies including biodiversity, with participation of all line ministries. Moreover, several biodiversity-related policies were developed by key institutions concerning biodiversity conservation. The National Biodiversity Status Report of NSDP is implemented to respond to green growth principles of all sectors including trade, transport, tourism, infrastructure, building and construction, energy, telecommunication, all of which require active participation from the public and private sectors.

The RGC's Rectangular Strategy Phase 4

The Rectangular Strategy is updated every five years after the Legislature of the National Assembly is formulated after each national election. The Rectangular Strategy Phase 4 determined four strategic goals - sustaining economic growth of around 7% per annum, creating more job opportunities, achieving the poverty reduction target of below 10%, and further strengthening the capacity and governance of public institutions at both national and sub-national levels. The Rectangular Strategy Phase 4 places inclusive and sustainable development in the Rectangle 4, which encompasses four sides of 1) promotion of agricultural and rural development; 2) strengthening sustainable management of natural and cultural resources; 3) strengthening management of urbanization; and 4) ensuring environment sustainability and readiness for climate change. The four sides of this Rectangle emphasize the need for balance of sustainable development and conservation. The followings are priority areas derived from the fourth side:

1. Continuing to implement the “National Strategic Plan on Green Growth 2013-2030”, “Cambodia Climate Change Strategic Plan 2014-2023”, “National Environment Strategy and Action Plan 2016-2023”, “National REDD+ Strategy”; and using the social and environmental funds effectively to ensure economic development with low-carbon emission and resilience to climate change.
2. Further strengthening the management of protected areas, biodiversity conservation, natural resource conservation, especially the ecosystems of Tonle Sap lake, the Mekong river and the coastal areas.
3. Further strengthening the management of solid waste, wastewater, gas and toxic substances by implementing principles of reduction, reuse, recycling and non-use as well as strengthening pollution monitoring and control.
4. Promoting resource efficiency and sustainability by implementing the principle of sustainable consumption and production.
5. Increasing the usage of environmental-friendly and climate-friendly technologies in physical infrastructure and socio-economic development.
6. Continuing to promote the implementation of carbon trading mechanisms and related regulatory frameworks, strengthen the capabilities to develop and implement climate change adaptation and resiliency measures.

7. Continuing to encourage and increase investment in clean energy and renewable energy, especially solar power while reducing the production of energy from unclean sources to ensure long-term energy security.
8. Continuing to strengthen regulatory frameworks and research capability, as well as the development of skill and capacity for national and sub-national official in terms of environmental management, green development, climate change, integrated water resource management, and the usage of natural resources in a sustainable manner.

National Strategic Development Plan[3]

In the NSDP 2014-2018, the RGC reinforced and broadened the management of natural resources, trying to balance development and conservation outcomes. In this regard, the RGC ensures: (1) green cover, forest and wildlife conservation; (2) the sustainability of fisheries resources; and (3) the sustainability of the ecosystem, to improve the quality of land and sustainability of water sources by focusing on the protection of biodiversity, wetlands and coastal areas.

The NSDP 2019-2023, which contains seven chapters, was passed by the National Assembly on July 1, 2019 at the 2nd session of the 6th legislative mandate. As stated in Section 6 of Chapter 4, the RGC pays high attention to sustainable development by linking to the Cambodian Sustainable Development Goals. The strategic goal of RGC is to balance development and conservation outcomes, which contributes to sustainable agriculture, industry and tourism; mining resource management; sustainable forests, fisheries and ecosystems, as well as national cultural heritage development. With this regard, RGC continues to strengthen fisheries and aquaculture resources, forest and wildlife management and development, and management of protected areas. The RGC firmly commits to continue reinforcement of the following national strategies in association with natural resource management and conservation and disaster risk management.

- Agricultural Sector Development Plan, 2019-2023
- National Strategic Plan on Green Growth, 2013-2030
- Cambodia Climate Change Strategic Plan, 2014-2023
- National Environment Strategy and Action Plan, 2016-2023
- National REDD$^+$ Strategy, 2017-2026
- Sendai Framework for Disaster Risk Reduction, 2015-2030
- Law on Protected Areas, 2008
- National Forest Programme, 2010-2029

[3] National Strategic Development Plan of Cambodia has evolved over time to reflect the development priority agenda. The first National Development Plan in 1994 was entitled "*Cambodia Restoration and Development Plan 1996-2000*" and focused on physical infrastructure development, social and institution; the second one was named "*Social and Economic Development Plan 2001-2005*. From 2006 to present, the RGC has changed and maintained the name "*National Strategic Development Plan*" and four consecutive NSDPs were executed covering the period of 2006-2010, 2009-2013, 2014-2018 and 2019-2023.

- National Strategic Plan on Aquaculture, 2016-2023
  Strategic Planning Framework for Fisheries Sector, 2015-2024

National Strategic Plan on Green Growth 2013-2030 (NSPGG)
NSPGG, which was prepared by the National Council for Green Growth, has a vision to develop a sustainable economy, together with environmental, social and cultural sustainability for poverty alleviation. The aim of the NSPGG is to promote a national economy with growth stability, reduction and prevention of environmental pollution, a safe ecosystem, poverty reduction, and the promotion of the public health service, educational quality, natural resources management, and sustainable land use and water resources management to increase energy efficiency, ensuring food and safety and glorify the national culture. The NSPGG was developed to provide orientation to relevant ministries/institutions, authorities at sub-national levels, the private sectors, civil society and stakeholders for efficiency of green growth with balance among economy, environment society and culture.

The National Environment Strategy and Action Plan 2016-2023 (NESAP)
NESAP is developed to align with the 1996 Law on Environment Protection and Natural Resource Management and the Rectangular Strategy Phase 3 to reaffirm sustainable development and poverty alleviation of RGC. NESAP is formulated to tackle:

1. Environmental sustainability is the main source of growth and development as many development sectors still depend on natural resources such as water, land, forests and mineral resources. Therefore, sustainable management and conservation of natural resource and environment is significant to sustain economic growth in the country.
2. Environmental deterioration which affects agricultural productivity, socio-economic and health.
3. The need for a sustainable supply of environment and natural resource goods, services, and functions to meet future growth.

NESAP was developed in an inclusive manner to

- assist institutions at national and sub-national levels and private sector actors in integrating environment and natural resource into policies, strategies, action plans, programmes and projects
- support existing sustainable development, green growth, climate change and other action plans being implemented by government agencies, NGOs and private sectors, and
- initiate development of programmes/projects in close collaboration and coordination with all concerned ministries and institutions, development partners, private sectors and NGOs.

The NESAP has a mission to (1) provide a roadmap for resource mobilization and actions for ministries and institutions, private sectors, CSOs, and development organization to achieve sustainable and inclusive development, and (2) identify priority sectors and concrete programmes and projects to demonstrate opportunities and benefits in shifting to sustainable and inclusive development. In order to achieve NESAP, four main strategic objectives are stressed, as follows:

1. Strengthen cross-sector collaboration and relevant legal instruments and guidelines to improve coordination, regulations, and delivery functions for sustainable development outcomes.
2. Improve resource use efficiency for a healthy environment and social well-being, while increasing business competitiveness and incentivizing technological innovation.
3. Develop and implement financing mechanisms and benefit-sharing schemes, and fund mobilization plans, to modernize environmental conservation and natural resource management.
4. Raise public awareness, build individual and institutional capacity, promote technology transfer, and strengthen the application of science and technology to improve the conservation, management, and monitoring of the environment and natural resources.

A total of 14 objectives were set out to achieve the four strategic objectives. NCSD oversees the implementation, and NESAP subcommittee was set up to work closely with ministries and institutions, development partners, private sector and CSOs. MoE is responsible for environmental regulations and conservation initiatives, whereas other ministries and institutions contribute to NESAP by mainstreaming natural resources and environment into their activities. NESAP identified US$263 million of current and pipeline projects. There was also financial gap to achieve objectives pertinent to technology and science transfers, public-private partnerships in green and sustainable development, and chemical and hazard wastes management. Co-financing from the government, development partners, investment funds and private sources was indicated by NESAP. NESAP also proposed environmental taxation, carbon offset, and payment for ecosystem service schemes.

In order to achieve NESAP 2016-2023, the Cambodia's road map for sustainable development was formulated, and a task force established composed of 16 line ministries and institutions as well as other key concerned stakeholders.

Cambodia Climate Change Strategic Plan 2014-2023

Climate change is a global issue and Cambodia is vulnerable to drastic changes in climate. In recognition that the socio-economic development and poverty alleviation cannot be addressed unless climate change is taken into consideration for all development sectors, RGC through MoE, with the participation of the Climate Change Technical Team (CCTT) and guidance from the the National Climate Change Committee (NCCC), developed the Cambodia Climate Change Strategic Plan (CCCSP) 2014-2023 endorsed in 2013. The 10-year vision of the 2013 CCCSP is "*Cambodia develops towards a green, low-carbon, climate-resilient, equitable, sustainable and knowledge-based society*". A total of eight Strategic Objectives were identified to accomplish its vision, goal and mission, of which Strategic Objective 3 "*Ensure climate resilience of critical ecosystems (Tonle Sap Lake, Mekong River, coastal ecosystems, highlands, etc.), biodiversity, protected areas and cultural heritage sites*" directly links to the resilience of ecosystems. Four points listed in this objective are related to biodiversity conservation and restoration of threatened eco-systems, promotion of community-based and eco-based approaches and eco-tourism, promotion of payment for ecosystem service including REDD+, and promotion of participatory land-use planning. The

Strategic Objective 3 mapped three ministries (MoE, MAFF, MoWRAM) as responsible for biodiversity conservation.

2.5.2 Biodiversity-related Policies and Legislations

- **Law on Environmental Protection and Natural Resource Management (1996)** aims to protect and promote environmental quality and public health through the prevention, reduction, and control of pollution; to assess the environmental impacts of all proposed projects prior to the issuance of the decision by the Royal Government; to ensure the rational and sustainable conservation, development, management, and use of the natural resources; to encourage and enable the public to participate in environmental protection and natural resource management; and to suppress any acts that cause harm to the environment.
- **Land Law (2001)** has the objective 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. This law provides a legal basis for government institutions to manage state land such as protected areas, public land, and community land.
- **Law on Mineral Resource Management and Exploration (2001)** aims to determine the management and exploitation of mineral resources, the manipulation of mines and all activities related to mining operations in the Kingdom of Cambodia. This law gives mandates to the Ministry of Mines and Energy (MME) to manage all mineral resources in, on or underneath the land, mountains, plateaus, territorial waters and sea islands, and in or on seabed within Cambodia's territory. This law includes consideration of the environment as appeared in paragraph 6 of article 1 under chapter 3 and paragraph 2 of article 21, chapter 5 (Exploration and Mining Operation). This law permits all partners interested in mining activities to access all areas across the country for mining exploration, including PAs' management zones.
- **Forestry Law (2002)** 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 forests for their social, economic and environmental benefits, including conservation of biological diversity and cultural heritage.
- **Fisheries Law (2006)** aims at management of fisheries resources, promoting aquaculture development, processing, and enhancement of local population for social, economic and environmental benefits, as well as biodiversity conservation and cultural-natural heritages. The law encompasses all natural and artificial fisheries and aquaculture. Its mandate covers flooded forest and mangrove forest in association with life cycle of fisheries.
- **Law on Water Resources Management (2007)** aims at fostering the effective and sustainable management of the water resources of the Kingdom of Cambodia to attain socio-economic development and the welfare of the people. Based on definition in article two, it covers groundwater, atmospheric water, aquifers, basins and all water resources in

sea, river tributary, stream, waterfalls, canals and swamps, ponds, reservoirs or storage. Article 23 of this law authorizes the Ministry of Water Resources and Meteorology to declare any watershed as a protected "water use" zone if it is prone to degradation by human activities or natural factors.

- **Law on Protected Areas (2008)** defines the framework for the management, conservation and development of protected areas to ensure conservation of biodiversity and sustainable use of natural resources in protected areas. The law provides a complete set of conservation and management regulations but the practical implementation on the ground is often problematic mainly due to a limited number of rangers and staff resources to either enforce the law or development. Settlements located inside the PAs often cause encroachments and illegal logging in the protected forest land.
- **Biosafety Law (2008)** has the objective to prevent adverse impact on the conservation of biodiversity and natural resources caused by the trans-boundary movement, development, handling, transfer, use, storage, and release of living modified organisms resulting from modern biotechnology; and to ensure effective conservation of biodiversity and sustainable use of biological resources, also taking into account risks to human health.
- **Law on Seed Management and Plant Breeder's Right (2008)** has objectives to protect new plant varieties, to secure the management and sustainable development of varieties, and to encourage the development thereof for social, economic, and environmental benefits.
- **Law on Tourism (2009)** provides the Ministry of Tourism a mandate to govern the tourism sector in a sustainable manner for poverty reduction. This law aims to protect and conserve the natural resources, culture and customs, which serve as the foundation of the tourism sector, with its optimal benefits. As highlighted in Articles 2 and 48, this law takes into account the protection and safeguard of natural resources, environment pollution.

2.5.3 Biodiversity Considerations in Development Sector

This section will analyze the existing national policies and legislations related to ecosystem and biodiversity conservation and identify opportunities, gaps and overlapping jurisdictional areas and suggest solutions to decrease the discrepancy between policy and practice, reduce overlapping and overcome policy challenges.

The RGC makes strenuous efforts to implement all legally-related aspects, programmes, action plans, and institutional arrangements related to natural resources to achieve the national goals of environmental protection, biodiversity conservation, poverty reduction, socio- economic development, and good governance. The national goals as reflected in the Rectangular Strategy and National Strategic Development Plan are set out to assure sustainable development and conservation of natural resources. Conservation and management of biological resources in consideration of ecology, economy and social issues are necessary to contribute to environmental protection, poverty reduction and socio-economic development. Regarding ecosystem and biodiversity-related laws, there are a number of key laws relevant to protected areas management and biodiversity conservation, each of them contains precise objectives. However, diffusion of

mandates between line institutions seems to reduce the effectiveness of the implementation. Given below are overview of national policy framework and strategic plan in relation to natural resources and biodiversity conservation in Cambodia.

2.5.4 National Strategies on Biodiversity

On a basis of these laws, strategic programmes or frameworks for 10-20 years have been subsequently developed by the relevant ministries as a roadmap to assure sustainable development by assuring effective conservation of biodiversity.

- **National Protected Area Strategic Management Plan (NPASMP), 2017-2031** has a mission to achieve the most effective, efficient and equitable management of the national protected area system in Cambodia.

- **Agricultural Sector Strategic Development Plan, 2019-2023 (ASDP)** is freshly updated from ASDP and has a vision of *modernization of Cambodian agriculture in competitive, prospectus, climate change resilient and sustainable manners toward increase in household income, prosperity and health for Cambodian people*. The mission of ASDP is to provide services with high quality, modern technical science, standardization and clear policy for proficiency and effective development of agricultural sector in Cambodia. With this vision and mission, the ASDP forecasts to accomplish agricultural growth to around 4% per annum throughout the coming 5 years from 21,813 billion Khmer Riels (KHR) in 2018 to KHR 25,700 billion in 2023, promotion of competitive agriculture, quality and safety products and nutritional food as well as the effective enhancement of sustainable management of soil, forest and fisheries resources. As set in the strategic goal 2, effective management and development of soil, forest and fisheries resources is the top priority alongside agricultural development.

- **Strategic Planning Framework for Fisheries 2015-2024 (SPFF)** to guide Fisheries Administrative in effective implementing the National Strategic Development Plan, and compliance with the Law on Fisheries. SPFF has also been updated in line with ASDP, with focus on six strategic programmes, including strengthening management and conservation of fisheries resources; protection and conservation of fisheries resources; freshwater and marine fisheries development; fisheries value chain development and management; fisheries research and development, and capacity building to fisheries officers, fisheries law enforcement and other legal frameworks relating to the fisheries sector. A number of key aspects in association with fisheries sector such as enforcement of fisheries law, maintaining around 600 thousand tonnes of fish catch per annum, annual increase of 20% of aquaculture and enhance livelihood of fisheries community is set within a five-year duration of 2019-2023.

- **National Forest Programme 2010-2029 (NFP)** has a mission to advance the sustainable management and development of forests support poverty alleviation, enhanced livelihoods, economic growth and environmental protection, including conservation of biological

diversity and cultural heritage. To address forest loss, forest restoration is necessary. Forestry Administration (FA) set two milestone indicators within five years of 2019-2023: 1) yield harvested from tree plantation increases from 200 billion m^3 in 2019 to 275 billion m^3 in 2023, and 2) revenue generated from CFs will increase from 10% in 2019 to 18% in 2023. Within this five-year period, five strategic measures will be taken encompassing: 1) forestry management and development, 2) strengthening fauna and flora research and development, 3) management of zoo park and saving wildlife, 4) forestry law enforcement, and 5) management and support service strengthening.

- **National Policy on Mineral Resources 2018-2028 (NPMR)** has the objective to manage and develop mineral resource in a sustainable manner in order to bring benefit to people; to develop small-scale mining and create new resources for national revenue.

As highlighted above, there are many national policy and legislations and strategic plans established to ensure sustainable development, management and conservation of biodiversity within or outside the protected areas system. However, sectorial policy and law are often developed to meet the specific sectoral needs, sometimes in an ad-hoc manner, based on individual sectors and institutional circumstance. Many sectorial laws lack financial mechanisms, or measures to secure implementation and resources, which results in ineffective law enforcement and poor participation from relevant stakeholders. As highlighted in the NPASMP, the Protected Area Fund planned to be established with joint management of the MoE and the MEF does not yet exist, and the national budget allocations for the management of protected areas remain limited, mainly used to cover staff salaries and basic administration with limited opportunities for investments in infrastructure, capacity building and training. Many PAs lack resource staff and rangers, zoning, management plan, and limited operation on the ground. Most development and conservation activities rely on conservation NGOs and/or funding agencies such UNDP, UNEP, GEF, USAID, World Wildlife Fund (WWF), Wildlife Conservation Society (WCS), Conservation International (CI), Birdlife International (BI), Flora and Fauna International (FFI), Wildlife Alliance (WA), Regional Community Forestry Training Center for Asia and the Pacific (RECOFTC), etc.

To achieve a better and more efficient and effective biodiversity conservation, there is a need to establish and strengthen coordination mechanisms, mobilize adequate resources, and review and amend some laws to achieve coherency, consistency, and a clear mandate for individual institutions. In February 2016, the Prime Minister announced a jurisdiction reform to give mandate to MoE for environmental protection within PAs and for MAFF to be responsible for productive forest and Economics Land Concession (ELC) areas as well as the protection and management of fisheries.

2.6 Biodiversity-related Education

Biodiversity subject has been introduced in the lower education sub-sector, aiming at giving school children basic knowledge of plants and animals, their interaction in the ecosystem and their contribution to the environment and development. This subject is included in earth science [4]and biology[5] subjects at grades 7 through 12. Recently, with contribution of NGOs and development partners, MoE and MoEYS have jointly developed an eco-school programme to schools. This programme focuses on garden, waste management and Water, Sanitation and Hygiene (WASH). At the higher education programme, biodiversity has been integrated in the curricula of Bachelor programmes of the state-owned universities such as the Royal University of Agriculture, Prek Leap National College of Agriculture and Royal University of Phnom Penh. Furthermore, the Masters programme[6] entitled "*Master of Science in Biodiversity Conservation*" was founded by Fauna and Flora International (FFI) in 2005, in collaboration with the Royal University of Phnom Penh. Funding for this master programme comes from international academia, foundations and NGOs. Students who attend the master programme can access the FFI-initiated Kannitha Fund, International Crane Foundation and Centre for Biodiversity Conservation. This masters programme provides a unique curriculum on biodiversity and natural resource management. Additionally, in collaboration with MoEYS, Wildlife Alliance (WA) develops Kouprey Express (KE), a mobile environmental education unit, to provide awareness raising on the value of biodiversity and protection to students, teachers and communities across Cambodia. To date, KE has reached 210,000 people through direct awareness raising programme and a million people through radio/television spots and billboards.

In addition to awareness programmes, *ex-situ* conservation also play a significant role for conservation of fauna and flora, scientific research and education. Phnom Tamao Wildlife Rescue Centre, home to over 1,200 wild animals, is a key centre which provides awareness-raising to school students, communities and the public on information about wildlife species, their interaction within ecosystems and their conservation value. Another wildlife rescue centre, the Angkor Centre for Conservation of Biodiversity (ACCB), delivers environmental education to local school students and communities through lectures, workshops/seminars and night shows. Based at the Cambodian Agriculture Research and Development Institute (CARDI), there are samples of 38 crops with 6,692 rice accessions/samples and 1,569 samples of other crops being conserved in the CARDI genebank (CARDI, 2016). The Sok An Phnom Kulen Orchid Research and Conservation Centre, established by the Ministry of Environment in 2018 in the foothills of the Kulen National Park, has a collection of over 300 wild orchid species. The centre will be a destination for education and tourism in the future.

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[4] *http://www.nie.edu.kh/kh/earth-science*

[5] *http://krou.moeys.gov.kh/kh/article/item/1058-1058.html#.XrnqL1xlcVY*

[6] *http://www.rupp.edu.kh/graduate/biodiversity*

3. ECONOMIC AND POLICY DRIVERS OF BIODIVERSITY CHANGE

The economy in Cambodia mainly relies on four main sectors - garments and footwear, construction and real estate, tourism, and agriculture (WB, 2017). Of these four sectors agriculture and tourism are the two biodiversity-dependent sectors. The MEF's revenue mobilization strategy identifies 12 sectors generating revenue for economic development (MEF, 2019), of which tourism, economic land concession, island and coastal zone rental are connected to ecotourism, and mine and energy are connected to biodiversity and natural resource dependency. The mining and energy sectors can have future potential for economic growth, but their development is mostly destructive of biodiversity. Both the negative and positive economic and policy drivers of biodiversity change are discussed as follows.

3.1 Sector Biodiversity Dependencies

Sector development that depends on biodiversity includes agriculture, water and tourism.

The agricultural sector includes four sub-sectors: crop production, livestock, fisheries and forestry. In 2018 the agricultural sector contributed to 23.5% of Cambodia's GDP where 53.1% was derived from crops, 11.1% from livestock, 24% from fisheries and 6.7% forestry (MAFF, 2019). From 2014 to 2018, rice cultivation area has increased from 3.03 million ha to 3.64 million ha; other crop land increased from 953,597 ha to 1,091 million ha, with average annual increase of 3%, and rubber tree plantation increased from 357,800 ha to 436,680 ha. Livestock and poultry raising increased from 6,335,002 individuals in 2014 to 10,035,585 heads in 2018. Whereas fisheries subsector (inland freshwater, marine and aquaculture) increased from 745 thousand tonnes in 2014 to 911 thousand tonnes in 2018. Aquaculture in 2018 produced 254,000 tonnes for fishes, and 410,000 heads for crocodiles, both of which were two-fold increase if compared to 2014. The total tree plantation from 2014 to 2018 accounted for 338,040 ha including 331,943 ha tree plantation managed by the private sector (MAFF, 2019). In 2016, the agricultural sector employed 30.9% of the total workforce, followed by craft and related workers at 23% and service and sales worker at 19% (NIS, 2016).

Water resources play a significant role for consumption, particularly crop irrigation, hydropower and ecotourism. Up to around 750 million m^3, 10% of total water resource are used each year, 95% of which are used for the agriculture sector (MoWRAM, 2012). In order to benefit from water resources, RGC has developed a plan to rehabilitate defunct irrigation systems, and construct new dams for hydropower generation, irrigation, consumption and flood control.

The tourism sector increased by an average 26.1% per annum from 2013 to 2018, contributing 12% to GDP, and employing one million people. The number of eco-tourists has recently been estimated globally to increase by 20%, and thus Cambodia can use its natural assets to tap this opportunity. A total area of 2,029,199 ha of seven PAs in the Cardamom Mountains-Tonle Sap (CMTS) have been targeted for ecotourism development under the World Bank funded US$50-million ecotourism development project.

3.2 Sector Biodiversity Threats

Below is a review of sectors and sub-sectors that cause threats to biodiversity followed by proposed key solutions to mitigate such impact.

3.2.1 Consumption and threats to Biodiversity

Biological and natural resources play a central role in generating income opportunities and employment for rural people and contribute to economic development, but this sometimes means they come under pressure. Examples of illegal activities having negative effects on biodiversity are illegal logging, felling trees for fruit collection; poaching of key threatened wildlife species; collection of eggs of birds and turtles; electrofishing and overfishing during spawning and breeding seasons. The sixth National Report to CBD specified that species of high commercial value, such as turtles and tortoises, pangolins, bears, deer and wild cattle are commonly targeted for international trade. In addition, exploitation of wildlife in the region is high, particularly the collection of eggs and chicks of migratory birds and the destructive harvesting methods that eliminate non-target fish or plant species. MAFF's annual report in 2016 showed that 1,490 cases were associated with forestry offences, of which 1,110 cases were sent to courts, and 380 cases were fined. A total of 13,425m^3 of sawn wood, 58m^3 of rosewood, 1,814 cases of various types of wildlife and 3,324 kg of NTFPs and 295 chainsaws were confiscated. Moreover, 208 cases of land encroachment on a total area of 5,213 ha were compiled and sent to the court. Illegal activities related to fisheries sector in the same year were also high: 3,474 illegal cases at inland fresh water and 176 illegal cases at marine were reported. A total of 1,294,174 meters of fishing net, 24,007 pieces of fishing gear, 607,916 poles, 388 electric shocks generators and 15,445 meters of bamboo barrier nets were removed and destroyed. In 2019 PA enforcement officers confiscated 9,930.5127m^3 of sawn wood, 161 planks, 114 wood pieces and 55 poles; 793.2716m^3 of round log; 314 wood-carrying motorbikes; 190 chainsaws, 153 handsaws, and 4,047 wildlife traps (MoE, 2019).

The actual number of cases related to the natural resources would most likely be higher if all illegal activities were documented and law enforcement was more comprehensive. At present, as a consequent of overharvest and unregulated and unsustainable collection practices, the population of certain species such as agarwood trees, rosewood and dipterocarp, other NTFP species, wildlife and fishery resources have declined significantly. Two large herbivorous mammal species, such as wild water buffalo and Kouprey, may already be extinct in their natural habitats. Most biodiversity resources are collected from protected areas. Unsustainable collection practices together with habitat fragmentation are drivers of the erosion of biodiversity resources, which severely affect the function of ecosystems and their regeneration capacity, and in turn reduces the ability of functional ecosystems to provide support to local livelihoods.

To date, Cambodia remains home to numerous threatened wild species listed in the IUCN RedList 2018. Those consist of 37 plant species, 143 vertebrates and 79 invertebrates (GSSD, 2019). Currently, population of many species have declined considerably, and will probably be followed by many more species if the trend of ongoing deforestation and degradation continues. To reverse this trend, immediate policy measures need to synergize forces between stakeholders from local

communities, local authority, armed forces and relevant agencies at the national and sub-national levels to conserve and manage natural ecosystems and biodiversity.

3.2.2 Agricultural Development

The agricultural sector, together with tourism, construction and real estate, and the garment industry, remains one of the four pillars in Cambodia's economic development. The agricultural sector employed 42% of the total workforce and contributed to the Cambodia's GDP at 26.7% in 2017 and 23.5% in 2018 (MAFF, 2019). Agricultural holdings in Cambodia is categorized into two main types - household agriculture holding and juridical agricultural holdings which is managed and operated by private enterprise or state. The result of agricultural census in 2013 showed that a total of 3,304,738 ha was owned by 2,129,149 household agricultural holders, and 806,628 ha was owned by 101 juridical holders (NIS, 2013).

Economic Land Concessions (ELCs) were reported to increase to 2.2 million ha in 2015, which is equal to about 12% of Cambodia's land. Based on MAFF's 2016 annual report, the agricultural sector in Cambodia produced nearly 6,857,807 tonnes of rain-fed rice on a cultivation area of 2,315,794 ha, and dry season rice on an area of 307,501 ha, as well as other seasonal cash crops grown on an area of 5,932 ha. The total area for rubber tree plantation is accounted for 431,053 ha, but planted area was only 126,996 ha (29.46%), with total annual harvest capacity of 127,852 tonnes. The revenue generated from rubber sector in 2016 amounted to US$ 133.4 million.

In order to promote agriculture in Cambodia, RGC granted about 2.02 million ha of forest land for ELCs, of which 1.55 million ha were located in permanent forest estate, which is under the jurisdictional management of MAFF and 470,000 ha were within PAs, under the jurisdictional management of MoE (RGC, 2016a). The fee for land lease is US$ 10/ha/year after five years of operation. It is worth noting that the agro-industrial sector causes irreversible impacts on forest ecosystems and biodiversity as it totally and permanently changes the natural ecosystem when it introduces monoculture agriculture.

In addition, between 2009 and 2013, 2.45 million ha were allocated as Social Land Concession (SLCs) to poor households and military households for establishment of new villages. Such land concessions directly affect the deforestation and degradation of forest ecosystems and biodiversity. Like ELCs, some SLCs are located within and adjacent to the Pas.

Acknowledging the importance of agriculture in the national economy and for food and nutrition security, RGC through MAFF developed Agricultural Sector Strategic Development Plan (ASSDP) in two consecutive phases of 2009-2013 and 2014-2018. The plan focused on four pillars, one to enhance agricultural productivity, diversification and commercialization by a double cropping and crop intensification approach and commercialization of rice and other commercial crops to achieve food security and boost the economy (MAFF, 2015a). In the strategic plan, MAFF set a target to achieve 5.65 million ha of agricultural land for all crops. Rice is regarded the main stable crops with production volume up to 9.95 million tonnes in 2016, followed by other key cash crops like cassava, rubber trees, mango trees and cashew trees (MAFF, 2017b).

With the increases of weeds, insects and diseases that damaged the crops of farmers, more and more herbicides, pesticides and fungicides have been applied to prevent outbreak of pests and to enhance crop production. According to the National Institute of Statistics (NIS) in 2013, small agricultural households used high quantities of fertilizers and chemicals to intensify crop yield: 70% inorganic fertilizer; 50% organic fertilizer; 30% pesticide and/or herbicides, and 9% fungicide. The consumption of chemical pesticides in 2007 was estimated to about 3,570 tonnes, with 522 trade names of 133 common names of chemical pesticides sold in local markets, most of which are unregistered.[7] Based on the Cambodia Organic Agriculture Association in 2011, over 3.2 million liters of 100 different types of pesticides were applied each year and the import of pesticides grew significantly (BDLINK, 2017). The import of fertilizes increased from 129,192 tonnes in 2008 to 699,079 tonnes in 2014, but sharply decrease to 143,485 tonnes in 2015 (BDLINK, 2017). Pesticides with fake labels, which are hazardous to the environment and biodiversity, accounted for 60-80% of the total supply, most of which are bought from Thailand and Vietnam (BDLINK, 2017). Among the four geographical zones, as illustrated in table 7, small agricultural holders inhabiting the plains zone apply higher volume of pesticide, fungicide, herbicide and other chemical substances, followed by Tonle Sap Lake zone, plateau and mountainous zone, and coastal zone (NIS and MAFF, 2015).

Table 7: Number of Agricultural Households Used Fertilizers or Chemicals by Zone

Zone/province	Type of fertilizers/chemicals used in one crop planted in 12 months					
	Organic fertilizer	Inorganic fertilizer	Pesticide	Fungicides	Herbicides	Other chemical
Plain zone (Kampong Thom, Kandal, Phnom Penh, Prey Veng, Svay Rieng, Takeo and Tboung Khmum)	540,471	769,703	444,395	126.086	393,944	32,091
Tonle Sap Lake zone (Banteay Meanchey, Battambang, Kampong Chhnang, Kampong Thom, Pursat, Siem Reap, Oddhar Meanchey, Pailin)	278,091	473,802	218,082	46,490	233,215	23,595
Coastal zone (Kampot, Koh Kong, Preah Vihear, Kep)	95,294	121,831	17,506	3,270	14,22	4,411
Plateau and Mountainous zone	153,399	142,907	30,861	8,714	34,547	6,017

[7] http://ap.fftc.agnet.org/ap_db.php?id=554

(Kampong Speu, Kratie, Mondulkiri, Preah Vihear, Ratanakiri, Stung Treng)						

Source: Census of Agriculture of the Kingdom of Cambodia (2013), p.194

To increase crop productivity, Cambodian farmers have applied intensification approaches. The applied tools include utilizing machinery tools and inorganic fertilizers, herbicides and pesticide and fungicide to prevent their crops from damage caused by insects and diseases. Intensification may lead to a loss of natural ecosystems and biodiversity at various levels; contributing to water and soil pollution, and causing to health hazard. Beside this, the government has provided important exemption or subsidies for all agriculture equipment and machineries, which are misused and causing harm to natural ecosystems and biodiversity.

3.2.3 Tourism Development

While tourism is considered a sector that contributes to foreign exchange earnings, provides business opportunities for communities and helps to alleviate poverty, it may also have negative impacts on biodiversity and environment. Large numbers of tourist activities in the coastal zone may result in overuse of marine biodiversity and disturbance of beach and coral reefs. Typical problems in the coastal zones are sewage discharge, sediment built-up, unregulated diving on coral reefs and land reclamation. Studies of the impact of tourism on biodiversity found three negative impact types: activity disruption through noise activities, spotlighting and the approach towards animal feeding; direct killing or injury from road accident and hunting; and habitat alteration for infrastructure development of accommodation, roads and parking areas. In addition, tourism activities also harms the environment, fauna and flora through unregulated solid waste disposal.

A model-based study of impact of tourism on biodiversity loss with 141 country samples suggested that a 10% increase in the numbers of international tourist arrivals will lead to an increase in biodiversity loss between 2 – 4% (Habibullah et al., 2015). The study also emphasized that biodiversity-reliant ecotourism will destroy itself if the tourism industry and tourism-related activities are left unchecked and uncontrolled by the relevant authorities, and this results in tremendous impact on local businesses such as the transportation, hotels and accommodations, food and restaurants, banking, and various leisure and entertainments services. At the same time, when properly managed, tourism can contribute to biodiversity conservation and poverty reduction (CI, 2003). Therefore, sustainable tourism could contribute to biodiversity conservation that they are dependent upon.

Cambodia's Tourism National Strategies 2012-2020, in paragraph. 19, set 2020 as a milestone to attract seven million international tourist arrival to Cambodia, with expected revenues of US$ 5,000 million through tourism product diversification along with high quality (MoT, 2012). Forecasts suggest that tourism will become increasingly important in biodiversity hotspot countries, particularly in Southeast Asia—and will require careful planning to avoid negative impacts on biodiversity (CI, 2013). Birdlife International (2011) identified 40 Indo-Burma

Biodiversity Hotspots of biodiversity significant value in Cambodia (CEPF, 2012). In order to achieve this target, key players from government technical agencies, private sectors, development agencies and local residents in tourism destinations have to share their respective responsibilities and to synergize forces in an effective manner.

3.2.4 Water Sector Development

Cambodia has experienced water shortages in the dry season for both household consumption and crop irrigation for many years. The situation is expected to become even worse with climate change resulting in prolonged droughts and drier and higher temperatures in the dry season. The reason for water shortages are several and many are human-induced such as increased agricultural activities, population growth, intensified socio-economic development, deforestation and forest degradation, and inadequate hydraulic infrastructure. Many natural ponds and pools which are important waterholes for wildlife have become dry.

Many rivers, streams and water body surrounded by farmlands and settlements are showing increasing signs of contamination by human and animal waste, fertilizer and pollutant sources. Rural communities that rely on water from these sources have experienced water-related diseases such as diarrhea, dysentery, typhoid in the dry season because of low level of domestic water supply and poor sanitation systems. In order to cope with water issues, a number of existing water management approaches have to be reinforced:

- harvest of rainwater,
- pond and/or well construction at household level,
- restoration of broken hydraulic structures or irrigation system being built during ancient and Khmer Rouge times,
- construction of new irrigation system along natural streams, and
- Awareness raising on the adverse impact of chemical application on biodiversity, and identification of alternative farming technique to intensify crop yield.

3.2.4 Mining Development

Cambodia is has long known to be rich in diverse mineral resources, based on research carried out about 150 years ago by the French and confirmed by recent studies in the 20th century. Consequently, the mining sector has grown considerably after the establishment of peace in 1993. By the end of 2017, several different companies have been granted permission to mine:

- A total 260 licenses to mining operators in crushed stones, gravel, sand and laterite, with total area of 6,000 ha, total investment fund of US$ 335 million, and job employment to 5,000 people
- Five cement factories with annual production capacity of 7 million tonnes to supply for construction, coal power plants and animal feed business
- A total of 54 companies, with total investment of about US$ 733 million and 1,500 job employment (MME, 2018). Some well-known companies from Australia, China and Japan are operating their exploration activities along with local companies.

Based on exploration, a few provinces were confirmed to possess metallic minerals:

- Iron Ore consisting of Hermatite (Fe203), Magnetite (Fe304), Limonite (2Fe203, 3H2O) was estimated to account for 5-6 million tonnes and other deposits may add 2-3 million tonnes at Phnom Deck, Rovieng district, Preah Vihear province. Koh Ker of Preah Vihear province, and Thalaborivath of Stung Treng province were also confirmed to have Iron Ore.
- Gold deposits were in five provinces of Kampong Cham, Kampong Thom, Preah Vihear, Ratanakiri and Mondulkiri. Renaissance Minerals (Cambodia) Limited undertook gold exploration at O Khvau, Mondulkiri province and estimated at least 2 million troy ounces of gold in the O Khvau region project. The first gold production will be carried out first quarter 2020.
- Bauxite has been discovered in Battambang and Mondulkiri provinces
- Antimony (Sb) Chronomium (Cr.) was found in Sre Peang area of Pursat province.

Other non-metallic metals like cement, gemstone, coal and mineral fuels have been reported in many provinces across the country. The mining sector contributes to about 2.5% of the total national revenues, with an expectation to increase to 5% in 2020, and over 10% after 2023[8] . This prediction is made based on the fact that two mining companies, Indian-owned mining firm Mesco Gold (Cambodia) Ltd and Australia-based Renaissance Minerals, were to start producing gold in late 2019 onwards, and Singapore-based firm Kris Energy Ltd was expected to extract oil starting in late 2019.

As mentioned, mining as a sector will potentially contribute to poverty reduction and help achieve the RGC's development goals. Currently, however, many mining operations have detrimental impacts on biodiversity and ecosystems through the destruction of natural ecosystems, water pollution, and waste generation. Illegal mining activities also pose serious threats to biodiversity. In addition, mining is sometimes operated on indigenous land without prior consultation which results in social conflict and local economic problems. Mining licenses also include 54 exploration licenses of metallic minerals sub-sector to survey iron, gold, copper and bauxite granted inside PAs. Based on WWF-Cambodia data [9], a majority of the 13 mining licenses falls within a Biodiversity Corridor and four out of the five PAs (three Wildlife Sanctuaries and one National Park) of the Eastern Plain Landscape. Mining operation within natural Protected Areas will inevitably impact social, environment, ecosystem and biodiversity, which will require high costsfor environmental restoration of the sites. To address such concerns, RGC needs to develop a separate procedures and conditions to mitigate adverse impacts on ecosystem and biodiversity, and to assess mining operation practices through different means of inspection (MoME, 2018).

[8] https://www.phnompenhpost.com/business/mining-industry-expected-be-viable-late-year

[9] https://greatermekong.panda.org

A study of impact of sand mining on a river ecosystem conducted by WWF in 2018 revealed that it caused physical impacts. For example, such mining changed the river channel morphology, altering the flow regime and the composition and movement of sediment, changed the larger-scale river features and impacted on water quality. In addition, sand mining causes erosion of riverbanks and might destroy infrastructure and result in negative impacts on the spawning ground for fish, invertebrates and other aquatic animals that lay their eggs on sand (WWF, 2018). As shown in Table 8, the study of sand and gravel mining in the Lower Mekong River (LMR) carried out by WWF between 2010 and 2013 indicated that Cambodia extracted 18.8 million m^3 of sand or 60.32%, and 2 million m^3 or 70.21% of gravel of the total volume of 31 million m^3 of sand (1m^3 of dry sand = 1.6 tonnes) and 2.9 million m^3 of gravel respectively among the four Lower Mekong Countries of Laos, Thailand, Cambodia and Vietnam.

Table 8: Volume and Percentage of Sediments Extraction from the Lower Mekong River by Country

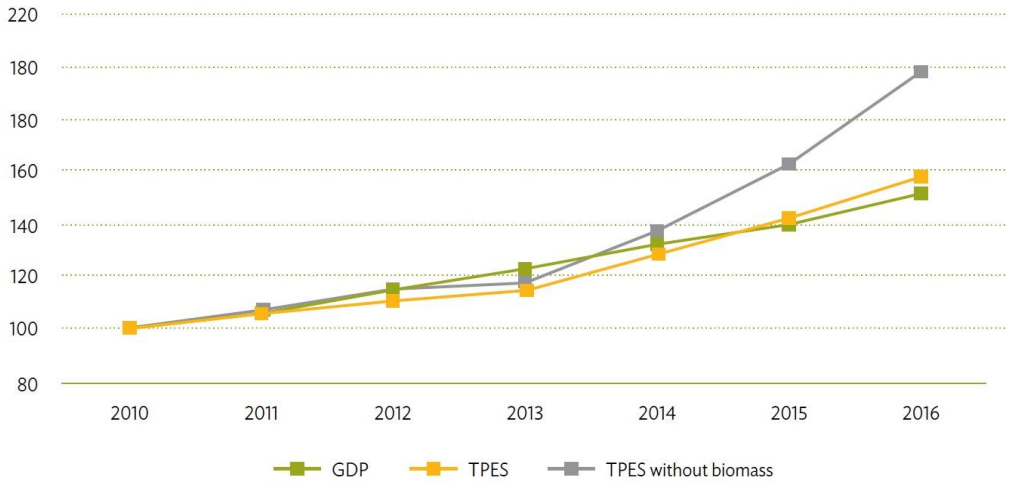
Country	Extraction (cubic metres per year)						
	Sand (m^3)		Gravel (m^3)		Pebbles (m^3)		Total (m^3)
	Volume	%	Volume	%	Volume	%	
Laos	904,100	2.91	10,000	0.34	454,500	100.00	1,368,600
Thailand	3,677,200	11.83	857,740	29.45	-	-	4,534,940
Cambodia	18,748,503	60.32	2,044,940	70.21	-	-	20,793,443
Vietnam	7,750,000	24.94	-	-	-	-	7,750,000
Total	**31,079,803**	**100.00**	**2,912,680**	**100.00**	**454,500**	**100.00**	**34,446,983**

Source: Geography of Sand and Gravel Mining in the Lower Mekong River, 2013

3.2.5 Energy Development

High economic growth in Cambodia fuels a high energy demand. Cambodia's total primary energy supply (TPES) includes hydropower, coal, oil, biomass, and electricity import. During 2010-2016, the amount of TPES, excluding biomass, had increased to two times higher than the growth of GDP, which grew 1.5 times (MME, 2018). Figure 5 shows the trend of energy and GDP growth in Cambodia from 2010 to 2016 as percentage compared to baseline 2010. The electricity demand is estimated to increase by 7.5 times from 2015 to 2040, based on the Basic Energy Plan for Cambodia (GDE, 2019), in which electricity mix in 2030 consisting of 35% from coal, 55% from hydropower, and 10% from renewable energy (biomass, wind energy and solar photovoltaics). Noted that Cambodia's power sector is characterized by rising electricity demand, the dominance of coal and hydro-based power generation, and energy imports from neighbouring countries.

Cambodia has approximately 2,300 MW in installed electricity generation capacity, with 81% of total power generation originating from hydro and coal (MME, 2018). Solar PV and biomass contribute only marginally to the country's power generation. The national consumer grid tariff ranges from US$ 0.12 - 0.19 per kWh, depending on consumer type (industry, commercial or residential) and voltage (low, medium, high) based on MME in 2018.



GDP = gross domestic product, TPES = total primary energy supply.

Source: Ministry of Mines and Energy, 2018.

Figure 5: Historical Trend of GDP and TPES

Petroleum demand from 2012 to 2016 increased by 7.2% per year, of which gasoline, diesel oil and Liquefied Petroleum Gas (LPG) increased at a rate of 6.1%, 8.4% and 23%, respectively. Oil demand is projected to increase to 4,650 kilotons (ktoe) by 2040, with average growth rate of 3.8% per year (GDE, 2019). To meet high demand and reduce dependence on energy imports, Cambodia has explored for oil and gas in the Tonle Sap Lake, licensed extraction in the Gulf of Thailand, and assessed the potential of constructing an oil and gas refinery plant.[10] The exploration process of gas and oil may produce environmental impacts at different levels, depending on performance during the operation process.[11] The most likely foreseeable impacts on biodiversity and ecosystems are through water pollution from spills, leakage, chemical uses, and waste management. More petroleum demand in future will increase air pollution and have an adverse impact on aquatic biodiversity if pollution is spilled into the water body.

Electricity sources from hydropower, coal/gas and solar/wind/biomass are vital for economic growth, and, based on CBEP's current plan, will increase to 1,602 MW, 2,373 MW and 490 MW by 2030, respectively (GDE, 2019). However, hydropower and coal plants cause irreversible impacts on biodiversity and environment. The coal power plants, by their nature, usually lead to irreversible impact, including greenhouse gas (GHG) emissions, environmental destruction from

[10] https://www.phnompenhpost.com/post-plus/oil-explorers-closing-tonle-sap-lake
[11] https://www.tourismcambodia.com/news/tradefair/27834/oil-refinery-construction-pushed-to-2021.htm

mining, the generation of millions of tonnes of waste, the emission of harmful substances, contribution to global warming, and social problem. The greater the number of constructed conventional coal-fired plants, the greater the negative impact on the environment (GDE, 2019). Moreover, hydropower dams can cause permanent deforestation, and have a negative impact on freshwater fisheries, nearby agricultural lands, and create social problem through the need for resettlement. Hydropower reservoirs can also be a source of methane gas emissions, another greenhouse gas responsible for climate change. By 2018, seven hydropower dams with a total energy supply of 1,327MW will be operating. All of these hydropower dams are located in forested areas, and usually in areas settled by indigenous people. For instance, the Lower Sesan 2, with production capacity of 400MW, will flood 340 km^2 and affect 1,000 families that need to be resettled. Hydropower dam in Pursat province affects 600,724 ha forested land, 5,355 ha. farmland belonging to 296 families, and 347 houses.[12]

If major hydropower projects are developed, based on the modeling work undertaken by Mekong River Commission (MRC), fish production is projected to fall by 70% in 2040 across the Mekong river, and Cambodia's annual GDP losses is projected to be US$ 3-5 billion.[13] Solar-based energy can complement hydropower in the day time peak demand and dry season shortages while the feasibility study on solar PV floating as a hybrid system with a hydropower plant has quite significant potential to meet the rising energy demand.

With regards to cooking, 62% of households use firewood, 5% use charcoal, 31% use LPG, and 2% use electricity (ADB, 2018b). Based on a study undertaken by Netherlands Development Organization (SNV) in 2014, each household on average consumed 4.87 kg of firewood and 2.023 kg of charcoal for cooking per day. In average, 6 kg of wood produces 1 kg of charcoal (UNDP, 2008). The projection of firewood and charcoal-derived bioenergy consumption from 2007 to 2030, as shown in Figure 6, is not in correlation with population growth due to two factors: 1) more rural areas are able to access electricity and LPG for cooking and other purposes, and 2) the price of firewood and charcoal keep increasing because of the decline of wood resources and high production costs. Use of firewood and charcoal contributes to forest degradation, air pollution and health problem as more resources are demanded in line with population growth. Improvements in the efficiency of cookstoves is one of the approaches to mitigate this issue, and this has been initiated by many international-funded projects, distributed in many provinces. For instances, the Australia-funded Rural Energy Projects supported the provision of 90,000 higher efficiency cookstoves in Kampong Cham province between 2015-2018 (ADB, 2018b).

[12] https://www.khmertimeskh.com/ 623286/senators-approve-2019-2023-development-plan-power-projects
[13] Source: https://opendevelopmentcambodia.net, 2019

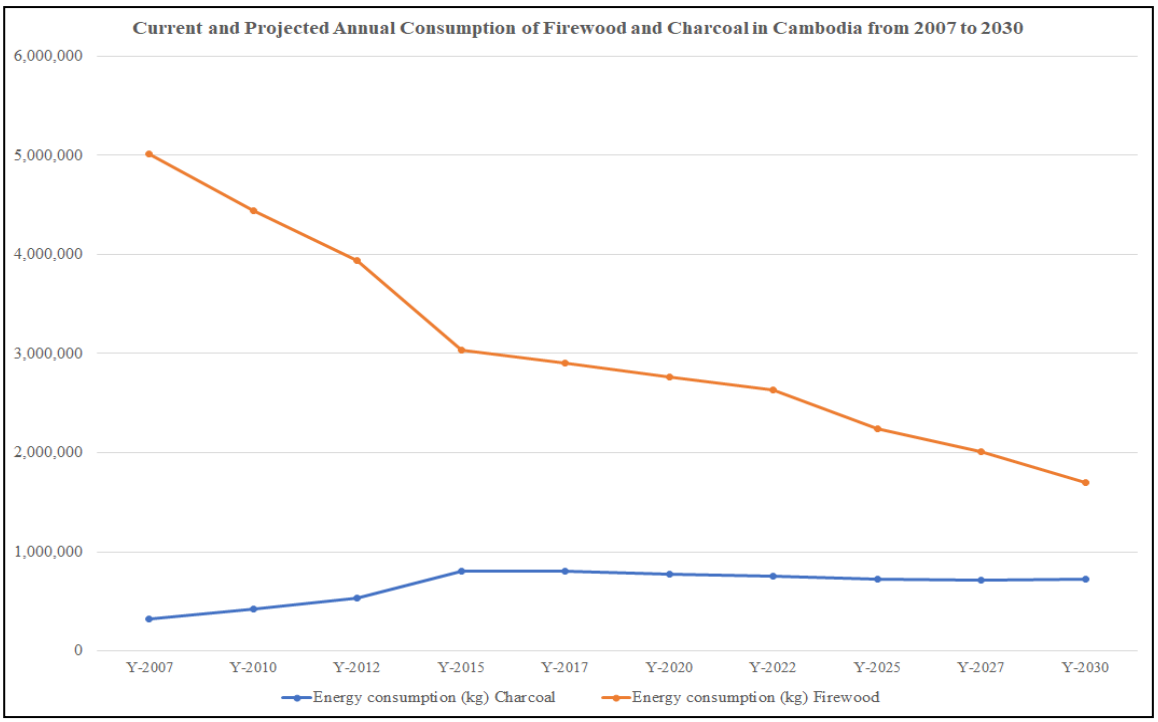


Figure 6: Projected Consumption of Firewood and Charcoal from 2017 to 2030
Source: ADB, 2009

3.2.6 Transport Sector Development

Cambodia has two technical ministries in charge of road infrastructure development – MRD manages rural road infrastructure and Ministry of Public Works and Transport (MPWT) manages national road infrastructure. There are 45,241 km of rural roads, equating to over 73.5% of the total road network (ADB, 2019). Over 95% of the rural road network are unpaved road. With Decentralization and De-concentration (D&D) reforms, Commune/Sangkat Fund has been developed, most of which is used for construction of new roads and road upgrades to maked connections from village to village. The national road network has a total of 16,292 km of roads, or about 26.5% of the total road network, of which include 2,254 km of national paved road connect to GMS countries. There are 5,007 km of inland national roads (72% paved road), and 9,031 km of provincial roads (30% paved road) (ADB, 2019). Unpaved roads are dusty, slippery and potholed, and so need regular maintenance work. In the NSDP 2014-2018, RGC and development partners allocated US$ 910.4 million or 12% of the NSDP budget for strengthening transport infrastructure sector. A number of rural roads which connect from village to village within PAs are constructed through conservation zones, and are sometimes close to core zones. The construction of roads within PAs contribute to both direct and indirect habitat loss and forest degradation as it provides access for illegal settlement, land encroachment for agricultural speculation and illegal extraction

of biodiversity, for instance poaching and logging (PASP, 2017). In order to harmonize such infrastructure development with natural resource management, Environmental Impact Assessment (EIA) together with other regulations are necessary to mitigate negative impact.

3.3 Invasive Species

Invasive species are one of the drivers causing changes to forest ecosystem, with adverse impacts on environment and economic growth. It is generally considered the second biggest threat to biodiversity after habitat destruction (General Directorate of Administration for Nature Conservation and Protection (GDANCP), 2014). At present, a total of 69 invasive species [14], of which 34 alien species, 30 native species, and other 5 biostatus species have been recorded in Cambodia. These invasive species include 37 plant species, 14 fish species, 6 insect species, 3 bird species, 3 reptile species, 3 mammal species, 2 micro-organism and 1 mollusc species. Ecologically, invasive plant species dominate open area of the destructed habitat and competes with native species. It is noted that only some invasive plant species cause severe disturbances of natural ecosystems. The followings is a list of species and the nature of their impacts:

Mimosa pigra, an invasive alien species with spines and itchy fruit, grows predominantly in the flooded plain areas of the Tonle Sap Great Lake, the Mekong River and tributaries, and is sparsely distributes in the upland area. The study of *M. pigra* infestation and threat in 2004 estimated that it occupied around 2,100km^2 of flooding zone across the country (Rijal and Cochard, 2015). Many reports note that mimosa thickets are a shelter and breeding habitat for rodents after rice harvests, but the thickets are not favored by birds, snakes and cats which are predators of rodents, as well as fishes (Rijal and Cochard, 2015).

Mimosa diplotricha, a climbing seasonal plant, randomly dominates disturbed areas of all lowland terrestrial forest types. This species grows predominantly in colonies, forming thick clumps with dense leaves, suppressing seedlings and climbing trees to several meters in the rainy season. It dies naturally in the early dry season around December, and becomes a large biomass which can fuelto forest fire and can kill seedlings and saplings.

Imperata cylindra , a member of the grass family, dominates open areas of either natural deciduous forest or severely disturbed forested areas. This species is sensitive to forest fire and prevents growth of seedlings of native species.

[14] http://issg.org/database/species/search.asp?st=sss&sn=&rn=Cambodia&ri=19415&hci=-1&ei=-1&fr=1&sts=&lang=EN

Other grass family of *Panicum repens*, *Urochloa mutica*, *Neyraudia reynaudiana* and *Cenchrus polystachios* also disturb the natural habitat, but the scope of disturbance is small and manageable.

These species generally grow fast in the rainy season and suppress seedlings of native species, and are susceptible to forest fire in the dry season. When these species dominate in disturbed areas, it is hard for native species to recover.

3.4 Climate Change

Climate change-induced issues have also been a key driver to negative change in ecosystem and biodiversity. Cambodian is experiencing longer and drier dry seasons, shorter rainy seasons with more intensive rainfall, increase of temperature, sudden strong winds, changes in rainfall patterns, an increase in frequent and duration of extreme weather, and sea level rise. The temperature in Cambodia is predicted to increase between 0.013ºC and 0.036ºC by 2099. Rainfall is indicated to increase between June and August in the northwest and decrease in the northeast. These climate phenomena cause severe impact on biodiversity, ecosystem, water resources, health and food production. The economic loss induced by climate change was estimated about 4.3% of its GDP in 2011 (NCCC, 2013) and 10% of its GDP in 2015, respectively.[15] Changes in rainfall patterns together with increase in temperature are threatening the flow regime of Tonle Sap and Mekong River that make up to almost 86% of Cambodia in the rainy season, while rising temperature and prolonged drought cause increases in evapotranspiration, decrease of surface water availability, growth of alga and bacteria in water which provides significant impact on fisheries resources and terrestrial wildlife, increase the risk of forest fires and loss of forest productivity, resulting in the loss of income or livelihood options for forest-reliant households.

Furthermore, such changes might lead to atypical insect growth cycles that can further affect agriculture and forests. Fisheries contribute to 7% of national GDP, and 98% of the population inhabiting Tonle Sap are involved in some form of fisheries. According to the National Communication to the United Nations Framework Convention on Climate Change (UNFCCC), vulnerabilities of communities living around the Tonle Sap Lake in particular have increased significantly as a result of the threats posed by the increased frequency of heavy rainfalls during the wet season combined with the annual flooding of the Mekong river, which are destructive for crops and infrastructure around the Tonle Sap plain. In 2016, forest fire destroyed 250,000 ha. of the Tonle Sap's flooded forest, about one third of 640,000 ha of the UNESCO designated biosphere reserve as a consequence of a long drought affected by El Nino.[16] Prolonged drought and increase in temperatures intensify wildfires in the dry season, especially from December to April, and

[15] https://www.khmertimeskh.com/25393/10-of-gdp-lost-to-climate-change
[16] https://www.phnompenhpost.com/national/tonle-sap-forests-razed-fire

accelerate forest degradation and biodiversity loss through forest clearance for agricultural expansion, illegal logging and poaching, etc. The sea level rise also poses to threaten to marine and coastal ecosystem.

3.5 Major Government Subsidies Affecting Biodiversity

The RGC applies different forms of subsidy to promote economic development as well as environmental management. The subsidies can be tax exemptions, land concessions with low prices, input materials, and sometimes with financial support. Of 10 categories of tax exemption that appeared in the customs website, industrial equipment and other associated products utilized for exploration and extraction of hydrocarbons and organic substances can be imported to Cambodia without tax (PWC, 2018). Crop seeds and breeding animals for agriculture are required for partial tax payment.

In the agricultural sector, RGC through MAFF has been making efforts in intensification and value-added to crops, development of irrigation infrastructure, and allocation of crop seed stockpile for sale to farmers at discount prices or free delivery and subsidized fertilizers to target communities in the framework of the Emergence Food Assistance Project. In 2016, MAFF issued stock licenses to 45 companies and issued distribution license to 36 companies who run their businesses with pesticide, herbicide, fungicide and fertilizer, as well as other over 400 licenses in association with import of agricultural-related materials, equipment and machinery (MAFF, 2017). In 2017, RGC allocated US$ 60 million for the first phase project to help 15,000 farming smallholders to commercialize their crop such as rice, cassava, silk, livestock. This project consisted of two components – building infrastructure and microfinance deals.[17]

As discussed above, RGC granted a large amount of state land as economic land concessions to large agricultural investors to cultivate key strategic crops, such as sugar cane, cassava, palm oil, cashew, rubber, oil palm, acacia trees, for no fee. Only after the investors generate returns do they have to pay a minimal rental fee of around US$ 10/ha/year, which is to go to the national budget revenue at the Ministry of Economy and Finance. Such a generous policy has resulted in significant loss of forests and biodiversity.

While RGC strives to promote agricultural production, some adverse impacts have been emerged such as:

- Soil and water pollution as a result of excessive use of chemical-related inputs to enhance productivity, affecting crop yield.

[17] https://english.cambodiadaily.com

- Long term loss of soil fertility has been attributed to soil erosion, deforestation, expansion of agricultural lands, unsustainable land management, infrastructure development, climate change, and pest and disease. In 2018, the highly erodible agricultural land across Cambodia is account for 4.45 million ha (LDN, 2018) are understand unsustainable soil conservation
- Introduction of new cultivars for high yield leads to poor resilient crops to climate risk.

In accordance with the 2010 Land Degradation Neutrality Policy in Cambodia, the annual cost of land degradation was estimated at US$ 677 million, equaling 8% of the country's GDP (UNCCD, 2018). Land degradation results in many negative impacts on food security, carbon sequestration capacity, wood production, ecosystem balance, ground water recharge, and much more.

3.6 Positive Changes in Biodiversity

While Cambodia has faced many challenges resulting in a decline of habitat ecosystems and population of fauna and flora, there have also been positive results from policies and initiatives developed to minimize negative impact on biodiversity and ecosystems.

3.6.1 Institutional reform for biodiversity governance

The Royal Government of Cambodia (RGC) undertook a jurisdictional reform in the forest and agricultural sectors in 2016 by assigning responsibilityfor conservation and protection of natural forest ecosystems to MoE and responsibility for the agricultural sector to MAFF. As stated in the Sub-decree no. 69, dated 28 April, 2016, on t*he Transfer of Protection Forest, Production Forest and Economic Land Concession between the Ministry of Environment and the Ministry of Agriculture, Forestry and Fisheries*, 1.7 million ha of 13 sites of protected and conservation forested areas and 951,325 ha of 5 production forest areas of Prey Lang, Southern Cardamom Corridor, Prey Preah Rokar, Western Siem Pang and Veun Sai-Siem Pang Forest are transferred from MAFF to the jurisdictional management of MoE, while 450,677 ha of economic land concession within PAs were transferred to the jurisdictional management of MAFF. Article 2 of this sub-decree orders MoE to designate the 5 production forest areas as protected areas. At present, only 508,207 ha of 614 CF sites are under the jurisdictional management of the Forestry Administration (FA) (MAFF, 2019).

All protection and conservation forests and Permanent Forest Estates are transferred to MoE and designated as Protected Areas (PAs). As of 2019, Cambodia had 46 PAs and three Biodiversity Conservation Corridors, with total area of over 7.5 million ha, about 41.64% of the country territory. Of this, over 1.7 million ha are under 12 National Parks; 3.78 ha under 21 Wildlife Sanctuaries; 151,471 ha under 9 Protected Landscapes; 409,669 ha under 5 Multiple Use Areas; 14,600 ha under 4 Ramsar Sites; 24,654 ha in one Natural Heritage Park, about 1.5 million ha of Biodiversity Conservation Corridors in three landscape zones in the northeastern region, the northern region and the Cardamom Mountains, (MoE, 2017). All PAs fall under the jurisdiction of the key agencies of the General Directorate for the Administration for Nature Conservation and Protection (GDANCP), and General Directorate for Local Community (GDLC). In order to assure effective management of PAs, RGC through MoE developed the National Protected Area Strategic

Management Plan (NPASMP) 2017-2031 embracing 4 main strategic objectives: 1) prioritize and strengthen conservation, 2) enhance sustainable management, 3) expand community participation and benefits, and 4) strengthen institutional capacity and collaboration, which include many priority areas.

On 8 February 2018, RGC decided to establish Koh Rong Marine National Park with an area of 52,000 ha, extending along the coast of Preah Sihanouk and Koh Kong provinces, aiming at safeguarding marine biodiversity. This first Cambodian marine national park encompasses coral reefs, seagrass beds and mangrove forests, all possessing a rich biodiversity including flagship species such as Irrawaddy dolphins, dugongs and sea turtles (RGC, 2018d).

On 14 April 2019, another sub-decree on the establishment of Kraing Deimeas Protected Landscape of 288 ha was issued by the minister of the MoE, aiming to safeguard biodiversity and sustainable use of natural resources. Along with higher level management, a number of genetic conservation areas have also been subsequently designated by MoE such as designation of genetic conservation area for conservation of *Pterocarpus macrocarpus*, *Albizia lebbeck* and *Xylia xylocarpa* under Prakas No. 215. The genetic conservation area covers 170 ha, located in Sochet commune, Sandan district, Kampong Thom province. With regard to the fishery sector, by acknowledging the significance of the fishery to the local population as well as national economic contribution, RGC removed fishing concessions on the Tonle Sap Lake in 2012, while also promoting aquaculture and community fisheries.

Forest restoration and fish release have also been undertaken every year by MAFF, MoE, other national and sub-national government agencies, NGOs and local community, aiming at restoring biodiversity and ecosystems. However, data on the number of seedlings and the size of the restoration areas are scattered and have never been collated. The Forestry Administration (FA) achieved over 2,543 ha of forest restoration over the past 6 years from 2011 to 2016 (MAFF, 2017b).

3.6.2 REDD+ Programme

RGC through MoE developed a National REDD$^+$ Strategy 2017-2026 (NRS), aiming at reducing its annual deforestation to half of the rate during the Forest Reference Level (FRL) period of 2006-2014, and contributing to sustainable biodiversity management and conservation and social-economic development. NRS is composed of three strategic objectives of 1) management and monitoring improvement of forest resources and forest land use, 2) strengthening implementation of sustainable forest management and 3) mainstreaming approaches to reduce deforestation, building capacity and engaging stakeholders. It is divided into two phases: phase one 2017-2021 to develop an action plan and finalize institutional arrangement, and phase two 2022-2026 to achieve transition from readiness to implementation.

From 2016 to present over US$11 million has been generated from carbon credits in Cambodia under the voluntary market, of which US$2.6 million were generated from the sale of carbon credits at Keo Seima Wildlife Sanctuary to the US-based Walt Disney Company. As well as this, REDD+ projects have also been implemented in other areas. The include the Oddar Meanchey

Community Forestry REDD+, the Southern Cardamom REDD+ project, the Tumring REDD+ project and the Prey Long REDD+ Carbon Project (Yeang, et al 2018). These projects are expected to reduce emission of 14 million tCO_2 from well protected forest over the next 10 years, and finance provided by the companies will be used for livelihood improvement of 2,500 households in 20 target villages.

3.6.3 Community-based natural resource management

Besides efforts in biodiversity and ecosystem conservation, and protection at government level, there are also many community-based management initiatives such as Community Forestry (CF), Community Protected Area (CPA), Community Fisheries (CFi), Community-Based Ecotourism (CBET) and Farmer Water User Group (FWUG), which empower communites to use and manage their resources in a responsible and sustainable manner as well as to encourage them to participate in natural resources protection. Up to June 2019, 168 CPAs with a total area of 288,609 ha have been established with the participation of 44,659 households from 313 villages, and 97 communes of 16 provinces (Kim, per comm., 2019). By the end of 2017, a total account of 614 CF sites was established on a total area of 508,207 ha within 21 provinces (MAFF, 2019). With regard to CFi, by end of 2018 there were a total of 516 sites (475 fresh water CFi and 41 marine CFi) which involved the participation of 147,518 households. Alongside this, livelihood activities such as organic agriculture, eco-tourism, homestay, community-based enterprises and other livelihood programmes have been developed and integrated in order to improve the livelihoods of local villagers.

A case study of the economic value of malva nut at O Tung CPA of Virachey National Park, Kok Lak commune, Veun Sai district, Ratanakiri province in 2019 showed that the average gross revenue generated from malva nut collection is around US$ 520,000 with additional fees to the amount of US$ 1,507 collected from harvesters at the CPA entrance in 2019 (Kim, 2019). O Tung CPA members worked with local authorities to develop malva nut harvest regulations and to monitor harvest activities during the fruiting season to assure trees were not cut for fruit collection. Harvesters from outside were not allowed to bring in axes and machetes and required to pay KHR 20,000 (US$ 5) for each motorbike. In the past trees were cut to harvest fruit, but now ladders have been introduced to enable pickers to climb trees for fruit collection. It takes 15 years for malva nut trees to produce flowers and fruits from the seedling stage, and yield is variable by year dependent on rainfall (Kim, 2019). Output of Organic Rice Contract Farming (OECF) initiated by RGC at sub-decree level and facilitated by MAFF since 2003 has grown by 750 units by end of 2015. The prime aim of OECF is to promote equity, quality assurance and a fair price between buyers and suppliers. Environment-friendly organic product is its core value.

3.6.4 Payment for ecosystem management

The Ibis Rice Initiative was launched by the Wildlife Conservation Society (WCS) and Sansom Mlup Prey Cambodia (SMP) in 2009 to promote wildlife-friendly rice grown within the Kulen Prumtep Wildlife Sanctuary. The program contributes to the livelihood of the rural poor who livein the wildlife sanctuary through market expansion and the provision of a good market price. In another programme in the Kulen Prumptep Wildlife Sanctuary local community members are contracted by WCS to protect nests of key bird species like Giant Ibis on t condition that up to US$

15/nest is rewarded for reporting bird nests, and US$ 4.5/day/person is paid for bird nest protection (2 members per group) (MoE, 2019b).

4. FINANCING POLICY MECHANISMS FOR BIODIVERSITY CONSERVATION

This section reviews the national budget process and financial mechanisms cotributing to biodiversity impacts. This section also tries to examine better options for the effective protection of biodiversity and impact mitigation through identifying finance solutions and/or opportunities to increase financial resources for achieving biodiversity outcomes. Annex 4 summarizes the identification of biodiversity financing solution for future fund mobilization for biodiversity conservation in Cambodia.

4.1 Government Budget Planning Process

4.1.1 National Budget Process

A national budget process consists of formulation, legislative approval, promulgation by the King, execution and auditing. The annual budget is composed of estimates of revenue and expenditure, prepared by budget item and activities within one calendar year. Below the process of budget preparation is presented in three steps:

Step 1: Strategic Plan Preparation from March to May

The Ministry of Economy and Finance (MEF) prepares a macroeconomic framework and medium-term public finance policy on the basis of current economic and financial situation, any macroeconomic constraints and future prospect for the short and medium terms. The MEF submits an economic framework to the Council of Ministers for approval, and then issues a Circular as a guidance for all ministries, independent/autonomous state institutions, provincial/municipal governors and all sub-national agencies to prepare their strategic budget plan. All government institutions develop budget plan based on their own visions, goals, objectives and priorities by aligning with priority sectors and the NSDP.

Step 2: Preparation of the Budget from June to September

The annual budget preparation is carried out from June through to September. A draft technical procedure guideline is developed by MEF at the beginning of June and adopted by the Council of Ministers by first week of June. After the adoption, the guideline is sent to ministries, independent state institutions, provincial/municipal governors and all sub-national agencies to prepare their detailed budgets for both revenue and expenditure and submitted to MEF by June 15. In August, MEF compiles all proposed revenues and expenditures in details and invited all government agencies to defend their budget proposal. In September, MEF finalizes balance of revenue and expenditure, followed by preparation of draft National Budget Law with explanatory note.

Step 3: Adoption of the Budget from October to December

Based on the 2007 budget law, the draft budget law is submitted to the Council of Ministers (CM) in the first week of October for review and approval. In the next step CM submits the draft budget

law to the National Assembly (NA) in the first week of November. In November, the NA opens discussion and debate before adoption of the budget. NA sometimes makes a proposal for amendment before the adoption. Following approval by NA, the adopted or amended budget law is submitted to Senate in the first week of December for examination and recommendation. After approval from the Senate, the draft Budget Law is sent directly to the King for promulgation.

If the Senate requests modification, the draft Budget Law needs to be sent back to the NA for examination and a decision whether to accept or reject any terms suggested by the Senate. The back and forth process of draft Budget Law cannot exceed 10 days. After NA and Senate adopt the Budget Law, the King signs and promulgates the adopted Budget Law.

Implementation, Monitoring and Control (January 1 to December 31)

Cash disbursement to executing agencies for expenditure is made in different ways. The expenditure can begin from January onwards. In general, the expenditures are grouped into three categories:

- Payroll (all expenditures relating to staff, like salary, pension funds): executing agencies submit a proposal to the Civil Service Secretariat for review, and then send to MEF for approval. After approved by MEF, the document is sent to the National Bank of Cambodia (NBC) for check issuance.
- Operating costs: executing agencies submit proposal to MEF directly for checking and approval, and then NBC issues a check for money disbursement.
- Direct expenditure: money is directly paid to the suppliers of goods or services. The executive agencies prepare a bidding process following MEF guideline and procedures, which is submitted to MEF for approval, and then the approved document is sent to NBC for budget disbursement.

Budget Auditing

The Auditor General of the National Audit Authority (NAA), an independent public entity, has the authority to audit accounting records, accounts, management systems, operation controls and programmes of the executing public agencies. The audit covers financial statements, management of credit projects financed by external source, management system and operational performance, and efficiency and effectiveness of operations. The audit process follows the Law of Audit of the government, stating that the government shall send settlement and annual budget to the National Assembly and the Senate for examination and approval, and also send to NAA within 9 months of the close of the financial year.

Government Budget

RGC allocates the annual budget for operations of 35 national institutions and sub-national agencies of 25 provinces across the country. In 2019, a total of KHR 25,765,028 million was spent, of which MoE and MAFF spent around 0.84% of the total national expendituree. Most of the budget is used for staff salaries and other recurrent expenses, and a small percentage is spent for investments and emergency interventions in response to natural catastrophes. The budget for law enforcement, patrolling and PA infrastructure development is very small, so cannot be effectively operationalized. Moreover, even though RGC strives to increase salaries for rangers from less than

US$ 100 to around US$ 200 in order to encourage effective conservation of biodiversity, it is still small if compared to daily expenses. Without additional financial resources from partner agencies and NGOs, ecosystem and biodiversity management and conservation cannot be carried out effectively.

Public Finance Management in National Budget Process

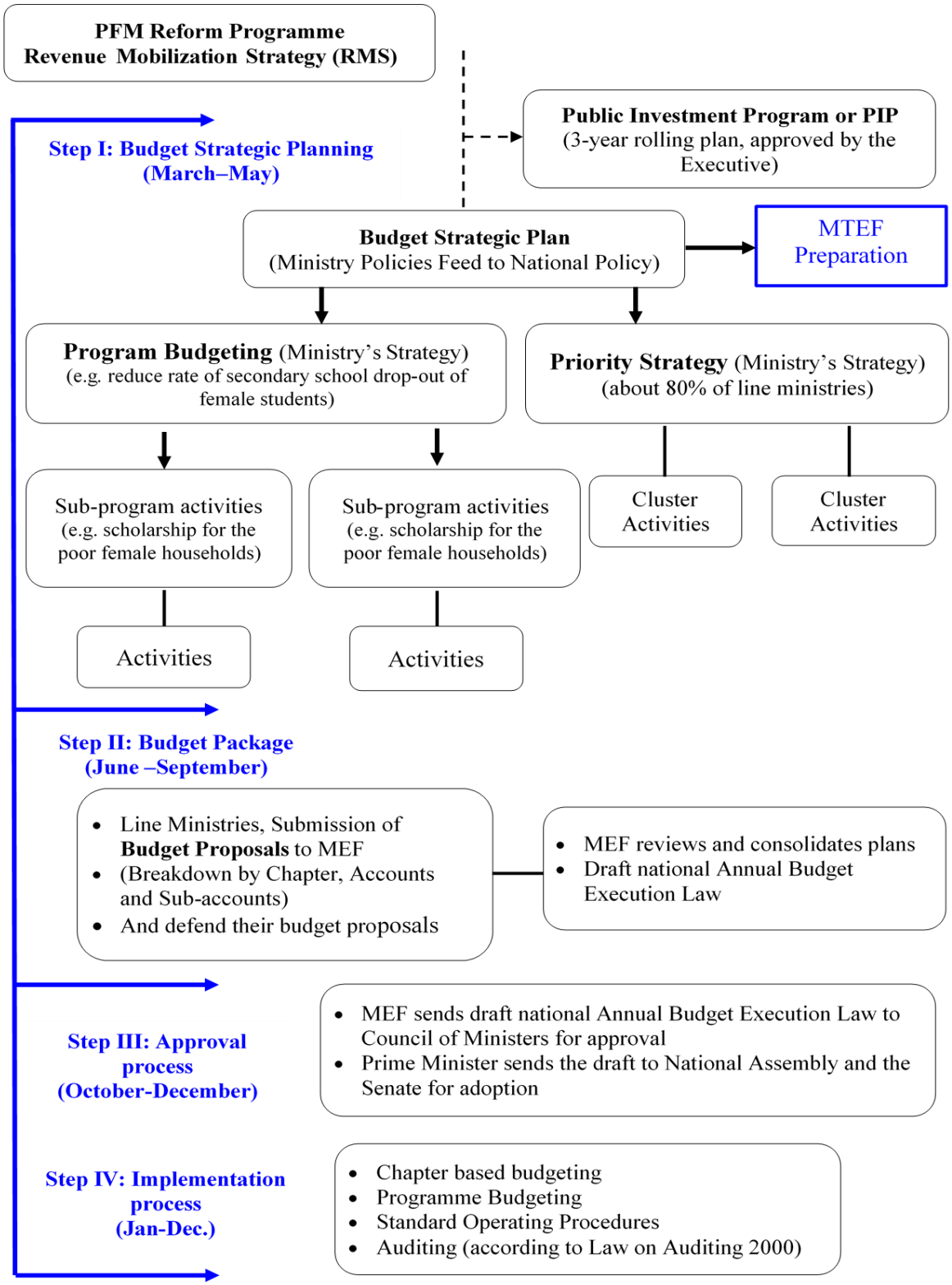


Figure 7: Public Finance Management Process

4.1.2 Government Finance

According to the Cambodian Budget Law 2019, it can be inferred that RGC gives top priority to social development, whereas budget for conservation is the lowest. In 2019, compared to other sectors, MoE and MAFF received only US$ 25.3 million (0.4%) and US$ 115.1 million (1.84%) respectively of the total national budget. These two ministries have most to do for biodiversity conservation and agricultural development. However, a few sources of funds at the national and subnational levels have been set up (RGC, 2019b).

The other most relevant revenue for BIOFIN is the non-tax revenue from fisheries concessions, forestry concessions, mining concessions, and economic land concessions. Fishery concessions, which are the lease of fishing lots to private operators, contributed less than USD 1 million per annum to the national revenue during the five-year period. Forestry concessions provided only USD 3.16 million in 2018 as non-tax revenue (royalties), compared to USD 11.37 million in 2014, probably indicating declining resources or exploitation in the concession areas. However, this could be good news if it means that less forest harvesting was the reason for the meager income from timber export.

The other significant use of land and formerly forested areas is economic land concessions (ELC). The granting of concessions totaled more than 2 million hectares, more than 10% of the area of the country, but it was later reduced to just over 1 million hectares of land. The stated objective by government is that ELCs are a means of job and income creation. The budget revenue from long term lease is very minimal. It varies from year to year but around USD 2 to 6 million, except in 2017 when it was USD 12.44 million.

At the capital/provincial level, revenue data for most of the sources relevant to BIOFIN are not available. Related are the returns from concessions generating just a couple of million US dollars. These are from land concessions, mining concessions, economic land concessions, and the contribution for environmental protection, which totaled just USD 1,000 in 2018. The breakdown of revenue by municipal/district and Sangkat/commune level does not provide information for land use sectors.

4.2 Multi- and Bi-lateral Official Development Assistance (ODA)

According to the data compiled from MEF and CDC, ODA has been the largest source of existing financing for biodiversity in Cambodia. Grants and loans provided by both multilateral and bilateral donors have been around $ 1 billion per year (CDC, 2019). A number of projects are for direct biodiversity conservation such as biodiversity conservation projects and sustainable forest landscapes, like a USAID project called Greening Prey Long (GPL). ADB and USAID have been implementing a number of projects in association with the environmental theme of “biodiversity and biosafety”. Other fund sources are from Global Climate Fund (GCF) and Global Environment

Fund (GEF) with the amount US$ 6.42 million provided through a Conservation trust fund (managed by MEF/MoE/CI).

For ongoing and pipeline projects financed by ODA, a total of US$ 110 million has been spent or committed to a total of 27 projects, with 14 projects classified for "Nature Conservation and Protection" subsector, and 13 for "biodiversity and biosafety" subsector (Table 9). The major donors are USA, Japan, Germany, France, EU/EC, Canada, New Zealand, ADB, and UNDP. The majority of these project is still ongoing. These projects complement the gaps in the Cambodian budget for nature conservation and protection, and biodiversity sectors. They present ample opportunities for BIOFIN to review and seek cooperation.

Table 9: List of Donor-Funded Projects mostly Related to Biodiversity in Most Recent Years and Pipeline

No	Donor	Official Title	Start Date	Completion Date	Budget (US$)
Projects classified in the Nature Conservation and Protection sub-sector					
1	EU/EC	Community Forest Management and Livelihood Improvement (CFMLI) Project	1-Jan-13	25-Jul-18	1,105,380
2	FAO	Support to the formulation of proposals for funding under the GEF and the Green Climate Fund (GCF)	15-May-17	31-Dec-18	99,000
3	France	AFD - Conservation and green growth in Indo-Burma biodiversity hotspot			4,421,518
4	France	AFD - Multi-stakeholder Partnership for the Sustainable Management of the Protected Areas in the Indo-Burma Hotspot (AFD)	6-Jun-14	30-Jun-19	3,260,870
5	Germany	Lower Mekong Basin Wetland Management and Conservation Project (Regional) (FC)	24-Apr-17	31-Dec-21	4,863,670
6	Japan	The Project on Establishment of Environmental Conservation Platform of Tonle Sap Lake (SATREPS)	1-Apr-16	31-Mar-21	4,111,498
7	UK	Illegal Wildlife Trade Film (IWT)	1-May-18	31-Mar-19	14,000
8	UK	Sustain ability through ecotourism: Improve livelihoods and disrupting wildlife trade, Cambodia	1-Apr-17	31-Mar-18	272,325
9	UNDP	Environmental Governance Reform for Sustainable Development	1-Jan-16	30-Apr-19	4,091,134
10	UNDP	Reducing the Vulnerability of Cambodia rural livelihoods through enhanced sub-national climate change (SRL)	1-Jul-15	31-Dec-20	4,805,529
11	USA	Environmental Governance Reform for Sustainable Development Project - USAID Cambodia Bilateral programme	27-May-16	28-May-18	2,500,000
12	USA	Lowering Emissions in Asia's Forests (LEAF) (RDMA Programme)	1-Jan-11	31-Jan-16	578,000
13	USA	Supporting Forests and Biodiversity (SFB) project USAID Cambodia Mission programme	9-Nov-12	8-Nov-17	23,997,151
14	USA	US Forest Service InterAgency Agreement	30-Aug-16	30-Aug-21	800,000
		Sub-total			**54,920,074**
Projects classified in the Environmental Protection Sub-sector					

15	ADB	TA 8179-CAM: Mainstreaming Climate Resilience into Development Planning	31-Oct-12	31-Dec-19	7,000,000
16	Canada	Integrated Disaster Risk Management	4-Mar-13	31-Dec-18	1,256,138
17	EU/EC	Reducing Plastic Bag Waste in Major Cities of Cambodia	3-Mar-14	31-Dec-18	1,334,116
18	EU/EC	Sustaining biodiversity, environmental and social benefits in the Protected Areas of the Eastern Plains Landscape of Cambodia	9-Dec-13	31-Dec-18	1,553,936
19	Japan	Senior Volunteer Programme	1-Jan-12	31-Dec-18	8,396,044
20	Japan	Technical Training in Japan	1-Jan-12	31-Dec-18	19,427,128
21	Japan	The Project for Effective Implementation of EIA and Pollution Control Through Capacity Development of MoE	1-May-17	31-Dec-20	2,740,998
22	New Zealand	Angkor Community Heritage and Economic Advancement Project (ACHA)	1-Jun-14	31-May-19	3,333,971
23	UNDP	Building an Enabling Environment for Sustainable Development (BESD)	1-Jan-19	31-Dec-20	2,128,268
24	UNDP	Forest Carbon Partnership Facility II	1-Jul-17	31-Jul-20	5,215,000
25	UNDP	Generating, Accessing and Using Information and Knowledge Related to the Three Rio Conventions.	14-Jan-15	31-Dec-18	1,314,036
26	UNIDO	Demonstration of BAT and BEP in open burning activities in response to the Stockholm Convention on POPs	1-Apr-15	30-Apr-21	1,512,000
27	USA	U.S. Environmental Protection Agency IAA (RDMA Programme)	1-Sep-14	23-Sep-18	17,500
		Sub-total			**55,229,135**
		TOTAL			**110,149,209**

Source: Processed from database compiled at CRDB/CDC accessed at odacambodia.com

As indicated in the BIOFIN Inception Report, 23 NGOs working in the field of natural resource conservation and biodiversity-dependent livelihood development provide a total budget of US$ 23.7 million, of which a total of US$ 10.8 million are from their own sources; US$ 7.17 million are funded by multilateral and bilateral partners, and US$ 5.7 million are from other NGOs. Currently a number of key international conservation NGOs directly addressing conservation and protection of biodiversity include Birdlife International (BI), CI, WCS, WWF, Wildlife Alliance (WI), etc. Table 10 provides a snapshot of international and national NGOs and their projects that are directly or closely related to biodiversity protection and/or enrichment in 2017. The sub-sectors they worked in are agriculture, fisheries, forestry, tourism, environment, and nature conservation and protection. Nevertheless, this fund may reach to only certain PAs and biodiversity conservation areas under MAFF.

Table 10: NGOs and Their Projects Most Concerned with Biodiversity in 2017

Sub-Sector	NGO Name	Project Name	Disbursements in 2017 (US$)			
			Own Resource	Multilateral /Bilateral	NGOs	Total
AGRICULTURE WATER & IRRIGATION			1,159,197	1,110,663	181,967	2,451,827
	IDE		**1,098,038**	**1,000,334**	**181,967**	**2,280,339**
		Pro-Poor Market Development Programme	1,098,038	1,000,334	181,967	2,280,339
	PADEK2		**61,159**	**110,329**		**171,488**
		Building Community Livelihood Resilience	61,159	110,329		171,488

FISHERIES		1,121,966	11,375	33,367	1,166,708
AIDA					
CI		**592,899**			**592,899**
	Fisheries Conservation Areas, Flooded Forest, Biodiversity Conservation Livelihood Resilience Projects	592,899			592,899
NAS				**33,367**	**33,367**
	Strengthening Capacity of Fishers' network and NGO Coalition Towards Fisheries Resources Sustainability and Ownership in Mekong and Tonle Sap Region (SFiN-NGO)			33,367	33,367
OA		**500,238**			**500,238**
	Mekong Regional Water Governance Programme	500,238			500,238
PiN		**23,373**	**11,375**		**34,748**
	DAI Tepmacheha Scale Up	23,373	11,375		34,748
WOMEN		**5,456**			**5,456**
	Communities for Sustainable Fisheries Alliance (CSFA)	5,456			5,456
FORESTRY		766,565			766,565
BLI		**761,649**			**761,649**
	Siem Pang Protected Forest, towards a vision for biodiversity conservation in dry forest of Cambodia (Phase II)	761,649			761,649
WVC		**4,916**			**4,916**
	Community Natural Resource and Livelihood (CNRL)	4,916			4,916
TOURISM		160,475	608,519		768,994
ConCERT		**137,015**			**137,015**
	ConCERT	137,015			137,015
ELIE		**23,460**			**23,460**
	Cafe Hefelump Eco-Tourism	23,460			23,460
SWISSCONTACT			**608,519**		**608,519**
	Skills Development Programme Cambodia		608,519		608,519
		7,651,524	5,441,179	249,377	13,342,080
ENVIRONMENT PROTECTION (INCL EIA, POLLUTION CONTROL)		6,655,971	1,199,405	249,377	8,104,753
ACCB		**239,255**			**239,255**
	Angkor Center for Conservation of Biodiversity (ACCB) a Kingdom of Cambodia /Goetz Project	239,255			239,255
CI		**1,052,419**			**1,052,419**
	Cardamom Conservation Programme	1,052,419			1,052,419
MB			**16,266**		**16,266**
	Community Forest Management and Livelihood Improvement (CFMLI) Project		16,266		16,266
WA		**2,804,065**		**187,313**	**2,991,378**
	Cambodia Wildlife Conservation	1,257,197		89,065	1,346,262
	South West Elephant Corridor				

	Southern Cardamom Forest Protection Programme (SCFPP) in the Southern Cardamom Mountain Range	1,546,868		98,248	1,645,116
WCS		**1,826,498**	**375,302**	**62,064**	**2,263,864**
	Batagur Baska Conservation Project	141,944	6,763		148,707
	Conservation and Landscape Management in the Northern Plains	539,163	167,609	62,064	768,836
	Southern Mondulkiri Biodiversity Conservation Project	853,966	200,930		1,054,896
	Tonle Sap Conservation Project	291,425			291,425
WWF		**733,734**	**807,837**		**1,541,571**
	Eastern Plains Landscape (EPL)	484,306	605,717		1,090,023
	Establishing a Sustainable Production System for Rattan Products in Cambodia	69,851			69,851
	Mekong Flooded Forest Landscape (MFF)	179,577	202,120		381,697
NATURE CONSERVATION AND PROTECTION (PROTECTED AREAS)		995,553	4,241,774		5,237,327
ELIE		**17,460**			**17,460**
	Natural Resource Conservation	17,460			17,460
MJP		**452,698**	**135**		**452,833**
	Natural Resource Management and Conservation				
	Samlaut Multiple Use Area (SMUA) Conservation	452,698	135		452,833
SADP		**525,395**			**525,395**
	Services & Cross-Sectoral Programmes	525,395			525,395
Winrock			**4,241,639**		**4,241,639**
	Supporting Forests and Biodiversity (SFB) Project		4,241,639		4,241,639

Source: Database compiled at CRDB/CDC accessed at odacambodia.com

4.3 Taxes, Fees, Royalties and Charges

Although nature-based businesses have contributed to economic development and job creation, these activities also have harmful impacts on biodiversity. In Cambodia, protected areas and non-protected ecosystems are considered to be the country's invaluable natural asset for the national economic development and beneficial to the tourism sector. Therefore, taxes, fees, royalties and other charges on the use, extraction and transport of these natural resources are collected by the government. A number of taxes, fees and other charges collected from the private sector running nature-based business but are used for general budget purposes. More should be ear-marked for resources conversation or management. For instance, fees and charges are derived from Economic Land Concession (ELCs), hydropower and mining concessions, hotels, airport surcharge for international visitors, but they are minimal and mostly go to the revenue pool of the national treasury.

4.3.1 Permits, Fees and Licenses to Protected Areas (PAs) and Recreational Areas

In the National Protected Area Strategic Management Plan (NPASMP), 2017-2031, several revenue collection approaches are identified: PA entrance fees, tourism concession fees, payments for ecosystem services (e.g. water, carbon), compensatory legal fees and fines. A number of in-kind and financial contributions could be made possible from scientific research and direct business with NTFPs within PAs.

4.3.1.1 Entrance Fees for Protected Areas

Entrance fees in National Parks (NPs) vary between different areas and are usually set by the private sector in consultation with the provincial department of environment. Some Pas, for example Kulen and Kirirom National Parks, have more potential as ecotourism sites than others. Entrance fees are applied at different rates based on government arrangements with the private sector. Most parks are privately run and fees (for both national and international visitors) are often collected by private licensed companies, limiting investment in the parks. The joint Prakas No. 1428 on the Provision of Public Services by the Ministry of Environment issued by the Ministry of Economy and Finance (MEF) and Ministry of Environment stated that all foreign tourists have to pay US$ 5 per day for the entry fee to the parks. However, most parks are free to enter due to lack of the enforcement of entrance fee collection.

4.3.1.2 Filming and Photography Fees in Protected Areas

The fee charged for taking commercial filming and photography in a protected area can be allocated for protected area management and biodiversity conservation costs. The government issued a joint Prakas No. 1428 between the Ministry of Economy and Finance and Ministry of Environment that list all the public environmental fee charges. Filming and photography fees cost around US$ 200 for documentary license and US$ 275 for filming in the protected area. However, there has not been any implementation of this in parks yet.

4.3.1.3 Camping Fees

NPs can collect fees for services directly from tourists. However, in practice, camping activities have been very limited and therefore fees have not yet been applied to camping. In the future, this could be a potential source of revenue for the protection or management of the camping areas so that biodiversity is not affected too much.

4.3.2 Taxes, Fees and Royalties in the Forestry Sector

Taxes, fees, royalties and other charges on the extraction, transport and/or use of forests and forestry activities and revenues may or may not be allocated to forest and biodiversity conservation purposes. The most used forms of taxation are stumpage fees, concessions fees, royalties based either on the volume or the value of the timber harvested and export levies. Sub-decree no. 69, dated 28 April, 2016 required MAFF to transfer 2,636,080 ha of conservation forest area, protection forest area, and production forest area to MoE to designate as protected areas, except

Community Forests (CF) areas, and some part of Permanent Forest Reserves are under the jurisdiction of MAFF. Therefore, taxes, fees, royalties and other charges on extraction and use of forest products and by-products are divided between the two ministries depended on their jurisdictions. Article 52 of the Forestry Law states that individuals or legal entities harvesting forest products and by-products for commercial purposes within Permanent Forest Reserves shall pay royalties and premium to the national budget through Forestry Administration (FA). The MAFF and MEF shall determine the level of the royalties and premiums. The joint Prakas No. 1013 between MAFF and MEF set all the public fees in 2012.

Several fees, royalties and charges have been collected from timber harvesting in the Economic Land Concession (ELC) and hydro dam projects. For the ELC projects, concessionaires have to pay annual land fees of US$ 1 to US$ 3 per ha depend on the ELC contract for the first five years but from 6th year, all the concessionaires have to pay US$ 5 per ha. For timber harvesting and transportation from ELC and hydro dam areas, transportation permits are needed and royalties also charged per cubic meter of timber. The transportation permits for forest and by-forest products cost KHR 100 000 (around US$ 25) for one year and for timber, royalties are charged US$ 2.50 per cubic meter. In addition to these fees, a 5% royalties charge is applied to all forest and forest products for forest protection activities (in which 20% is for the national budget and 80% is for the National Forest Development Fund).

However, the government also gives some tax and royalty exemptions for forest and forest byproducts extracted by the local communities, for example the honey and resin collected by the local community can be sold in the market without royalties and fee charges. The sustainable charcoal production in community forests by the local communities has been granted royalties exemption for a for time by the government to reduce the pressure on the natural forest and protected area.

4.3.3 Taxes and Fees in the Wildlife Sector

There are taxes, fees, royalties, quotas, and permits for wildlife capture, hunting, and trade. These mechanisms can be used to generate revenue and to support the sustainable use of wildlife including wild animals, plants, and fungi. Article 51 in the Forestry Law explicitly states that a Wildlife Conservation Fee (WCF) shall be paid to the Forestry Development Fund, and a Wildlife Royalty Fee (WRF) shall be paid to the National Budget. The amount of WCF and WRF shall be determined by joint Prakas between MAFF and MEF. The joint Prakas No. 1013 on the public services of MAFF stated that the fee for establishing a wildlife farm in Cambodia costs around KHR 1 million (around US$ 250) and is valid for 3 years. The fee for export, import, transport, and trade of wildlife is KHR 1 million (around US$ 250). All the revenues collected will be go to the national budget. The MAFF has issued permits for 6 long-tailed macaque farms and registered more than 262 locations of long-tailed macaque raised at a household level. The MAFF also issued more than 1200 permits to swiftlet farmers between 2018 and 2019. It costs KHR 200,000 (around US$ 50) per permit for wildlife farms at a household level.

4.3.4 Taxes, Fees and Royalties in the Fisheries Sector

As stipulated at Article 65 of the Fisheries Law, transportation of fisheries, products for commercial purpose shall pay premium, whereby the rate of premium is determined by proclamation of ministers of MAFF and MEF. The Fishery Administration (FiA) can generate revenues from service provision and facility rental, of which include fish dai (or fishing lots), income from marine fisheries, immovable asset rental, public service, finance and revenue from state crocodile farm. Total revenue generated from all sources in 2018 was US$ 411,653 in 2018, FiA gathered revenue from Fish Dai in the amount of US$ 281,780.

4.3.5 Levy Airport Taxes to Offset GHG Emission

The Ministry of Environment (MoE) first considered adopting an aviation tax in 2016. The discussion on this tax has been welcomed by different ministries, especially the Ministry of Economic and Finance (MEF) and other relevant ministries because it will create a new revenue stream for the government to address environmental issues.[15] A levy of air ticket was raised, and now MoE has levied a surcharge of US$ 1 on each air ticket. The revenue collected from this source is allocated for the Environmental and Social Fund (ESF) which is managed by the MoE. The revenues from the ESF can be directly allocated for environmental issues, protected area management, biodiversity conservation or carbon offset costs.

4.3.6 EIA Permitting and Review Fees

The Environmental Impact Assessment (EIA) permit and review fees are charged to developers for complementing the EIA review process by public authorities. Fees are often set at cost recovery level to recover the governmental expenditures required to successfully conduct consultation and EIA reviews. The MoE is responsible for the collection of public service fees, which include three main categories: PAs (including penalties and fines, land concessions, royalties and premium); review of EIA report and project monitoring (Inc. industry, health, agriculture, tourism, infrastructure and business required for environment protection contract); and labs and other services.Fees are collected from these services are paid to the national budget.[18]

4.3.7 Mining and Energy Permits and Fee

The Ministry of Mines and Energy (MME) is in charge of revenue collection arising from the mining and energy sector. There are two categories. Category one is in the charge of three General Departments – the General Department of Mining Resources (mining license), the General Department of Petroleum and the General Department of Energy. The service fees range from

[18] Sub-decree No.72 on the Process of Environmental and Social Assessment 1999, Articles 11

around US$ 250 to US$ 1 million. The MME needs to develop a separate procedure for prospecting and exploration of mineral resources in Protected Areas. The procedure shall include the conditions for environmental protection including forests and biodiversity protection; and when it is necessary to establish the processing factory in the natural protected area, specific conditions shall be included in the recommendation.[19] The minimum fees for EIA permit and review of a project cost KHR 5 million (around US$ 1,250) to KHR 50 million (around US$ 12,500) depend on the nature of the project.

4.3.8 Taxes and Fees in the Tourism Sector

Revenue from the collection of taxes and fees from the tourism sector can provide guaranteed financing for protected areas or other biodiversity conservation measures either through retaining fees, revenue sharing agreements with communities, or receiving earmarked transfers from the central government. The Ministry of Tourism (MoT) can charge fees on the tourism licenses to restaurants and food stores inside the protected area, eco-tourism sites and community based eco-tourism sites. The Prakas No. 076 on the tourism licenses to restaurants and food stores dated 2008 allows MoT to charge a fee for all public services concerning tourism. Tourism-related businesses of 15 different types can charge different levels of fees for public services depending on the size of the business. Some of the business activities relating to nature include camping, tourism operation and transport. Fee charge ranges from KHR 15,000 to KHR 10 million.

4.3.9 Taxes and Charges on Pesticides and Fertilizers

Taxes on pesticides and fertilizers can reduce the overuse of these potentially harmful substances and decrease adverse impacts to biodiversity and habitats. The government passed a Law on Management of Agricultural Pesticides and Fertilizers in 2012. The law aims to reduce risks caused by the use of agricultural pesticides and fertilizers to human health, environment and biodiversity. All the import, distribution and production of pesticides and fertilizers have to be registered and approved by MAFF with a fee charge. According to the law, fines and punishments will be applied for those who import and use illegal pesticide and fertilizers.

4.4 Environmental and Forestry Funds

The Law on Environmental Protection and Natural Resource Management was promulgated in 1996. The Law provides a foundation for the establishment of the Environmental Endowment Fund, a special treasury account shall be created and administered by the MoE for environmental protection and natural resource conservation in Cambodia. The sources of revenues come from contributions from the Royal Government, grants from international organizations, donations from

[19] National Policy on Mineral Resources 2018-2028

charitable individuals, donations from non-governmental organizations, and other lawful sums.[20] In addition, the Sub-decree No. 71 on the Environmental Impact Assessment (EIA) Process was issued in 1999 and it stated that all the project developers must pay a contribution to the Environmental Endowment Fund.[21] The Environmental Endowment Fund has been established and operationalized. The Fund's major sources of revenues are from development projects which required an approval of their EIA reports or Environmental Management Plan (EMP) by the MoE. Those projects are required to pay a contribution to the Environmental Endowment Fund on the annual basis. The Department of Environmental Impact Assessment is responsible for collecting the contribution from project developers. The contribution from the project developers is around US$ 500 to US$ 1000 per year. The revenues collected are allocated to the National Budget (49%), MoE (51%), and MEF (1%). The MoE uses the fund to support its environmental and conservation related activities. It is roughly estimated that at US$ 1 million are collected every year for the fund.

4.4.1 Protected Area Fund (Trust Fund for the CCMNP)

The Protected Area Fund (PAF) is stipulated at article 32 of the PAs law, and aims for rehabilitation and restoration of degraded forest ecosystem within PAs. The PA committee is established and co-chaired by the two ministers from MoE and MEF. Financial sources for PAF are derived from the national budget, PA entrance and other service fees, environment endowment insurance, donations, assistance from national and international organizations and friendly countries, and assistance from international environment funds. However, as raised in the PA strategic plan, there has been an overall lack of mechanisms in place to mobilize revenues generated from fines, taxes and external sources for operational expenses, infrastructure development and ecosystem restoration beyond the national budget allocation. So far, the Protected Area Fund has not been established and operationalized.

The Central Cardamom Mountains National Park (CCMNP) with its 400,000 ha is home to 54 threatened species in the IUCN-Red List and has been estimated to be worth US$ 1 billion in terms of goods and services. It provides benefits to over 300,000 households for water consumption, rice and fish production and food security. The CCMNP trust fund is initiated in 2016 by the international NGO Conservation International (CI). The purpose of the fund is to raise funds for conservation and protection of the CCMNP. The aim is to raise US$ 10 million to ensure that conservation is operated effectively. However, the country did not have a trust law when the fund was established so an offshore trust fund was set up in Singapore for the CCMNP trust fund with around 5% interest. So far, only one-fourth of the total target has been raised (around US$ 2.5 million).[22]

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[20] Law on Environment Protection and Natural Resource Management 1996, Article 19.
[21] Sub-decree No.71 on the Process of Environmental Impact Assessment (EIA)1999, Article 12.
[22] https://www.conservation.org/projects/cambodias-central-cardamom-protected-forest

4.4.2 National Forest Development Fund

The establishment of National Forestry Development Fund (NFDF) was specified at article 62, chapter 12 of the Law on Forestry 2002. Based on Forestry Law, NFDF is administered and managed by the National Forestry Development Committee which is set out by sub-decree, and co-chaired by MAFF and MEF. The NFDF relies on 6 fund sources including government funds, premiums on forest product and by-products, wildlife conservation fees, aid from NGOs, donations from NGOs and individuals, and revenue from other services in the forestry sectors (See sections on Taxes and Fees in the Wildlife and Forestry Sector). In 2019, US$ 308,679 was contributed to NFDF. The fund is used for forest and wildlife related protection, conservation, management, extension, scientific research, capacity building and reforestation.

4.4.3 Local Government Budget

Local revenues, budgeting and spending impact biodiversity through managing land use, natural resource exploitation, particularly those communes or villages near or inside the protected areas. Therefore, an effort to increase the effectiveness and biodiversity impact of local budgets can enhance impacts and direct funds to biodiversity. The RGC through the MoI has provided funds directly to commune councils for development projects, mainly road and bridge infrastructure developments. The Commune/Sangkat Fund (CSF) can also be used for biodiversity and natural resources management. The Minister of Interior recently stated that CSF will increase from the current US$ 35,000 to US$ 73,000 in 2020, and to US$ 100,000 and US$ 110,000 in 2022 and 2023 respectively.[23] The allocations would have to be proposed during the planning stage for commune investment programme and commune development plan, as well as during the annual planning exercise. Commune Investment Funds (CIFs) are utilized for commune development, mainly prioritizing physical infrastructure development. However, such allocations could potentially be extended to include community and partnership forests in commune land use plans (CLUPs). They could also be used for investment in Community Forestry (CF) and Community Protected Areas (CPAs), for instance eco-tourism and management of particularly high value NTFPs.

4.5 Mobilization of Private Donations

Biodiversity conservation can mobilize resources from private donations and philanthropies through different fund-raising strategies and marketing campaigns by individual organization. Funds can be raised from private citizens including memberships, fundraising events,

[23] Accessed to https://www.phnompenhpost.com/national/commune-development-budget-double-2020 https://www.phnompenhpost.com/national/commune-development-budget-double-2020

crowdfunding, etc. Currently, there are many NGOs working in Cambodia in the fields of biodiversity conservation and biodiversity-related livelihood development. Some of their funding sources are from private donations, particularly philanthropists such as the Maddox Jolie-Pitt Foundation for the conservation of Samlot Multiple Use Area and His Serene Highness Prince Albert II of Monaco foundation for the conservation of Koh Rong Marine Park through Fauna and Flora International (FFI).

4.6 Community Finance

Community finance – often considered part of microfinance – is of particular relevance for the communities living in or in the proximity of protected areas, including indigenous communities. The community itself is often the main shareholder of those institutions and can be the sole source of capital such as in village savings and loans.

4.6.1 Community Protected Area (CPA) Finance

As stated earlier, a number of Community-Based Organizations (CBOs) have been initiated by the government with supports of NGOs, citing CF, CPAs, CFi, etc. to empower community to manage and use their resources in a responsible manner. These CBOs usually received financial support from conservation NGOs and government-managed projects working in their respective areas. Some CBOs are able to generate income from ecotourism and NTFP collection within their jurisdictional areas. The MoE has also initiated annual fund support in the amount of US$ 1,000 to CPAs for effective management. However, not many CBOs have their own funds to sustain management activities.

4.6.2 Community Forest Finance

Funding sources for the Community Forestry Development Fund (CFDF) can be from the National Forest Development Fund (NFDF), monthly contribution of CF members, revenue from the sale of timber and NTFPs within community forests (CF), charities, NGOs, ODA and other legal sources of income. CFDF is managed by Community Forestry Management Committee (CFMC). CFDF use their fund for forest protection, management, extension and development within CF, as well as assisting poor people and CF members who get into accidents.

Community Forestry Credit (CFC) has been piloted by the Regional Community Forestry Training Center for Asia and the Pacific (RECOFTC), an international organization working to build the capacity of forest dependent communities, at 21 CF sites up to the end of 2018. RECOFTC gives money (US$ 1,000 or more) to the Community Forestry Management Committee (CFMC), and this money is lent to CF members who are active in CF management with an interest rate of 1% per month. Revenue collected from interest is used for operating CF management. If more money is added to CFMC, more money is lent to CF members and more revenue is collected for CF management and forest protection activities. This CF credit model provides three simultaneous benefits – money can be used by CF members without collateral, with low interest rate, and revenue generated from interest is used for operating CF. The question outstanding is that if

RECOFTC ends the project in the current CF sites, who will continue such facilitation with CFMCs.

4.6.3 Mini Trust Fund for Fish Conservation Areas

Mini trust funds for Fish Conservation Areas (FCAs) are initiated by conservation NGOs in order to secure long term funds for management operation, in particular for food and fuel for patrol expenses. As an example, the CFi committee at Ou Chrolang CFi, Ou Mreas commune, Siem Bok district, Stung Treng province received money in the amount of KHR 20 million (US$ 49,382) from IUCN country office under a mini trust fund for FCAs, and this money was transferred to a local bank, LOLC (Cambodia) Plc., at a fixed deposit for an interest rate of 9%. Income generated from interest wass utilized for fisheries management at O Chrolang CFi. The use of the fund is monitored by IUCN and local Fisheries Administration. If misuse of the fund is identified and cannot be resolved, IUCN reserves right to transfer this fund to another CFi.

4.6.4 Community-based Eco-Tourism Finance

Community Based Eco-tourism (CBET) is established to generate revenues for local communities who directly manage their natural resources, for instance Community Forestry, Community Fisheries or Community Protected Areas. Through 2019, 79 CBETs have been established countrywide. Revenues collected from tourism include entrance fees and other services like homestay, serving meals, guide and transport services. CBET at Koh Samseb, Kratie province charges US$ 1 for the entrance fee and also provides homestay and boating services. 50% of the money from entrance fees is allocated for conservation, and another 50% is allocated for CF development. For homestays and boat services, the owners contribute 20% of revenues generated to the committee cash box. The money is used for conservation and development based on internal discussion among the committee members.

4.7 Biodiversity Fines and Penalties

The Ministry of Environment (MoE) and Ministry of Agriculture, Forestry and Fisheries (MAFF) directly engage with environment protection and biodiversity conservation in Cambodia. Each ministry has laws defining fines and penalties for offenses committed within their jurisdiction. For instances, PA Law's Articles 53-64 of chapter 9, Fishery Administration Law's Articles 88-104 of chapter 15, and Forestry Law's articles 90 to 101 of chapter 15 state precisefines and penalties on the basis of the degree of offenses committed. The following list shows revenues collected from fines, penalties and other soruce by institution:

- Fisheries Administration (FiA): revenues collected in 2017 was in the amount of KHR 2,986 million (around US$ 73,744), of which KHR 85 million (around US$ 21,160) were collected from fines of illegal fishing. In 2018, total revenues collected from fisheries was in the amount of KHR 1,876 million (US$ 463 368), of which KHR 230 million (US$ 56 798) were from fines and penalty (1 US$ = KHR 4050).
- Forestry Administration (FA): in the FA's country paper on environmental outlook 2020 seven types of revenues were listed, of which two were generated from fines and auctions.

Within a 7-year period from 2000 to 2006, revenues collected from these two sources accounted for US$ 1.4 million. Revenue collected from different sources in 2017 accounted for KHR 38,196 million (US$ 9.4 million). Revenue collected from fines and penalties were not specified in the report. Revenue generated from transaction fines in 2019 were KHR 7,619 million (US$ 1.88 million).

- Ministry of Environment (MoE): Based on MoE's annual report in 2019, revenue collected from transaction fines at 15 PAs amounted to KHR 392 million (US$ 96,883).

A portion of revenues generated from fines, penalties and auctions are shared to competent units such as the Forestry Administration, Fisheries Administration and Ministry of Environment to use for management and conservation of biodiversity.

4.7.1 Penalties and Fines for Forestry and Wildlife Offenses

Transactional fine for forestry offense are decided by the Prakas of the Ministry of Agriculture, Forestry and Fisheries (MAFF). Transactional fine imposed by courts or proceeds from selling goods seized as evidence is paid to the national budget, and incentives are awarded to officers who participated in suppression of specific forest offenses. The fines range from KHR 10 to 100 million (US$ 24,691 to US$ 246,913), depending on classes of forest offenses.

4.7.2 Penalties for Illegal Fisheries

As explicitly stipulated in article 86, penalties include transitional fines, warnings, seizing or suspension of licenses under competence of FiA; and imprisonment, fining, confiscation, destruction of evidence and compensatory damage under the competence of the court. Fines range from KHR 500,000 (US$ 123) to KHR 50 million (US$ 12,345).

4.7.3 Penalties for Natural Resource Crimes in PAs

As explicitly stipulated in article 57-63, chapter 10 of the PA law and proclamation, natural resources crime is fined based on the scope of damage, ranging from KHR 100,000 (US$ 24) to KHR 250 million (US$ 61,728). All revenues generated from fines and penalties go to the national budget, and a reward is paid to officers or citizens who participate in cracking down on natural resource crimes. Based on the 2019 annual report, transactional fees collected at 7 PAs were reported to be KHR 475 million (US$ 117,353).

4.7.4 Penalties and Fines for Tourism Operations

Article 65 firmly stipulates that those who operate a tourism business without a tourism license shall be subject to transitional fines, ranging from a minimum KHR 2 million (US$ 493) in to a maximum of KHR 20 million (US$ 4,930). In the Prakas (declaration) on public service of the Ministry of Tourism, No. 997 determines service fees in the amount of KHR 10 million for national resorts, KHR 5 million (US$ 1,234) for provincial resorts and KHR 250,000 (US$ 61) for local resorts. All service fee are to be paid to the national budget.

4.7.5 Penalties for Illegal Mining Exploration and Operations

Chapter 8 provides inclusive statements on penalties, with fines ranging from KHR 500,000 (US$ 123) to KHR 10 million (US$ 2,469) for those who operate mining activities on privately owned land without written agreement, or for those license holders entering state-owned areas without written permission from competent agencies.

4.7.6 Penalties and fine for Petroleum Operations

Chapter 7 provides that fines and penalties are defined by joint declaration of Ministry of Mines and Energy (MME) and Ministry of Economy (MEF). As stated in Articles 58-67, the fines made are based on different cases such as petroleum exploration without prior agreement with MME, causig environmental damage, lack of safeguards, fraudulent financial document, release of petroleum data without permission of MME and late submission of petroleum and any other technical reports. There are a wide range of fines from a minimum of KHR 200,000 (US$ 49) to maximum of KHR 2,000 million (US$ 4,938,271).

4.8 Corporate and Corporate Foundations' Donations

In Cambodia, little is known of voluntary donation from the private sector for biodiversity conservation. Currently, two hotels, the foreigner-owned Knai Bang Chatt Hotel and Khmer-owned Veranda Natural Resort are located in the Kep National Park. The two hotels have a contract with MoE to pay US$ 1 per room per night to the ministry. Money collected from this donation is used for management of Kep National Park. The reason the hotel owners agreed to pay US$ 1 /room/night is because the natural landscape of the park is important in attracting tourists. This is a very good model for those who rely on nature for their business and can be up-scaled in future to other areas.

4.9 Reducing Emissions from Deforestation and Forest Degradation (REDD$^+$)

As an active member states of REDD$^+$, RGC through REDD$^+$ taskforce developed National REDD$^+$ Strategy, 2016-2017, and a number of key tasks have been completed: Forest Reference Level (FRL), National Forest Monitoring System (NFMS), alongside with policy analysis and consultation to establish Safeguards Information System (SIS). This REDD+ programme will address critical drivers to deforestation and forest degradation by reinforcement of laws on forestry, PAs and Fisheries. The initial assessment of FRL, on a basis of historical average net emission levels from 2006 to 2014, showed that it accounts for 78,953.951 tCO2/year (RGC, 2016d). The total forest cover in 2016 was 8,642,401 ha, representing 48.14%, but forest cover which is eligible for finance under UNFCCC was only 8,181,901, representing 45.05% (MoE, 2018a).

The Royal Government of Cambodia (RGC) officially approved several REDD+ projects such a Oddar Meanchey Community Forestry REDD+ project, Keo Seima Wildlife Sanctuary REDD+ project (previously known as the Seima Protection Forest REDD+ project), Prey Lang REDD+ project, Tumring REDD+ project (in collaboration with the government of the Republic of Korea),

and the Southern Cardamoms REDD+ project. All of these operate in the voluntary carbon market, and most are independently accredited using the Verified Carbon Standard (VCS; now known as Verra) and the Climate, Community and Biodiversity Alliance (CCBA) standards. The Prey Lang project is being designed and implemented under the Joint Crediting Mechanism in collaboration with the Japanese government (Yeang et al., 2018). A total revenue of more than US$ 11 million has been generated from the sale of CO_2 from $REDD^+$ projects, about half of this budget is given to local community residing within the carbon-sold forest areas as livelihood development project and forest management. With RGC's effort in promoting sustainable forest management, more carbon market is expected to be increased in future.

4.10 Voluntary Climate Financing

The National Biodigester Programme aims to reduce the dependence on fuelwood and fossil fuel for rural households by turning livestock manure into biogas for cooking and lighting. The project is certified by Gold Standard for its carbon credits and some financial returns have been made to support the programme from the sale of credits.[24]

The improved cook stove project intends to tackle the issue of forest degradation and inefficient use of fuel in Cambodia. The project generated more than US$ 11 million in revenue from its supply chain and the sale of carbon credits verified under VCS. The project has reduced CO2 emissions by 2.4 million tonnes, equivalent to 22,000 ha of Cambodian forest.[25]

The Joint Crediting Mechanism (JCM) is another initiative between the Japanese and Cambodian governments to exchange carbon credits generated from various projects in Cambodia such as Prey Lang JCM REDD+ project and other energy related projects.

4.11 Payment for Ecosystem Services

Different Payment for Ecosystem Services (PES) systems have been initiated by NGOs in collaboration with government agencies such as MoE and FA including biodiversity PES and watershed PES. No such initiative has, however, been legally formalized (Milne S. and Chervier C., 2014). The biodiversity related PES has been implemented by conservation NGOs from WCS, WWF, Birdlife, CI and Poh Kao in the form of community-based ecotourism, agri-environment payment (see section on Sustainability Standard and Certification), bird nest and turtle protection and conservation related incentives. Benefits are paid directly to communities, individuals or groups. The watershed PES for fresh water and hydropower protection has been initiated by conservation NGOs (Wildlife Alliance and FFI) in collaboration with MoE and FA, aiming at

[24] http://nbp.org.kh/

[25] https://unfccc.int/climate-action/momentum-for-change/activity-database/dissemination-of-3-million-improved-cookstoves-in-cambodia-by-women-entrepreneurs-to-improve-lives-of-women-end-users

generating revenues from those who benefit from ecosystem for conservation, but operation has not been in place.

Currently, UNDP and the Government is piloting a PES scheme in Phnom Kulen National Park and Kbal Chhay Multiple Use Area. Different setups of the PES scheme have been studied and discussed. MoE estimated to generate revenues in the amount of US$ 4.1 million (about US$ 1 million for Kbal Chhay, and US$ 2.9 - 3.9 million for Phnom Kulen NP) per year from the scheme.[26] However, these PES schemes are not fully operationalized yet and additional assessment on the fund management, willingness to donate/accept and monitoring framework are being conducted. In addition, RGC through NCSD are facilitating to develop policy for PES in Cambodia, piloting at two PAs - Multiple Use Area of Kbal Chhay Prek Toek Sap in Preah Sihanouk province, and the Kulen National Park in Siem Reap province.

The Wildlife Conservation Society (WCS) has piloted a scheme at the Kulen Promtep Wildlife Sanctuary where local communities are paid US$ 15 per bird nest found and US$ 4.50 /day/person to a group of guardians. A total of 211 bird nests of 6 threatened species were identified and protected in 2019. This initiative will be upscaled to other PAs in Cambodia.

4.11.1 Surcharge to Tour Agents for Koh Rong Sanloem Island

The administration of Preah Sihanouk province is in charge of collecting a fee of US$ 2 for each international tourist and US$ 0.50 for each national tourist using a tour agent. Preah Sihanouk provincial authority keep these revenues for the coastal area development, maintaining security, improving hygiene, and protecting the environment in the province. These charges also include tourist boats that transfer tourist to different islands in the province, particularly Koh Rong Marine Park. Many financial options have been identified for Koh Rong Archipelago Marine Fisheries Management Area (now known as Koh Rong Marine Park) such as voluntary donations, additional fees charged for diving and boating, concession fees and souvenirs (Hastings, J.G. and Yeang D., 2014). Until 2017, the provincial authority made a formal request to the MEF to collect a fee from national and international tourists through tourist boat operators. As a result, the MEF issued a letter No. 6864 to allow the provincial authority to collect the fee and use the fee for coastal development and environmental protection. It is estimated that approximately 150,000 tourists (both national and international tourists) visited the park in 2015.

4.11.2 Impact Investment

Impact Investments are investments made into companies, organizations, and funds with the intention to generate measurable social and environmental impact alongside a financial return. Currently, the Ministry of Environment (MoE) in collaboration with Fauna and Flora International

[26] https://www.phnompenhpost.com/national/ministry-unveils-pilot-pes-programme

(FFI) is working to design a pilot project for the marine protected areas through the investment from Blue Action Fund (BAF). BAF is a conservation trust fund dedicated to supporting marine protected areas and coastal waters of Africa, Latin America and Asia. The project is supposed to start in May 2020.

4.12 Sustainability Standard and Certification

Ibis Rice is part of the organic certification farming being initiated at KPWS. Members have to follow certain rules such as no forest land encroachment, hunting and pesticide application. The community receives a higher price than the market price for other rice, currently ranging from KHR 200-400 (US$ 0.04 - 0.09), and the benefit is shared by the market committee (10%), village development (10%) and members (30%). The Ibis rice is also certified as Wildlife Friendly from the Wildlife Friendly Enterprise Network (WFEN). This is because it contributes to the protection ofthe Giant Ibis which is Cambodia's National Bird and one of 50 endangered species in the Northern Plains of the country.[27]

4.12.1 Eco-label

The Law on Tourism has been in effect since 10 June 2009, to encourage sustainable eco-tourism development. As stated in Article 27 of Chapter 5 on "*Quality Assurance, Standards and Licensing*", the Ministry of Tourism (MoT) can issue Eco-labels to award tourist operators who comply with the environmental standards of MoE. Those who receive Eco-labels will pay low tourism license fees, as well as receiving other benefits and incentives.

4.12.2 Green Bank

State or donor sponsored financial entities works in partnership with the private sector to increase investments into green businesses and markets that are underserved by commercial finance. The green banks generally focus on the renewable energy sector, but they can also extend to other environmental areas including biodiversity conservation. In 2019, the Association of Banks in Cambodia (ABC) produced a guiding document entitled "*Cambodian Sustainable Finance Principles Implementation Guidelines*", with an aim to protect the environment, people and cultural heritage. With this aim, ABC sets principles to assess and manage environment, and protect critical natural resources. A bank/Micro Finance Institutions (MFI) will incorporate into its decision-making processes an approach that systematically identifies, assesses and manages the environmental risks, particularly potential negative impact climate change, pollution (including soil, water and air); waste management; and natural resources (water, natural forests & habitats, biodiversity).

[27] https://ibisrice.com/

4.13 Human Resources Management

Better management of human resources can improve an organization's effectiveness and efficiency in protected area management and biodiversity conservation. The Ministry of Environment has been reviewing its human resources need and taken some measures in terms of capacity building of its staff and increase the numbers of park rangers. In the National Protected Area Strategic Management Plan 2017-2023, MoE's General Directorate of Administration for Nature Conservation and Protection (GDANCP) pressed the urgent need for building capacity of staff and rangers and proposed that 300 rangers needed to be trained every year to assure effective management of PAs. The MoE has increased the number of rangers from 960 in 2017 to 1,173 in 2019. In addition, several training sessions on law enforcement, Spatial Monitoring and Reporting Tool (SMART), and investigation on natural resource crimes have been provided to rangers and park managers.

5. INSTITUTIONAL ANALYSIS FOR IMPLEMENTATION OF CAMBODIA'S NATIONAL BIODIVERSITY STRATEGY

5.1 Government Institutions

The institutional arrangements related to biodiversity finance in Cambodia have two main levels. The first is the vertical level with the central or national ministries and local government or sub-national government. The second is the horizontal level, through which relevant statutory academies, institutions, community-based organizations and non-governmental organizations (NGOs) participate in the support approaches. Various technical working committees or similar structures can also be appointed under different circumstances. In addition, national focal points facilitate the implementation of conventions and Multilateral Environmental Agreements (MEAs) either within or among the ministries.

The institutional analysis was carried out to review the mandates, missions, roles and responsibilities which are relevant to biodiversity conservation and/or financing as well as the capacities for biodiversity mainstreaming and implementation of biodiversity related policies.

5.1.1 Ministry of Environment

The Ministry of Environment (MoE) is the key institution for biodiversity related issues covering duties and tasks such as to:

- develop vision, policies, strategies and plans and define the priorities for sustainable development;
- formulate relevant legislation and regulations for supporting environment, conserving and managing biodiversity and ecosystem services, using the natural resources and natural capital in a sustainable manner and for sustainable livelihoods;
- coordinate and facilitate with other institutions the implementation and mainstreaming policies, strategies, and plans associated with environmental and biodiversity matters;

- produce recommendations and comments to other institutions in order to conserve, develop and use the natural capital and resources in a sustainable and appropriate way;
- manage and update all data and information related to biodiversity and environment;
- promote and mainstream biodiversity and environment concepts and knowledge to the public and other stakeholders, especially relevant sectors;
- assign as national focal points national competent authorities to implement the biological diversity convention and both of its protocols;
- manage, protect, conserve, and restore biodiversity and ecosystems and utilize the natural resources to support the sustainable development; and
- mobilize resources for environmental protection and biodiversity conservation.

It is important to note that the General Directorate of Administration for Nature Conservation and Protection (GDANCP), MoE, plays a critical role managing the protected areas in Cambodia. GDANCP together with its seven departments is the body for managing and biodiversity and sustainable use of natural resources within the PAs, covering over 41% of the Country's land surface.

5.1.2 National Council for Sustainable Development

The National Council for Sustainable Development is an inter-ministerial decision-making body established in 2015, under sub-decree (NorSor/RorKorTor/0515/403) to promote sustainable development and to ensure economic, environmental, social and cultural balance within the Kingdom of Cambodia. NCSD's general secretariat is located with MOE responsible for developing policy, legislations relating to sustainable development principles.

Among the five departments, the Department of Biodiversity (DBD) of the General Secretariat of National Council for Sustainable Development (GSSD) attached to the Ministry of Environment, Government of Cambodia[28] is highly responsible for biodiversity. The department was established through a Government Sub-Decree issued on 18 May 2015.

The DBD has the following main responsibilities:

- Develop a national strategic plan, action plans, policies and legal facilities relevant to biodiversity in collaboration with concerned institutions;
- Implement the UN Convention on Biological Diversity, its protocols and other decisions of the UN Conventions and MEAs;
- Develop a national biodiversity strategy and action plan, as well as national reports on the conventions and its protocols, and on the biodiversity status of the Kingdom of Cambodia;

[28] https://ncsd.moe.gov.kh/dbd/department-biodiversity

- Assess the potential of biodiversity and ecosystem values and promote ecosystem restoration and the sustainable use of biodiversity, and its relevance in the Kingdom of Cambodia, using appropriate means and approaches;
- Assess the vulnerability, risk and negative consequences from climate change, as well as promote the sustainable utilization of biodiversity in the Kingdom of Cambodia;
- Promote the integration and mainstreaming of biodiversity issues into national development plan and sectoral plans and lead in coordination of the implementation of biodiversity initiatives and approaches;
- Promote the research, education, dissemination and training through workshops and meetings with the aim of upgrading understanding on biodiversity and ecosystem services and values, and to encourage involvement of local communities and other institutions and stakeholders in implementing the relevant biodiversity conservation and management activities.

5.1.3 Ministry of Agriculture, Forestry and Fisheries (MAFF)

The ministry is defined in sub-decree on the organization and functioning of the Ministry of Agriculture, Forestry and Fisheries (MAFF) dated 07 April 2000. The ministry has the functions and duties as the following:

- development and implementation of agricultural development policy in order to improve the standard of living of people in the state;
- participation in the formulation of land reform and land use policy;
- orientation and planning for the development of all agricultural sectors;
- coordination of the monitoring and evaluation of the implementation of policies and activities for agricultural development;
- monitoring the development of the natural resources of the agricultural sector and facilitate the exploitation of natural resources to meet the needs of the country and respect for ecosystems;
- defining regulations on the management, preservation of natural resources of the agricultural sector, and monitoring of implementation;
- evaluation and providing training human resources for agricultural development by increasing the level of technical knowledge and understanding.

The ministry has two key administrations which play key roles in relation to forestry ecosystem and biodiversity. Those include:

Forestry Administration (FA), MAFF has key functions and duties as follows:

- preparation of an inventory of forest resources and wildlife, evaluation of potential and following up the evolution of forest and wildlife;
- development of regulations for guidance and governing forest resource exploitation, and wildlife;
- researching forestry and wildlife science and documentation; and
- inspection and managing all businesses associated with forestry products, NTFP, and wildlife activities (RGC, 2009c)

Fisheries Administration (FiA), MAFF has key functions and duties as the following:

- preparation of an inventory of aquatic resources and evaluation of potential and following up the evolution of aquatic resources and hydro-farming;
- development of regulations for guidance the protection, preservation, improvement and strengthening of fishery zones and for governing aquatic resources both maritime and non-maritime, and monitor their implementation;
- researching aquatic science, hydro-farming and documentation; and
- inspection and managing all businesses associated with aquatic resources and fish culture (RGC, 2009c)

5.1.4 Ministry of Economy and Finance (MEF)

The MEF carries out the tasks and responsibilities in the fields of economic policy, financial policy, tax policies and budgeting for the whole country and all sectors. In addition, it leads and executes all activities related to the coordination and facilitation of public resource mobilization, spending and its oversight, planning of the public investment, monitoring and oversight of the public financial management, public debt management, and of the state stockholdings. MEF is responsible for allocating the state budget and providing guidance for its use in the implementation of programmes, projects and initiatives.[29]

5.1.5 Ministry of Health (MoH)

The MOH has responsibilities to protection, promotion, and rehabilitation of traditional herbal medicines for healthcare and treatment purpose as well as documentation about the utilization of them. National Research Centre of Traditional Medicine, a cluster of the MoE structure has a mission to provide a principle guideline for promotion of traditional medicine to be used which is align with the aim of the medicine policy. A Cambodia Traditional Medicine Policy was enacted in 2010 aiming at the integration of the use of traditional medicines into the Primary Health Care system and the core pharmaceutical services based on the principles of primary healthcare (MoH, 1997).

5.1.6 Ministry of Water Resources and Meteorology (MoWRAM)

As stated in a sub-decree on organization and functioning of the Ministry of Health dated 22nd October 1997, Ministry of Water Resources and Meteorology (MOWRAM) has functions dealing with inland water resources and main roles as below:

[29] https://www.mef.gov.kh/about-ministry.html

- define policy and plan on water development including conservation of water sources for sustained supply based on the government policy;
- develop required legislation and regulations concerning the water resource sectors;
- research the potential of surface and underground water sources;
- set short, medium and long term targets for exploitation and development of water resources and for conservation purposes to meet the national need and community livelihoods;
- rehabilitate major irrigation infrastructure to provide enough water for agriculture, daily consumption of humans and animal and tourism, and
- construct flood control and polders to protect agricultural land and public property.

5.1.7 Ministry of Tourism

Ministry of Tourism (MOT) has its pivotal role in managing and developing the tourism industry of Cambodia[30]. Main functions of the MoT include:

- formulate a national policy on tourism and a strategic tourist development plan;
- formulate programmes in compliance with national sectoral policies and supplement the government efforts;
- encourage investments in tourism on the basis of the National Strategic Development Plan;
- manage the Cambodian tourism industry;
- manage and maintain natural resorts, man-made resorts, tourist centers, and tourist developmental regions nationwide;

5.1.8 Ministry of Land Management, Urban Planning, and Construction

Ministry of Land Management, Urban Planning, and Construction (MLMUPC) has a mission to direct and manage the territorial planning, urbanization, construction of the Cadastre and Geography of the Kingdom of Cambodia. As Cambodia's PAs are one type of other land use zones, they are required to officially register with MLMUPC. This creates another layer of complexity of securing land tenure of biodiversity protection during the implementation across institutions, particularly MOE.

5.1.9 National Universities and Institutes

For education sector, two national universities, Royal University of Phnom Penh (RUPP) and Royal University of Agriculture (RUA), are responsible for developing skilled human resources, while conducting biodiversity related research. These universities have a number of faculties dealing with biodiversity, environment and forestry, and tourism. RUPP has its own center for

[30] https://www.tourismcambodia.org/the-ministry

biodiversity, which produces peer-reviewed journal articles for circulating knowledge and related biodiversity financing options in the Cambodian Journal of Natural History. RUA is focused on forestry, natural resources management, and agriculture.

5.1.10 National Assembly and the Senate

The national assembly is responsible to approve the national budget each year. Once the draft annual budget law is approved, it then goes to the Senate for final approval, and finally to the King of Cambodia to promulgate the law. Once the law is passed, the law is executed by the Ministry of Finance and Economy.

5.1.11 Provincial/Municipal State Land Management Committee

According to the 2005 Sub-decree on State Land Management, this committee was created to support Cadastre related matters[31]. The committee is authorized and responsible for granting an ELC with a total investment value less than KHR10 million and a total concession land area of less than 1,000 ha[32].

5.2 Non-Governmental Organizations

5.2.1 Community-based Organizations

In Cambodia, there are different types of community-based organizations (CBOs) participating in biodiversity conservation and related activities. Of note are international conservation NGOs, primarily focusing on the conservation of natural resources and sustainable use of biodiversity within the defined landscape of protected area systems. Some CBOs are alliance or grantees of those conservation NGOs, extending their grassroots activities on sustainable development of community livelihoods and protection of natural resources.

At the community level, some communities are officially recognized as CBOs and eligible for small grants or awards for biodiversity conservation. This falls under community-based eco-tourism, community protected areas and community forestry. Currently, the Global Environment Facility (GEF) small grant programme has granted funds to CBOs for promoting local participation in biodiversity protection and community-based adaption, which account for approximately 35% and 40% respectively of annual funding of US$ 7.9 million[33]. The needs and capacities of those NGOs and CBOs are listed in Table 10 below.

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[31] Article 25 of the Sub-decree No. 118 ANK.BK dated October 07, 2005 on State Land Management.

[32] Article 29 of the Sub decree no. No. 146 ANK/BK dated 27/12/2005

[33] https://sgp.undp.org/component/countrypages/?view=countrypage&country=30&Itemid=271

5.2.2 Business Community

Private companies play a vital role in contributing to biodiversity outcomes. Some enterprises are heavily dependent on ecosystem services, such as tour operators. Some corporations have invested their corporate social responsibilities to minimize their business impacts on the environment. However, some large corporations have not set aside sufficient contributions for social and environmental impact mitigation, such as hydropower and infrastructure projects. Required needs and challenges are also listed in Table 10 in Section 5.3 below.

5.3 Biodiversity Finance-related Capacities and Needs per Priority Organization

This section describes the capacities, needs and challenges of institutions and organizations for environmental protection and biodiversity conservation and the implementation of relevant financial mechanisms. These are the institutions in section 5.1 responsible for development and implementation of public policies and plans, including budget management.

The government institution responsible for leading the formulation and implementation of policies, legislation and plans associated with environmental protection, biodiversity conservation, sustainable development and climate change is the General Secretariat of National Council for Sustainable Development (GSSD), which plays a role as the secretariat of National Council for Sustainable Development (NCSD)**.**

The GSSD is responsible for the promotion of sustainable development aimed at ensuring economic, environmental, social and cultural balance within the Kingdom of Cambodia. A sub-decree stipulates the tasks and responsibilities of government institutions involving government policy, legislation, and plans in the field of environmental protection, biodiversity conservation, green development, environmental management, designation, management and enforcement of protected areas, forestry and fisheries; monitoring environmental pollution and biodiversity, including forests and fisheries; conducts biodiversity, ecosystem services, and values. It coordinates the implementation of measures and mainstreaming for the protection, conservation, reproduction and restoration of fauna and flora, the rational use of and potential for forest resources, import and export of animals and plants; carries out community natural resource management, etc.

The national budget allocated for those institutions is not enough to finance all necessary biotechnology, biodiversity, and biodiversity-related activities necessary to implement all policies. About 90 percent of the budget is used to finance salaries, operations, enforcement, basic research and assessment.

Many government institutions are limited in financial and human resources and experti skills and knowledge. Most institutions do not have sufficient resources to conduct research or pursue other initiatives or for emergency issues.

There are also overlaps of mandates and responsibilities affecting institutional and individual performance. Non-governmental funded projects still play an important role in financing biodiversity related outcomes. Concerted efforts are required from various sources including the

private sector, development partners and other voluntary sources to complement government allocations.

Table 11: Needs and Key Challenge Facing the Different Stakeholders

Group of Stakeholders	Needs	Key Challenges
Government	– Development and improvement of a more systematic way to implement measures and actions – Mainstreaming and integration across sectors – Sustained commitment to biodiversity conservation and environmental protection – Improvement of development and implementation process to mutual benefits	– Overlapping roles and responsibilities – Institutional arrangement and coordination within and among agencies – Clarity of legislation, policies and plans – Limitation in knowledge, capacity, skills and readiness to implement any actions – Limitation in finance resources – Limitation in availability of tools, materials and guidance/manuals – Harmonization and consistency in policy and plans
NGOs/Civil Society	– Improvement of the sustainability of beneficiaries – Building awareness of beneficiaries about the independencies – Support for bottom-up innovation, accountability and ownership – Need for adhoc implementation bodies	– Limited capacity, knowledge and skills – Budget available for small scale and objective driven programmes – Building systematic structures / avoiding fragmentation; – Building sustainable, long-term institutions – Roles and responsibilities are changed subject to local area need; otherwise to new area;
Private/ finance sector	– Taking advantage and benefit of technology availability for support of any biodiversity conservation – Contribution to biodiversity conservation objective along with their agenda and mission – Using opportunities in relevant sectors within their capacity relevant to their value – Investment in biodiversity conservation in alignment with their available capacity and agenda	– Investment in profitable areas only – Limited budget and finance in biodiversity conservation overall – Lack of dedicated financing instruments for biodiversity as not in their mandate – Hesitation about changing ways of doing things, unless having interested personnel
Development partners	– Promoting and encouragement of more space for demonstration projects – Strengthening of relationships, partnership under cooperation context with government by coordination and alignment with the UN CBD Conventions and others – Support biodiversity conservation agenda broadly in line with government's	– Must be meeting their development agenda and objectives – Making funds and resource available for specific priorities and target areas – Support for mainly project-based or initiated ideas, with minimal coordination or sustainability – Lack of sustainable long term support from government

Group of Stakeholders	Needs	Key Challenges
	policies and plans – Supporting human capacity and technology transfer – Seeking opportunities of accessing multilateral and co-financing funds	– Gaining a big impact from the project intervention
Academia	– Building evidence and science-based information and data – Case studies, initiative and innovation driven – Ensure accessibility to information, data and available tools – Reaching out to policy makers, responsible institutions and executive/implementing agencies – Buildign readiness to support any request by the ministries or agencies to provide services and capacity development	– Limited financial and technical capacity, especially field experience – Limited resources like tools and laboratories to promote direct biodiversity conservation and environmental protection

5.4 Stakeholder Engagement Plan

Stakeholder engagement is the process by which an organization involves people who may be affected by the decisions, it makes or can influence the implementation of its decisions. Stakeholder engagement is a fundamental element both in the development and implementation process to ensure effective, smooth and sustained outputs and outcomes of BIOFIN.

We distinguish between 'Direct Stakeholders' and 'Indirect Stakeholders'. A Direct Stakeholder is an entity and/or organization that directly drives the development of biodiversity conservation and environment protection and impacts more or less directly the implementation of biodiversity and conservation related activities and environmental protection. While "Indirect Stakeholders" are those who may contribute to sectoral information, potential finance, and/or participate in the development or implementation of the integration or mainstreaming actions (see more details in Table 11). The goal of the Stakeholder Engagement Plan is to involve all stakeholders of the project, as early as possible in the implementation process and throughout the duration of the project, to ensure that their views and concerns are taken into account. The plan will help the project in implementing effective working relationships and communication channels . The national implementing agency of the project will continue to hold consultations throughout project/programme implementation as deemed necessary. This section provides a summary of the engagement of the major stakeholders including gender.

Responsibilities for Engagement

The assignment of responsibilities for coordination to a specific unit (Department of Biodiversity (DBD) within National Council for Sustainable Development (NCSD)) is illustrated in section Error! Reference source not found..

The roles and responsibilities of key stakeholders with regard to biodiversity conservation and environmental protection within the NCSD and MoE is in the table and figure below.

Table 12: Role and Responsibilities of Overall Stakeholder Engagement

Stakeholders	Roles and functions in biodiversity Conservation and Environment Protection
GSSD and Ministry of Environment (MoE)	• Development of policy, legislation, strategy, planning and initiation • Coordination, facilitation, integration and mainstreaming • Provision and generation of data and information • Capacity building, knowledge management, sharing and institutional strengthening • Stakeholder engagement and monitoring • Resource mobilization
Ministry of Economy and Finance (MEF)	• Support for the integration of implementation in national and subnational planning and budgeting • Allocation of financial resource to government institutions • Endorsement of finance budget
Line Ministries / **Public Institutions**	• Planning, strategic development and implementation in respective sectors • Provision and generation of data and information • Capacity building, knowledge management and institutional strengthening • Stakeholder engagement • Resource mobilization
NGOs	• Assisting the government in the implementation • Provision and generation of data and information within their areas • Provision of technical support and initials • Engagement in policy, strategic, and plan making • Representation of vulnerable groups and local level
Private/finance sector	• Implementation, initiation • Support for government policy and plans within their area of interest • Engagement in policy making • Provision of relevant information and data as per request
Development partners	• Provision of financial and technical support • Engagement in policy, legislation, strategic and plan making • Indirect monitoring • Encouragement the government agenda
Academia	• Provision of research, development, innovation, and information/data • Engagement in policymaking

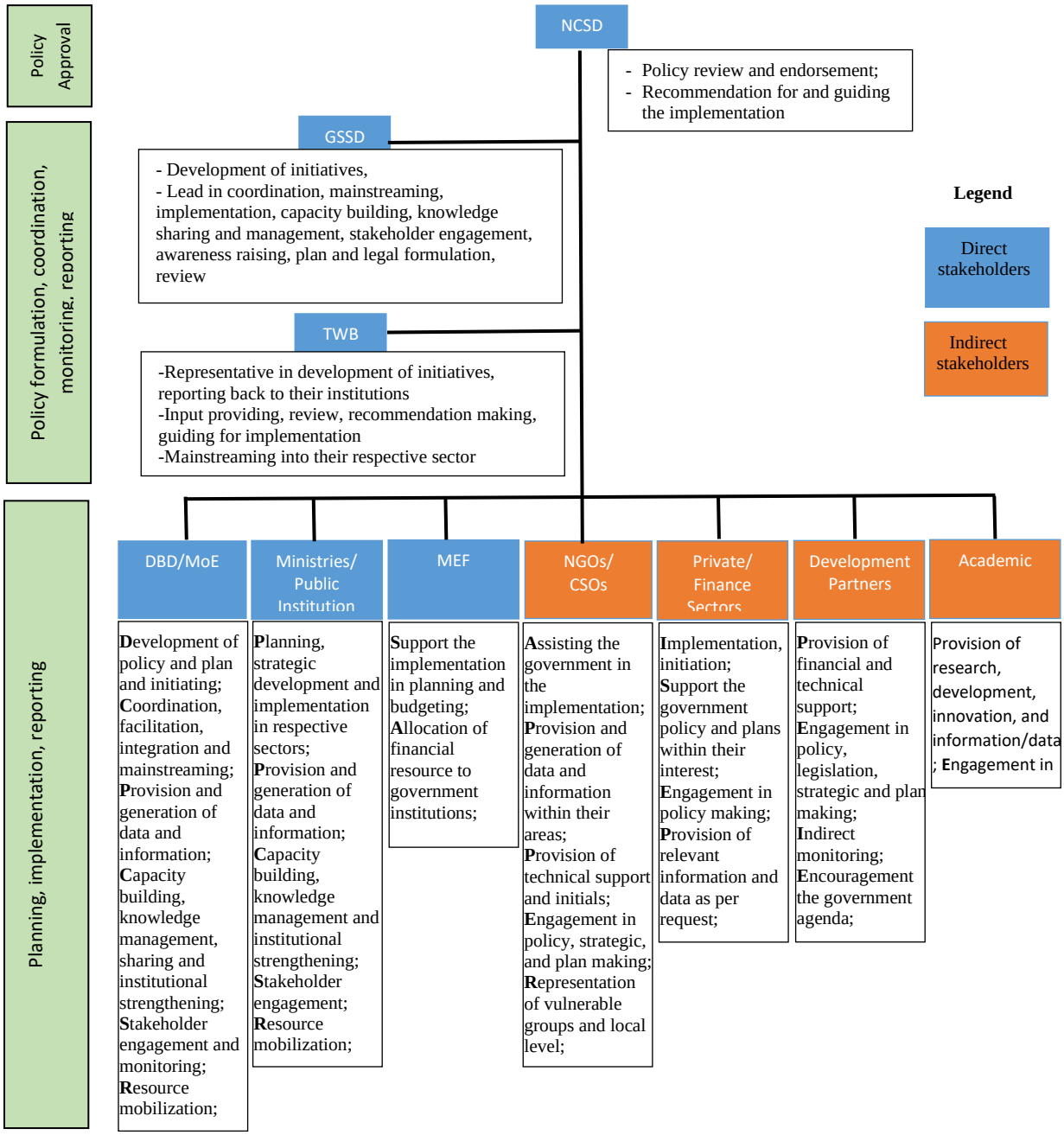

Figure 8: Hierarchical level of roles and functions within stakeholder engagement

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusion

Since 2016, the RGC has been implementing a series of environmental reforms which include the consolidation of 41% of the country's territory (7.6 million ha) designated as Protected Landscapes, to be governed by the Ministry of Environment. About 1.4 million ha is now designated as Permanent Forest Estate (production forests, community forests, conversion forests, mangroves and flooded forests) are under the jurisdiction of MAFF. The National Council for Sustainable Development (NCSD) plays a central role in coordination, consultation and the development of a policy and legal framework to assure more sustainable, resource-efficient, climate-resilient and low carbon modes of Cambodia's development.

Despite the ongoing conservation interventions, biodiversity within and outside designated PAs continue to be threatened due to several drivers – growing agriculture, mining and infrastructure development (roads and hydropower). Recent population growth and unregulated migration have also resulted in biodiversity and ecosystem degradation. Other factors contributing to ineffective conservation outcomes include lacks in main areas: lack of boundary demarcation, zoning, conservation infrastructure, and enforcement officers. Among other factors are insufficient budgets for enforcement and dissemination of knowledge about laws, poor coordination among competent and concerned institutions and a lack of incentives to involve local communities through development schemes. In this sector, there are some key features:

- Grassroot authorities at village and commune level, as well as local police, are key actors in influencing natural resource management. They have some decision-making power in certain affairs such as commune development planning and issuance of recognition letter concerning with land business and law enforcement.
- The majority of households located within and adjacent to natural habitats and protected areas are poor and heavily reliant on subsistence agriculture and biodiversity resources derived from natural habitat. To cope with such an issue, an incentive programme for community development may contribute to minimizing human pressure on biodiversity.

Under the UN Biodiversity Convention, the RGC has achieved the restoration of natural habitat and biodiversity to ensure its reputation regarding the state of the environment in the international arena. It is worth noticing that the implementation of all enacted laws and policy frameworks require an increasing government budget allocation to reflect the needs for nature-based solutions. As the budget is always limited, there is a need for a sizable contribution from development partner agencies to achieve meaningful conservation outcomes, and to ensure all issues raised above are effectively resolved. There are sets of policy recommendations suggested under this policy and institutional assessment noted below.

6.2 Legal and Policy Recommendations

- Harmonize development and conservation sectors through biodiversity related laws and policies to safeguard the environment and biodiversity in development projects. In this

regard, biodiversity hotspots and key corridor areas for use as passage of wildlife within and outside PAs should not put in the national development plan by other development sectors, in particular road construction, mining, agriculture and tourism. In this case, the sub-decree on EIA should be strictly enforced.

- Protected Areas should have their own budget package for routine management operations such as patrols, biodiversity monitoring and law enforcement.
- Collaboration mechanism at the sub-national level (province and district) should be strengthened and linked to the national level to assure all development activities are in line with national and international policies.
- Roles and responsibilities between national and sub-national levels in biodiversity conservation need to be more precisely defined to achieve effectiveness and efficiency.
- Public investment and ODAs should be aligned to achieve the cross-cutting objectives between biodiversity and economic development. Doing so, biodiversity and development objectives should be inclusively mainstreamed and jointly implemented.
- The integration of biodiversity into sustainable land use planning is vital for the success of ecosystem restoration and management. Investing in nature and biodiversity can be done through green budgeting, inclusive and transparent land use planning and green financing projects. If this could be implemented, it will improve public and private investment in nature in the future.

6.3 Changes in Sectoral Policies and Practices Reducing Biodiversity Loss, and/or Imposing Biodiversity Finance

Given the importance of the environment and biodiversity for the prospect of sustainable development, all line ministries including sub national agencies should include biodiversity components in planning and budgeting for their projects/programmes. It is also recommended to adhere to a green economy approach in all sectors by promoting green taxes, green finance, green credit and green micro-macro finance, to contribute to poverty alleviation and sustainable development (NCGG, 2013). The followings are suggestions of how environment can be mainstreamed into the development sectors:

- **Agriculture sector**: RGC should provide incentives for farmers to adopt ecological agricultural practices, for instance integrated pest management, integrated nutrient management, conservation tillage, agro-forestry, water harvesting in dry land areas, drip irrigation, and livestock and aquaculture integration into farming systems, so as to either increase agricultural yield, improve soil quality or reduce pressure on biodiversity and environmental services. Areas to consider are for example for MAFF in collaboration with MoWRAM to improve irrigation systems and invest in water-related infrastructure or introduce mechanisms that incentivize such investments; and to improve the means and mechanisms to improve crop diversification and intensification, as well as fisheries management and forest management. Strategies for the development of the agriculture sector should be prepared in close engagement with the private sector.

- **Energy sector**: RGC should promote shifting to solar panel, wind power and/or bioenergy as sources of energy for electricity supply to rural community in order to minimize adverse impact on the environment and humans. Public subsidies through reducing duty or providing tax holidays could be powerful financial policy instruments to attract well known foreign investors.

- **Road infrastructure sector**: Road infrastructure which falls under the jurisdiction of the Ministry of Public Works and Transport (MPWT) and Ministry of Rural Development (MRD) is one of top priority development sectors in Cambodia. A committee at sub-national level with members from MPWT, MoE, Ministry of Land Management Urban Planning and Construction (MLMUPC), MAFF and local authority should be formulated to discuss issues related to road infrastructure development plan within PAs, and to find sound solutions to mitigate any adverse impacts on biodiversity and environment.

6.4 Institutional/Organization and Capacity Development Recommendations

Backed by the rectangular strategy phases 3 and 4, stating that human resource development is the top priority among four other strategic rectangles, it is recommended that key human capacity development in biodiversity conservation related areas be strengthened and upgraded on the existing conservation programmes. Budget mobilization with sources from the government and other donors is necessary for key agencies from MoE, MAFF and concerned universities to invest in capacity building relating to biodiversity and ecosystem conservation. This includes:

- Law enforcement training and capacity building for police and technical staff on the ground (PA's rangers, foresters, fisheries officers) to assure they have enough capacity to perform law enforcement.
- Technical training to technical staff on biodiversity-related subjects such as research, conservation, gap analysis, data management, project management, natural resource governance and proposal writing.
- Agricultural training to staff working in the agriculture-related fields: agriculture intensification and diversification through agro-forestry, eco-agriculture, drip irrigation systems and conservation agriculture.
- Technical training in environment-friendly development to technical staff in development sectors of energy, transport and water resources, for instances clean energy generation through solar park planning in the energy sector; environment and social safeguards management to mitigate associated environmental and social impact; climate risk management, etc.

6.5 Enhancement of Biodiversity Financing

The RGC has developed many laws, policies, strategies and plans to support the protection and management of natural resources but to secure implementation in compliance with financial and human resources.

Earmarking revenues generated from ELC, hydropower, mining and eco-tourism which rely on natural ecosystem and biodiversity should be enhanced to reinvest in PAs and biodiversity friendly agro-industry, partially ELCs.

REDD+, also known as carbon-based PES schemes, seems to be a success, and so should be scaled up with various projects. UNDP and MoE are developing a nested approach to standardize project-based REDD+ pilots into the national performance-based payment system. This enables Cambodia to access the performance-based payment under the United Nations Framework Convention on Climate Change (UNFCCC), under which the majority of the funds will be re-invested in REDD+ sites.

To close the funding gaps, resource mobilization in support of biodiversity conservation should be a cross-sectoral approach through GSSD to synergize international and national finance for effectiveness in conservation and sustainable use of biodiversity. The use of budget and funds should also be monitored closely. To address these issues, several key actions are proposed, which include i) conduct an assessment of biodiversity expenditure, ii) conduct an assessment of biodiversity financial needs and iii) define economic incentive reform to engage private sectors to invest in biodiversity conservation and nature-based solutions and innovations.

In order to sustain biodiversity finance, a number of following existing finance solutions and initiatives should be reinforced and scaled up:

- The government fund for biodiversity conservation (PAs and other conservation areas under MAFF) should be increased to double the current expenditure in consideration of recurrent (staff salary and administration cost) and investment expenses.
- A Protected Area Fund (PAF) should be activated and reinforced to mobilize fund from different sources for conservation and protection of all PAs. Potential fund sources for PAF can be from ODA, tourism concession and service, PA entrance fees, and revenue generated from innovative activities.
- Community finance in different models like mini trust funds for fish conservation, community forest credit and community-based ecotourism which are initiated by NGOs should be expanded to other CF, CFi and CPAs in order for communities to have enough resources for management of their areas. The application of different community fund models should be based on actual community and management contexts. However, the CFi's mini trust fund model seems to be more manageable, accountable, demands less time to control and is easy to monitor as cashflow is recorded by the bank. If more money is deposited in the account, more revenue from interest is generated for operation at the site.
- The government-initiated PES and surcharge fees from businesses related to biodiversity and ecosystem are good approaches in revenue generation for biodiversity conservation. These approaches should be reinforced and scaled up for many Protected Areas.
- A corporate foundation, even if it exists in a voluntary manner, is crucial for future fund mobilization for biodiversity conservation as many businesses reliant on natural ecosystem and biodiversity often cause impact on biodiversity. Revenue sources for this foundation could be from hotels, resorts, mining companies, hydropower companies, drinking water enterprises, the ecotourism sub-sector, petroleum companies and automobile companies.

6.6 Entry Points for Biodiversity Financing Solutions

Biodiversity and ecosystems in Cambodia have been under severe threat in many ways, including forest encroachment, agricultural expansion, poor agricultural practices, illegal logging, unsustainable practice of NTFP collection, poaching, illegal fishing and/or overfishing by using harmful fishing gear. RGC and conservation NGOs have applied different approaches to address these problems but so far this has been on a small scale or as pilot programmes, with sometimes limited success. Some possible point of expansion include:

- Biodiversity-conservation based agriculture models like Ibis Rice which directly links community livelihoods to conservation should be promoted and scaled up to other areas by focusing on either particular species or the entire ecosystem. With this regard, holistic interventions within a defined landscape at the beginning should include (1) budget allocation to buy organic crops in fair price and linkage of products to market and building capacity in value chain, (2) promotion of green financing by engaging the banking sector and National Bank of Cambodia, (3) provision of tax and duties exemption for biodiversity friendly enterprises and reallocation of nature-based taxes to reinvest in green agriculture through MAFF, and (4) use of green public finance generated via ODA to support this sector.

- Development of a roadmap to bring agroforestry within CF into the development processes of the Forestry Administration (FA) with the aim to improve production, soil health and biodiversity at degraded forest area of Community Forestry (CF) should be promoted and implemented at all CF sites.
- Conservation agriculture to achieve high crop yield and restore soil degradation and biodiversity should be exposed to farmers along with the technical and necessary input supports such as seeds of cover crops and tools. This requires promotion of medium-scale investment within a landscape while considering government subsidy instrument throughout the whole value chain.
- Development of fast track processes for establishment of CF and (Community Protected Area) CPAs should be considered by reducing some steps and simplifying resource assessment in the management plan process in order to minimize costs and make it more relevant to the capacity of committee members. The current process has too many steps and takes many months or even years to reach a legalization step, and the management plan employs a highly technical method, incurring both a long establishment and unnecessarily expensive process. .
- Community members should be legally permitted to commercialize some potential NTFPs within Sustainable Use Zone, especially rattans, bamboos, honey, resins, wild fruits and nuts with respect for sustainable guidance, and encouraged to monitor illegal activities or forest crime within the area. To make it effective, MoE and MAFF should initiate a working mechanism to facilitate community representatives or traders to transport NTFP products without too many impediments. This requires an inter-ministerial approach and green investment. NTFPs could be scaled up to bio-friendly business model beyond the conventional household consumption because local residents can generate sizeable income from NTFPs. Promotion of sustainable NTFP enterprises requires legal reform in the

forestry and PA laws and could lead to competitive business innovations and secure markets. Therefore, a market-based mechanism is essential to attract public and private investment on a commercial scale for NTFP development and processing. Public funds for NTFP innovation should be made available for research covering bio-engineering and processing, medical plants, and implantation of the Nagoya Protocol on Access and Benefit Sharing.

- Micro watershed management through building small weirs on streams within PAs, CF and highland areas should be considered to benefit to terrestrial and aquatic biodiversity conservation and improve crop yield. However, the design of such weirs should take serious account of any possible environmental impact.
- Investing in providing access to natural scenery through community-based ecotourism should be considered due to growing interest in nature hiking, camping and sightseeing nationally, regionally and globally. Cambodia's PAs have the potential for attracting private or public investment that could contribute to the rolling out of sustainable financing for PA management in the future.

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Annex 1: Public Agencies Implementing Action Plans of NBSAP

No	Strategic objective	Key actions	Key ministries
1	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	Five key actions being prioritized included 1. Assessment of function, role and value for sustainable development and poverty eradication, status and trends of biodiversity ad its components in Cambodia	MoE, MAFF and GSSD
		2. Establishment of a list of the priority components of biodiversity and ecosystem service	MoE, MAFF and GSSD
		3. Monitoring and reporting on status of important biodiversity components	MoE and GSSD
		4. Organizing data and information collected for awareness raising and decision making	MoE and GSSD
		5. Raising awareness about value the biodiversity and ecosystem services	MoE/GSSD and MoEYS
2	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	1. Investigation of direct pressures leading to biodiversity degradation and monitoring their impacts	MoE, MAFF and GSSD
		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
		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
		4. Regularly assess and improve, as needed, the effectiveness of measures taken to address direct and	MoE, MAFF and GSSD

		indirect causes of the loss and degradation of biodiversity and associated ecosystem services, bearing in mind the principles of adaptive management	
		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 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 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	MoE, MAFF and GSSD
		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
		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	MoE, MAFF and GSSD

		communities and indigenous ethnic minorities who rely directly on local biodiversity and ecosystem services for their livelihoods and well-being	
		8. Integrate biodiversity and its ecosystem services into wider national and subnational development strategies and plans	MoE, MAFF, MoT, MRD, MoI and GSSD
		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
		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
		11. Mobilize human and financial resources needed for the implementation of these actions and empower the relevant institutions	MoE, MEF, MAFF and GSSD
3	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	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
		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
		3. Develop and implement a	MoE, MAFF and

		biodiversity economic valuation 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	GSSD
		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
		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
		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
		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)	MoE, MAFF, MEF and GSSD

		green tax and budget reform; and (iii) swap of debts schemes with international investors	
4	Strengthen the enabling environment for the implementation of the strategy	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	MoE, MoEYS, MEF, MAFF and GSSD
		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
		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 inter alia 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	MoE and GSSD
		4. Building on previous and ongoing capacity needs assessments, identify technologies needed for the conservation and sustainable use of biodiversity and associated	MoE, MoEYS, MAFF and GSSD

		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	
		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	MoE, MAFF, MEF and GSSD
		6. Ensure, through participatory planning and enhanced coordination, synergies among biodiversity projects and programmes under different Ministries, and establish strategic partnerships with the finance and business sectors	MoE, and GSSD
		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
		8. In line with the ecosystem approach and the Rectangular Strategy, ensure that management is decentralized to	MoE, MAFF, MoI and GSSD

		the lowest appropriate level for greater efficiency, effectiveness and equity	
		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 clearinghouse mechanism for technical and scientific cooperation, and avoiding a piecemeal approach to the conservation and sustainable use of biodiversity	MoE, MAFF, and GSSD
		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
		11. Enhance coordination and synergies for efficient use of resources in implementing education, public awareness and research programmes dealing with biodiversity	MoE, MAFF and GSSD
		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
		13. Enhance mechanisms for the management, dissemination, targeted communication and exchange of scientific data and knowledge, including traditional knowledge, about biodiversity and related	MoE, MAFF and GSSD

		ecosystem services, making effective use of the clearing-house mechanism	
		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

Annex 2: Matching Aichi Target and Cambodia Biodiversity Target, and Country Progress Contributing to the Achievement of the Respective Aichi Biodiversity Targets

No	Aichi Biodiversity Target	Cambodia Biodiversity Target	National contribution to global target	Relevant SDGs
1	**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.	**Target 1** By 2020, every Cambodian 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	Several publications are generated in Cambodia and about Cambodia's unique biodiversity. Some are in popular magazines, others in scientific journals and conference proceedings, in the media and on Cambodia's clearing house mechanism and other websites. The country has in place mechanisms that attract and assist tourists from all over the world to learn about the cultural, biological and socioeconomic value of Cambodia's nature. In this context, supported by the PES schemes, visitors	12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature

No	Aichi Biodiversity Target	Cambodia Biodiversity Target	National contribution to global target	Relevant SDGs
		resources, and the biomass used for energy production, and integrates this knowledge in the way they deal with these ecosystems and resources.	can see some of the remaining populations of threatened species. While visiting, they can also learn or be reminded about respect of the environment In participating in pilot projects such as the ones coordinated by UNESCO on integrating biodiversity in school curriculums, Cambodia is making contributions to facilitate integration of biodiversity value.	
2	**Aichi Target 2** By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.	**Target 3:** By 2020, at the latest, biodiversity values have been integrated into national and sub- national development and poverty reduction strategies and planning processes.		15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts

3	**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.	**Target 9:** By 2020, Payment for Ecosystem Services (PES) is used throughout the country as an incentive for the conservation and sustainable use of biodiversity.	Just like Cambodia has been learning from and consulting with neighbouring countries and Costa Rica while building its payment for ecosystem services schemes as incentive for the conservation and sustainable use of biodiversity, Cambodia's experience with PES including REDD+ can be shared.	12.2 By 2030, achieve the sustainable management and efficient use of natural resources.

4	**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.	**Target 7:** By 2020, Government, 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. .	Cambodia has regulations and policies that ensure sustainable production and consumption. Some of these apply and are in harmony with sub-regional regulations guiding impacts in transboundary areas and waters and across borders. Waste management and pollution control for example are critical in the Mekong Basin. Cambodia is vigilant regarding illegal timber production and export. Similarly, Cambodia enforces laws prohibiting import and consumption of illegally produced goods (e.g., illegally traded ivory)	12.1 Implement the 10-year framework of programmes on sustainable consumption and production, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries. 12.2 By 2030, achieve the sustainable management and efficient use of natural resources. 12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse. 14.7 By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism. 15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species. 8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavor to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on

No	Aichi Biodiversity Target	Cambodia Biodiversity Target	National contribution to global target	Relevant SDGs
				sustainable consumption and production, with developed countries taking the lead In addition, ▪ The Cambodia Industrial Development Policy 2015–2025 mentions setting clear standards and guiding principles on environmental protection and production safety for investment projects located in SEZs and other industrial zones ▪ The National Policy on Green Growth encourages small, medium, and large enterprises to pursue sustainable practices related to the production and use of natural resources. ▪ Implementing Strategic Planning Framework for Fisheries 2010- 2019 with the aim of boosting fish production to serve domestic consumption and export markets by relying on 3 pillars: (1) freshwater and marine-based natural fisheries, (2) freshwater and marine aquaculture, and (3) facilitating processing and trade. ▪ Ensure: (1) green cover, forest and wildlife conservation; (2) the sustainability of fisheries resources; and (3) the sustainability of the ecosystem;

No	Aichi Biodiversity Target	Cambodia Biodiversity Target	National contribution to global target	Relevant SDGs
				▪ Reduce deforestation and degradation of forests; ▪ Protection of biodiversity and aquatic-animal habitats
5	**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.	**Target 12:** 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. Also target 5 for forests.	Cambodia's target equivalent to Aichi Target 5 focused on coral reefs (under Cambodia national target 12) and considered this aspect of reducing habitat loss under Cambodia national target 5 for forests. Regarding coral reefs, in implementing the Strategic Planning Framework for Fisheries 2010 – 2019, Cambodia targets to 840 ha of coral reef under some form of sustainable management. Establishment of the Marine National Park (52498 ha) in February 2018 by expanding the Marine Management established in 2016 was the key measures taken with the improvement of the patrols.	14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans. 15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements. In addition, ensure green cover, forest and wildlife conservation; the sustainability of fisheries resources; and the sustainability of the ecosystem, so that the quality of land and sustainability of water sources could be improved by focusing on the protection of biodiversity, wetlands and coastal areas
6	**Aichi Target 6** By 2020 all fish and invertebrate stocks and aquatic	**Target 4:** By 2020, freshwater fisheries and aquaculture are managed	Cambodia's target does not cover every aspect of Aichi Biodiversity Target 6. Plants, invertebrates and marine fisheries	14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated

No	Aichi Biodiversity Target	Cambodia Biodiversity Target	National contribution to global target	Relevant SDGs
	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.	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	are not included, nor recovery plans for all depleted species Cambodia is investing in aquaculture to make sure that fish demands can continue to be met if sustainable fish culture can allow to maintain capture fisheries within the ecological limits. The success of Cambodia's community fisheries reforms received international attention both regionally, with an ASEAN workshop show-casing the success of the reforms, and globally	fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics Also, strengthen the management and conservation of fishery resources in a sustainable manner, especially through the suppression of all violations of laws, rules and regulations related to fisheries including tightened control of fishing gears and fishing period, elimination of overfishing, strengthening fishing communities' capacity for the management, use and conservation of fisheries resources
7	**Aichi Target 7** By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.	**Target 5:** By 2020 the majority of areas under agriculture, animal production, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity, sustainable development, poverty eradication and improved well-being.	Cambodia has in place regulations, policies and guidelines that promote sustainable aquaculture, agriculture and forest management. Ecosystem approach or the landscape approach used in the Satoyama Initiative gives an opportunity to manage sustainably and simultaneously forestry, agriculture, aquaculture and animal production across a landscape. Aichi Biodiversity Target 7 needs to be stated in a more measurable way to enable an assessment of contribution	15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally. 15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that

No	Aichi Biodiversity Target	Cambodia Biodiversity Target	National contribution to global target	Relevant SDGs
			from the implementation of our national target.	are essential for sustainable development. 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix (regarding forest and fuelwood) In addition, manage forest and wildlife resources in a sustainable and equitable manner, in accordance with the "National Forest Program 2010- 2029", in particular through better law enforcement and governance, demarcation, classification and registration of forest, effective management and exploitation of state and private forests, implementation of measures for improving the livelihoods of and promoting participation from forest dependent communities, enhancement of management and effectiveness of conservation measures, reduction of deforestation and degradation of forests, intensified tree planting and forest rehabilitation, strengthening the conservation of wildlife and wildlife sanctuaries, development of institutional and human capacity, and promotion of research studies and their dissemination.

8	**Aichi Target 8** By 2020, pollution, including	**Target 16:**	Many actions have been carried out in various parts of the country and for	12.4 By 2020, achieve the environmentally sound management

No	Aichi Biodiversity Target	Cambodia Biodiversity Target	National contribution to global target	Relevant SDGs
	from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.	By 2020, pollutant pressures on terrestrial and aquatic ecosystems are substantially reduced to levels that are not detrimental to ecosystem function and biodiversity.	different types of pollutants. They provide a rich set of experiences, some of which have been organized as guidelines and in the form of materials for awareness-raising activities and capacity building, already in use in the country and elsewhere. Research institutions are also participating in addressing gaps in knowledge and providing insights on the way pollutants are produced and how they can be avoided or controlled. Cambodia initiated a programme on the 3R (Reduce, Re-use, Recycle), particularly in the context of the Industrial Development Policy and in line with some of the country's key strategies and plans (e.g. the Green Growth Roadmap and the National Environment Strategy and Action Plan, 2016–2023). While Cambodia has been making progress in addressing solid wastes and pollutants, the technology needed to fully address liquid and gaseous pollutants is being acquired.	of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment. 14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution For marine and coastal areas: 14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information

9	**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.	**Target 18:** By 2020, major invasive alien species (IAS) and their pathways have been identified and prioritized, and prioritized IAS and pathways are controlled.	Cambodia, through the Department of Administration for Nature Conservation and Protection (GDANCP), Ministry of Environment, was one of the countries that participated in the 2011-2016 GEF-funded pilot project developed by CABI, UNEP and partners and titled "Managing invasive species in selected forest ecosystems of South East Asia." The overall project goal was to conserve globally important forests, species and	15.8 By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species
			genetic diversity in the region, with the initial aim of enhancing the capacity of the four pilot countries - Cambodia, Indonesia, Philippines and Vietnam - to manage their invasive alien species. Cambodia gained a lot from the project and is taking measures to address invasive alien species before they become a problem	
10	**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.	**Target 15:** By 2020, anthropogenic pressures (pollution, exploitation, sedimentation…) on coral reefs and vulnerable ecosystems impacted by climate change have been significantly reduced.	See national target 12 above (Aichi Biodiversity Target 5)	14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution 14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels

11	**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.	**Target 8:** 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	Cambodia's contribution to the world protected area system is noteworthy. In the last 3 years, the country added a bit more than 23% of its territory to the system including corridors that ensure the needed connectivity; wildlife sanctuaries protecting important fauna and flora including endangered species that are found mainly in Cambodia or can breed only in Cambodia; a marine national park; a genetic conservation area to protect some of the rare genetic materials in the world; natural heritage parks and landscapes, and areas that can be used for many purposes.	15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts (in connection with sub-paragraph (iii) of the national target)

No	Aichi Biodiversity Target	Cambodia Biodiversity Target	National contribution to global target	Relevant SDGs
		least doubled as compared to the 2010 levels; **(ii)** 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 **(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.	This addition represents less than 0.05% at the global level but its role is significant. Cambodia's protected area system provides sanctuaries to almost 2% of globally threatened species on IUCN Red List, including 34 mammals, 39 birds, and 20 reptiles. For example, the Prek Toal Core Area of the Tonle Sap Biosphere Reserve is an internationally recognized priority site, the habitat for globally important bird colonies. Populations of many of the targeted globally-threatened bird species (e.g., the greater adjutant (*Leptoptilos dubius*), the lesser adjutant (*Leptoptilos javanicus*), or the white- shouldered ibis (*Pseudibi davisoni*)) are increasing in protected areas.	

12	**Aichi Target 12** By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly	**Target 10:** By 2020, all species of fauna and flora threatened at national level have been identified and their status has been improved significantly as a result of	Many success stories regarding rescues, care and breeding at some centers (e.g., the Phnom Tamao Wildlife Rescue Center where thousands of rescued animals found sanctuary between 2014 and 2018 and some animals were born or hatched);	15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.

No	Aichi Biodiversity Target	Cambodia Biodiversity Target	National contribution to global target	Relevant SDGs
	of those most in decline, has been improved and sustained	applying measures to address their respective threats.	release in nature, essentially within protected areas; and recovery away from the release sites. The bird and turtle nest protection programmes are producing positive results as well as other programmes linked to ecotourism such as the IBIS Rice. We report on the measures taken to successfully improve the status of many threatened birds, reptiles, mammals, fishes and few invertebrates.	15.7 Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products In addition, ▪ Ensure: (1) green cover, forest and wildlife conservation; (2) the sustainability of fisheries resources; and (3) the sustainability of the ecosystem; ▪ Enhance soil fertility management to combat land degradation and desertification; ▪ Reduce deforestation and degradation of forests; ▪ Protection of biodiversity and aquatic-animal habitats

13	**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.	**Target 20:** 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*.	The extensive protected area system that characterizes Cambodia is the best guarantee that plant and animal genetic diversity is well conserved in situ. The designation of Cardamom Genetic Conservation Area is in itself extraordinary. In addition, the "*ex-situ*" collections of crops and their wild relatives at certain research institutions (e.g., crop germplasm at the Cambodian Agricultural Research and Development Institute (CARDI)) provide an opportunity for various ecological and genetic analysis and breeding work. Equivalent institutions for animal resources are needed. The	2.5 By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and ensure access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed

No	Aichi Biodiversity Target	Cambodia Biodiversity Target	National contribution to global target	Relevant SDGs
			work needs to be upscaled to better cover the wide range of diversity found in the country. By maintaining a germplasm of crops and their wild relatives, Cambodia is participating in the global effort to maintain genetic diversity for food security.	

14	**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.	**Target 6:** By 2020, 10 % of those 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 local communities' and indigenous ethnic minorities' women, old persons and children.	In Cambodia, it was estimated in 2011 that approximately 2,600,000 hectares of forest land required restoration. In 2010, up to 55% of the total rural population inhabit degraded agricultural land. Cambodia is completing many projects that provide basic information on best ways and means to carry out restoration projects. Projects like the GEF-funded project "Collaborative Management for Watershed and Ecosystem Service Protection and Rehabilitation in the Cardamom Mountains, Upper Prek Thnot River Basin" started in 2017 will be good contributions to the Aichi Biodiversity Targets 14 and 15.	15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally. In addition, Manage forest and wildlife resources in a sustainable and equitable manner, in accordance with the "National Forest Program 2010- 2029", in particular through better law enforcement and governance, demarcation, classification and registration of forest, effective management and exploitation of state and private forests, implementation of measures for improving the livelihoods of and promoting participation from forest-dependent communities, enhancement of management and effectiveness of

No	Aichi Biodiversity Target	Cambodia Biodiversity Target	National contribution to global target	Relevant SDGs
				conservation measures, reduction of deforestation and degradation of forests, intensified tree planting and forest rehabilitation, strengthening the conservation of wildlife and wildlife sanctuaries, development of institutional and human capacity, and promotion of research studies and their dissemination
15	**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 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.	**Target 11:** By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks have been enhanced, through 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.	Cambodia's protected area system covers large portions of forests and areas rich in aboveground biomass carbon and soil carbon. Those areas are also rich in biodiversity and expected to be resilient to changes. Studies on carbon stocks are being done through the REDD+ programme.	14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans. 15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world. In addition, Enhance soil fertility management to combat land degradation and desertification

16	**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	**Target 13:** By 2015, Cambodia has designated a national focal point and one or more competent national authorities for the Nagoya Protocol on	Cambodia ratified the Protocol in time and put in place the recommended structure. Cambodia is now developing its legislation. Cambodia has a lot of biological / genetic resources that could be used for the benefit of all on the	15.6 Ensure fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources

No	Aichi Biodiversity Target	Cambodia Biodiversity Target	National contribution to global target	Relevant SDGs
	operational, consistent with national legislation.	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.	Planet. Finalization of the legislation is expected to encourage and guide access to the resources and yield benefits for the country	
17	**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.	**Target 14:** By 2015, the National Biodiversity Strategy and Action Plan (NBSAP) have been updated and adopted, and have commenced to be implemented effectively. This is an overall target for the updated strategy	Cambodia adopted its NBSAP in February of 2016 following the requirements for Aichi Target 17. This National Report gives an idea of progress made in the NBSAP implementation.	
18	**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	**Target 17:** 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	Participation of local communities and indigenous peoples in any processes dealing with natural resources is a constitutional right and required through legislation (The Environment and Natural Resources Code of Cambodia). Cambodia and partners organise many training workshops to inform local communities and indigenous peoples, capacity building workshop to empower them, and	

No	Aichi Biodiversity Target	Cambodia Biodiversity Target	National contribution to global target	Relevant SDGs
	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.	(c) respected, subject to national legislation and relevant international obligations, and (d) 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.	consultations to learn from them and benefit from their know-how, innovations and practices. Cambodia's progress on this target needs to be accelerated. While the mechanisms and framework are in place, there is still quite a lot to do e.g., to adequately document traditional knowledge, know-how and practices with the consent of the local communities and indigenous peoples. Cambodia will benefit from others' experiences. However, Cambodia established many community fisheries, community forests and community protected areas that are generally performing well in terms of protection, conservation and sustainable management of natural resources.	
19	**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	**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.	Cambodia's target 19 focuses more on the storage of information/data relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, accessibility and sharing and dissemination. As a starting point, Cambodia developed a web portal that is common to the Rio Conventions with focus in the initial phase on sustainable land management, protected area management and ecosystem restoration. In addition, Cambodia developed a 5-year capacity building plan to support every aspect of the synergy among the Rio conventions including the operation and functions of the common web portal/clearing house mechanism.	

No	Aichi Biodiversity Target	Cambodia Biodiversity Target	National contribution to global target	Relevant SDGs
			Enhancing synergy among the Rio conventions will yield more benefits e.g., in term s of efficiency in resource use, in line with elements of Aichi Target 20. Cambodia will share its experience.	
20	**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.	**Target 2:** By 2020, at the latest, the national budget allocation for biodiversity conservation and sustainable use (including NBSAP implementation) has increased by 20 percent through the development and implementation of a resource mobilization strategy based on identified needs and taking into account international and national guidance and policies.	Cambodia increased the budget of Ministries dealing directly with biodiversity. That will enable the Ministries to increase their implementation of the NBSAP, engage more people in that work and enhance effectiveness and efficiency	

Source: GSSD, 2019

Annex 3: Protected Area System in Cambodia

Code	PROTECTED AREA	Area (ha)
National Park 12		**1,720,269.35**
1	Preah Soramarith Kosamak "Kirirom"	35,232
2	Preah Munivong "Bokor"	154,458
3	Kep	1,152
4	Pheah Sihanouk "Ream"	15,000
5	Botum Sakor	171,250
6	Preah Cheyvarama "Phnom Kulen"	37,500
7	Virachey	332,500
8	Vensai Siempang	57,469
9	Central Cardamom	401,313
10	O'Yadao	101,348
11	Southern Cardamom	410,392
12	Koh Rong	2,655.35
Wildlife Sanctuary 18		**3,684,328**
13	Phnom Aural	253,750
14	Peam Krasop	23,750
15	Phnom Somkos	333,750
16	Ronien Daun Sam	178,750
17	Kulen Promtep	402,500
18	Beng Per	242,500
19	Lomphat	250,000
20	Phnom Prich	222,500
21	Phnom NamLyr	47,500
22	Snoul	75,000
23	Prey Lang	431,683

24	Preah Roka	90,361
25	Western Siempang	65,389
26	Chhaeb	190,027
27	Tatai	144,275
28	Koe Seima	292,690
29	SrePok	372,971
30	Siem Pang	66,932
Protected Landscape 8		**149,347.30**
31	Angkor	10,800
32	Banteay Chhmar	81,200
33	Preah Vihear	5,000
34	An Long Pring	217
35	North TonleSap	31,159
36	Boeung Prek Lpov	8,305
37	Ang Trapeng Thmor	12,650
38	Boeng Prektub	16.3
Multiple Use Area 5		**409,669**
39	Dong Peng	27,700
40	Samlaut	60,000
41	Tonle Sap	316,250
	Boeng Chhmar Core Area (Ramsar Site)	(14,560)
	Prek Toal Core Area (Ramsar Site)	(21,342)
	Stung Sen Core Area	(6,355)
42	Punchearkrek	199
43	Kbal Chay	5,520
Ramsar 4		**14,600**
44	Stung Treng	14,600

	(Koh Kapik)	(12,00)
	(Boeng Chhmar)	(14,560)
	(Prek Toal)	(21,342)
Natural Heritage Park 1		24,654
45	Phnom Tberng	24,654
46	Biodiversity Corridor of Protected Area	1,427,940
	North-East Corridor	(757,661)
	North-West Corridor	(500,810)
	Cardamom Corridor	(169,469)
Total size		7,430,807.65

Source: MoE, 2017b

Annex 4: BIOFIN Catalogue for Cambodia - Biodiversity Financing Solutions

No	INDEX	Solution Type	Level	Select	Related Policy	Sector	Remark
1	ODA	Multilateral and Bilateral Development Assistance (ODA)	A	1	The National Strategy Development Plan and National Budget Law 2020 identify ODA as one of the main funding sources to achieve the country development target. The National Biodiversity and Action Plan (NBSAP) recognized the important of diverse resources of funding to achieve the biodiversity target.	Multiple	ODA is the largest source of financing for biodiversity. Total budget of grant and loan derived from multilateral and bilateral partners has been 1 billion per year. Large international donors include USAID, GEF, ADB, WB, ADB, JICA, GIZ, France, EU/EC, Canada, New Zealand, and UNDP
2	ODA	Increase biodiversity component of Climate Aid	A	1	The Climate Change Strategic Plan 2014-2023 stated that the MoE is responsible for mobilizing climate related fund from international funding mechanisms.	Multiple	Cambodia has developed climate investment plan under PPCR, SREP and FIP. Under the PPCR, the country received $91 million to build institutional capacity and climate resilience infrastructures. Another $30 million is for SREP to support energy related program. (www.climateinvestmentfunds.org/country/cambodia)
3	ODA	Aid coordination strategies	A	1	The Development Cooperation & Partnership Strategy 2014-2018	Multiple	The Cambodia ODA database was set up in 2004 and coordinated by the Cambodia Rehabilitation and Development Board Council for the Development of Cambodia (known as CDC). The CDC is the supreme decision-making body on aid coordination through bilateral and international institutions, and its chair is the Prime Minister. Technical working groups (TWG) were established in 21 areas as subsidiary bodies to coordinate and improve aid effectiveness.
4	MPD	Mobilization of	A	1	The law on association and	Multiple	Currently, there are 23 NGOs working in Cambodia in

No	INDEX	Solution Type	Level	Select	Related Policy	Sector	Remark
		Private Donation			non-governmental organization 2015 (Article 18 and 19) allow local and international NGOs and Associations to obtain resources from donation and other lawful sources.		the fields of biodiversity conservation and biodiversity-related livelihood development. A total budget in the amount of USD23,733,501 has been expended by various projects. Some of their funding sources are from private donation, particularly philanthropists (e.g. Maddox Jolie-Pitt foundation for the conservation of Samlot Multiple Use Area and His Serene Highness Prince Albert II of Monaco foundation for the conservation of Koh Rong Marine Park.
5	GF	Government fund	A	1	The National Strategy Development Plan and National Budget Law 2020.	Multiple	RGC gives top priority to social development, whereas budget for conservation is the lowest, comparing to other sectors. in 2019, MoE and MAFF received only USD25.3 million (0.4%) and USD115.1 million (1.84%) respectively of the total national budget for biodiversity conservation and agricultural development
6	EIA	EIA permitting and review fees	B	1	Sub-decree No. 72 on Environmental Impact Assessment (EIA), dated 11 August, 1999. Proclamation issued by MEF no. 999, dated 28 December 2012.	Multiple	MoE is responsible for collection of public service fees, which include three main categories - PAs (Incl. penalties and fines, concession land, royalty and premium); review of EIA report and project monitoring (Inc. industry, health, agriculture, tourism, infrastructure and business required for environment protection contract), and labs and other services (Incl. labs and other services). Cash collected from these services is paid to the national budget.

No	INDEX	Solution Type	Level	Select	Related Policy	Sector	Remark
7	TNRR	Mining and Energy permits and fee*	B	1	Joint proclamation on public service charge and transactional fines in cash by the Ministry of Mines and Energy	Mining and Energy	MME is in charge of revenue collection arising from mining and energy sector. There are two categories. Category one is in charge by 3 General Departments - General Department of Mining Resource (mining license) include license provision, license issuance, License extension, transfer of mining license, letter issuance to recognize the change of share composition or/and the change of shareholder, issuance of the recognition letter of the change of shareholder component or/and the change of shareholder manager and letter issuance to recognize mining sample and mine resource for export-import, General Department of Kerosene at the Upstream and Downstream, General Department of Energy (Incl. investment permission for electricity production, investment for transfer network and electricity distribution, permission for transfer of investment right for production, transmission network and electricity distribution and permission to study and delay of production, transmission network and electricity distribution project. The service fees range from 1 million riel to USD1 million. Category two transaction fines in cash.
8	TT	Taxes and fees in the tourism sector	B	1	Joint Prakas (proclamation) dated 28 December 2012, singed by minister of tourism and minister of	Tourism	This proclamation allows MoT charge fee for all public service concerning tourism. Many tourism-related businesses of 15 types are listed with ranges of fee charges for public service depend on size of business.

* Financial solution which not mentioned in the BIOFIN catalogue.

No	INDEX	Solution Type	Level	Select	Related Policy	Sector	Remark
					economic and finance on public service provision of MoT.		Some of business activities relating to nature include camping, tourism operation and transport. Fee charge ranges from 15,000 KHR to 10,000,000 KHR.
9	TT	Levy airport taxes to offset GHG emission	B	1	There is no specific government policy.	Tourism, Transport and Environment	A levy of air ticket was raised, and now MoE has taken this action by surcharge of USD1 on one air ticket. The revenue collected from this source is allocated for Environmental and Social Fund (SEF) which managed by the MoE.
10	TFS	National Forestry Development Fund	A	1	Law on Forestry, dated 2003, Sub-Decree No. 46 on the National Forestry Development Fund	Forestry	NFDF is stipulated in article 62 of the forestry law in order to use for reforestation, forest management and protection, biodiversity conservation, CF management and human resource development in forestry sector. Fund sources for NFDF are from government budget, ODA, charity wildlife conservation fee, premium on forest products and by-products and other forestry-derived revenue sources. NFDF is managed by National Forestry Development Committee, and co-chaired by ministers of MAFF and MEF. The amount of budget collected for NFDF is regularly reported in the FA's annual report.
11	TFWI	Taxes and fees in the wildlife sector	A	1	Article 51 of the Law on Forestry, date 2003 Prakas No. 458 on the permit to export and import of wildlife, dated 22 October 2019	Forestry	Article 51 explicitly states that Wildlife Conservation Fee (WCF) shall be paid to the Forestry Development Fund, and Wildlife Royalty Fee (WRF) shall be paid to the National Budget. The amount of WCF and WRF shall be determined by joint Prakas between MAFF and MEF.
12	TFF	Taxes, Fees and Royalties in the Forestry Sector	A	1	Article 52 of chapter 11 of the Law on Forestry	Forestry	The article 52 states that individuals or legal entity harvesting forest products and by-products for commercial purposes within Permanent Forest Reserve (PSR) shall pay Royalties and premium to the national budget through FA. MAFF and MEF shall determine the royalties and premiums. Sub-decree no. 69, dated 28 April, 2016 required MAFF to transfer

No	INDEX	Solution Type	Level	Select	Related Policy	Sector	Remark
							2,636,080 ha. of conservation forested area and production forest area to MoE. So, beside CF, none of PSR is under the jurisdiction of MAFF.
13	GL	Community Finance (Forestry)	B	1	Community Forestry Regulation, dated 30 December, 2006	Forestry	Fund sources for Community Forestry Development Fund (CFDF) can be from NFDF, monthly contribution of CF members, revenue from the sale of timbers and NTFPs within CF, charity, NGO, ODA and other legal income sources. CFDF is managed by Community Forestry Management Committee (CFMC). CFDF is spent for forest protection, management, extension and development within CF, as well as assisting poor people and CF members who get accidents. Community Forestry Credit (CFC), or can be regarded CF Trust Fund, has been piloted by RECOFTC at 21 CF sites by end 2018 (RECOFTC). RECOFTC gives money (USD1,000 or more) to CFMC, and this money is lent to CF members who are active in CF management with interest rate of 1% per month. Revenue collected from interest is used for operating CF management. If More money is added to CFMC, more money is lent to CF members for interest, and more revenue is collected for CF management. This CF credit model provides three simultaneous benefits - money can be used by CF members without collateral, with low interest rate, and revenue generated from interest is used for operating theirs CF without fiscal year. However, there is a question that if RECOFTC ends project at the target CF site, who will continue such facilitation with CFMCs.
14	GL	Community Finance (Mini Trust Fund for Fish Conservation	B	1	Pilot program on sustainable financing for conservation and management of fisheries resources has been upscaled based on previous	Fisheries	The mini Trust Fund for FCAs is initiated by conservation NGOs in order to secure long term fund for management operation, in particular expenses for food and fuel for patrol. For instance, CFi committee at Ou Chrolang CFi, Ou Mreas commune, Siem Bok district, Stung Treng province received money in the

No	INDEX	Solution Type	Level	Select	Related Policy	Sector	Remark
		Areas)			success. There is no specific government policy.		amount of 20 million riels from IUCN country office under mini Trust Fund for FCAs, and this money is transferred to local bank, LOLC (Cambodia) Plc., as fixed deposit for interest rate of 9%. Income generated from interest is utilized for fisheries management at O Chrolang CFi. The use of the fund is monitored by IUCN and local Fisheries Administration. If misuse of this fund is identified and cannot be resolved, IUCN reserves right to transfer this fund to another CFi.
15	GL	Community Finance (Community-based Eco-tourism)	B	1	There is no specific government policy.	Tourism	CBET is established in order to generated revenue for local community who directly manage their natural resources, for instances CF, CFi or CPA. Up to end 2019, 79 CBETs have established countrywide. Revenues collected from tourism include entrance fee charge and other services like homestay, serving meal, guide and transport. CBET at Koh Samseb, Kratie province charges USD1 for entrance fee and also provides homestay service and boating. 50% of money from entrance fee is allocated for conservation, and another 50% is allocated for CF development. Whereas homestay and boat services, the owners contributed 20% of revenue to the committee cash box, and money is used for conservation and development based on internal discussion among the committee.
16	TFS	Protected Area Trust Fund (Trust Fund for the CCMNP)	A	1	Protected Area Law dated January 2008	Protected Areas	The Central Cardamom Mountains National Park trust fund is initiated by the CI, the international conservation NGOs, aiming at raising fund for conservation and protection of the Central Cardamom Mountains National Park. The target of this trust fund is to raise to US$10 million to ensure conservation is operated effectively. PAF is stipulated at article 32 of the PAs law, aiming for rehabilitation and restoration of degraded forest ecosystem within PAs. PA committee is established,

No	INDEX	Solution Type	Level	Select	Related Policy	Sector	Remark
							and co-chaired by the two ministers from MoE and MEF. Financial sources for PAF are derived from national budget, PA entrance and other service fees, environment endowment insurance, donations, assistance from national and international organizations and friendly countries, and assistance from international environment funds. However, as raised in the PA strategic plan, there has been lack of overall mechanism in place to mobilize revenues generated from fines, and taxes and external sources for operational expenses, infrastructure development and ecosystem restoration beyond the national budget allocation.
17	PBE	Enhance local budget execution	A	2	Prakas (Proclamation) on the Commune/Sangkat Financial Management System, dated 02 April 2002	Multiple	Commune Investment Funds (CIFs) is mainly utilized for commune development, prioritizing to physical infrastructure development, but can also be extended to include community and partnership forest in commune land use plans (CLUPs), as well as investment in CF/CPAs, for instances eco-tourism, and management of particular high value NTFPs.
18	TFWI	Penalties and fines for forestry and wildlife offenses	A	2	Article 90-101 of chapter 15 on forestry offenses and legal penalties of the Law on Forestry	Forestry	Transactional fees for the forestry offense are decided by the Prakas of MAFF. Transactional fee, fine imposed by court or proceeds from selling evidence is paid to national budget, and incentives are awarded to officers participated in suppression of specific forest offenses. The fines range from 10 to 100 million riels, depending on forest offense classes.
19	TFI	Penalties for illegal fisheries	A	2	Law on fisheries dated 20 March 2007	Fisheries	As explicitly stipulated in article 86, penalties include transitional fines, warning, seizing or suspension of license under competence of FiA, and imprisonment, fining, confiscation, destruction of evidence and compensatory damage under the competence of the court. The fines range from 500 thousand riels to 50

No	INDEX	Solution Type	Level	Select	Related Policy	Sector	Remark
							million riels.
20	TFF	Penalties for Natural resource offense in PAs*	A	1	Law on Protected Area, dated 2008, and proclamation on public service provision of MoE	Protected area, Forestry	As explicitly stipulated in article 57-63, chapter X of the PA law, and proclamation, natural resource offenses are fine based on scope of damage, ranging from 100,000 riels to 250,000,000 riels. All revenues generated from fines and penalties go to the national budget, and reward is paid to officers or citizens who participate in natural resource offenses. Based on 2019 annual report, transactional fees collected at 7 PAs were reported to be 475,280,000 riels.
21	TT	Penalties and fines for tourism operation*	B	2	Law on Tourism dated 2009	Tourism	Article 65 firmly stipulates that those who operate tourism business without tourism license shall be subject to transitional fines, ranging from 2 million riels in minimum to 20 million riels in maximum. In the Prakas (declaration) on public service of the Ministry of Tourism, No 997 determines service fee in the amount of 10 million riels for national resorts, 5 million riels for provincial resort and 250,000 riels for local resort. All service fee shall be paid to the national budget.
22	TNRR	Penalties for illegal mining exploration and operation*	B	2	Preah Reach Kram (Royal Decree) NS/RKM/0701/09, enacted on July 13, 2001	Mining	Chapter 8 provides inclusive statement on penalty, with fine ranged from 500,000 riels to 10,000,000 riels for those who operate mining activities at privately owned land without written agreement, or those license holders entering state-owned areas without written permission from competent agencies.

* Financial solution which not mentioned in the BIOFIN catalogue.

No	INDEX	Solution Type	Level	Select	Related Policy	Sector	Remark
23	TNRR	Penalties and fine for Kerosene operation*	B	3	Law on Kerosene management and Kerosene product dated 25 June 2019 of legislative 6	Energy, Mining	Chapter 7 provides that fine and penalty is defined by joint declaration of MME and MEF. As stated in articles 58-67, the fine made based on different cases such as kerosene exploration without prior agreement with MME, cause to environmental damage, lack of safeguard, fraud financial document, release of kerosene data without permission of MME and late submission of kerosene and any technical report. There are wide ranges of fines from a minimum of 200 thousand riels to maximum of 2,000 million riels.
24	CD	Corporate and corporate foundations' donation	B	1	The National Strategic Development Plan suggests to mobilize fund from difference sources including, private sector to achieve biodiversity targets.	Multiple	Private sector can be potential for fund mobilization for biodiversity conservation as there are many businesses depending on natural resources, for instances eco-tourism, hydropower, and large scale-agroforestry, etc. So, certain amount of contribution can be generated from these sectors. However, current fund contribution from private sector for biodiversity conservation is prevalent. In Cambodia, voluntary donation made by private sector for biodiversity conservation is little known. Currently, two hotels - the foreigner-owned Knai Bang Chatt hotel and Khmer-owned Veranda Natural Resort, of which are located just at foot fill of the Kep National Park. The two hotels have a contract with MoE to pay USD1 per room for overnight stay of the guest. Money collected from this donation will be used for management of Kep National Park. The reason the hotel owners agreed to pay USD1/room is because natural landscape of the park is part recreation in attracting tourists. This is a very good model for those who rely on nature for their business and can be upscaled in future to other areas.

No	INDEX	Solution Type	Level	Select	Related Policy	Sector	Remark
25	CM	REDD+	A	1	National REDD+ Strategic, 2017-2026; National Protected Area System Strategic Framework	PA/Forestry	RGC adopted REDD+ program in 2017. REDD+ program contains three phases of readiness, implementation and result based for GHG reduction. In Cambodia, REDD+ readiness was successfully initiated in 2012 in meeting UNFCC, Forest Reference Level (FRL) was completed in 2016. REDD+ program in Cambodia will be implemented at two levels - result-based payment mechanism of UNFCC for national level, and voluntary market-based REDD+ projects based on specific criteria. FCPF Carbon Fund is initiated to pay incentive to FCPF countries in exchange for their REDD+ effort, with the purpose to make standing more valuable then cut down (WB). Fund is provided to countries that accomplished verifiable emission reductions in their forests and wider land-use sectors. Cambodia is one of the 47 FCPF participant countries, and UNDP is selected as a delivery partner to implement this project in this country. The WB's FCPF REDD+ Readiness Project with budget amount of USD3.800.00 started in 2013 and ended in 2017.
26	CM	Voluntary climate financing	A	2	The Climate Change Strategic Plan 2014-2023 National REDD+ Strategy	Multiple	The National Biodigester Programme aims to reduce the dependence on fuelwood and fossil fuel for rural households by turning livestock manure into biogas for cooking and lighting. The project is certified by Gold Standard for its carbon credits and some financial return have been made to support the program from the sale of credits (http://nbp.org.kh/). The improved cook stove project intends to tackle the issue on forest degradation and inefficient use of fuel in Cambodia. The project generated more than 11 million USD in revenue from its supply chain and the sale of carbon credits which verified under VCS. The project has reduced CO2 emissions by 2.4 million

No	INDEX	Solution Type	Level	Select	Related Policy	Sector	Remark
							tonnes, equivalent to 22,000 hectares of Cambodian forest*. The Joint Crediting Mechanism (JCM) is another initiative between Japanese and Cambodian government to exchange carbon credits which generated from various projects in Cambodia such as Prey Lang JCM REDD+ project and other energy related projects.
27	PES	Payment for Ecosystem Service-state intermediation and /or fee	A	2	National Protected Area Strategic Management Plan (NPASMP), 2017-2031, Minister's Sor Chor Nor No. 1119 on the approval for piloting PES for Phnom Kulen National Park and Kbal Chhay Multiple Use Area by the Royal Government of Cambodia	PA	PES is one of financial solution mentioned in strategic objective 4 "*Strengthen Institutional Capacity and Collaboration*" of NPASNP. PES can be fee for water consumption, carbon credit, etc… Yet, it has not been formalized by RGC. Currently, WCS has piloted this scheme at the Kulen Promtep Wildlife Sanctuary on a condition that USD15/nest is paid to local community who has found bird nests, USD4.5/day/person is paid to a group of guardians with two members. A total of 211 bird nests of 6 threatened species were identified and protected in 2019. This initiative will be upscaled to other PAs in Cambodia. In addition, RGC through NCSD are facilitating to develop policy for PES in Cambodia, piloting at two PAs - Multiple Use Area of Kbal Chhay Prek Toek Sap in Preah Sihanouk province, and the Kulen National Park in Siem Reap province.
28	PES	Surcharge to tour agents for	B	1	Proclamation issued by MEF to allow Preah	Tourism	Administration of Preah Sihanouk province is in charge of collecting additional fee of US$2 for each tourist

* https://unfccc.int/climate-action/momentum-for-change/activity-database/dissemination-of-3-million-improved-cookstoves-in-cambodia-by-women-entrepreneurs-to-improve-lives-of-women-end-users

No	INDEX	Solution Type	Level	Select	Related Policy	Sector	Remark
		Koh Rong Sanloem island*			Sihanouk to collect surcharge fee from tour agency operating at Koh Rong Sanloem island		from tour agent. Additionally, many fund-raising options are identified for sustainable conservation and protection of the Koh Rong Sanloem. Such fund source can be from voluntary donation, additional fee charge for diving and boating, concession fee, souvenirs and Cambodian Bay Trust Fund (Hastings, J.G. & Yeang D., 2014).
29	TT	Entrance fees	A	2	The Law on Protected Area in 2008	PA, Tourism	Entrance fee in NPs is variable depending on PAs, and price set by private sectors in consultation with provincial department of environment.
30	TT	Climbing fees	B	2	There is no specific government policy.	PA	NPs can collect fees for services directly from tourists, for instance guiding service by ranger, camping.
31	TT	Filming and photography fees	B	2	There is no specific government policy.	PA	NPs can collect fees for services directly from these activities.
32	TT	Camping fees	B	2	There is no specific government policy.	PA	NPs can collect fees for services directly from tourists.
33	TFI	Taxes, Fees and Royalties in the Fisheries Sector	A	1	Law on Fisheries, dated 21 May 2006	Fisheries	As stipulated at article 65 of the fisheries law transportation of fisheries products for commercial purpose shall pay premium, whereby the rate of premium is determined by proclamation of ministers of MAFF and MEF.
34	TFI	Revenue generation from	A	1	Fisheries report in 2018	Fisheries	FiA can generate revenues from service provision and facility rental, of which include fish dai, income from

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No	INDEX	Solution Type	Level	Select	Related Policy	Sector	Remark
		fisheries service and facility rental					marine fisheries, immovable asset rental, public service, finance and revenue from state crocodile farm. Total revenue generated from all sources in 2018 was USD411,653. in 2018, FiA gathered revenue from Fish Dai in the amount of USD281,780.
35	GL	Community Finance (Mining Fund/Social Development Fund for Local Community)	B	1	The National Policy on Mineral Resources 2018-2028, dated May 2018	Mining	In the objective 3 on developing mineral resources and community RGC encourages mining companies to develop Mining Fund (MF) with financial resources derived from corporation profits and royalties in order to benefit local communities who are directly and indirectly affected by mining operations. Since many mining operation sites fall within PAs or forested areas, amount of this fund should be utilized for either forest restoration/biodiversity conservation or nature-harmonized community development, for instances agro-forestry, organic farms, or community-based ecotourism.
36	SST	Sustainability standard: products and processes	B	3	There is no specific government policy.	Agriculture, Protected Areas	Ibis Rice is part of the organic certification farming being initiated at KPWS. Members have to follow the rule set such as no forest land encroachment, hunting and pesticide application. What the community received from Ibis Rice is higher price of the rice from 200-400 riels, and benefit is shared to market committee 10%, village development 10% and member 30%. The ibis rice is also certified by Wildlife Friendly from the Wildlife Friendly Enterprise Network (WFEN) due to its contribution to protect the Giant Ibis is Cambodia's National Bird and one of 50 endangered species in the Northern Plains of the country (https://ibisrice.com/).
37	SST	Eco-label	B	2	Law on Tourism, dated 10 June 2009	Tourism	The Law on Tourism is in force on 10 June 2009, to encourage sustainable eco-tourism development. As

No	INDEX	Solution Type	Level	Select	Related Policy	Sector	Remark
							stated at article 27 of Chapter 5 on "*Quality Assurance, Standards and Licensing*", MoT establishes Eco-label to award to tourism operators who comply with environmental standards of MoE. Those who receive Eco-label will pay low tourism license fee, as well as other benefits and incentives.
38	SST	Sustainability standard: finance sector	B	2	Cambodian Sustainable Finance Principles Implementation Guidelines	Multiple	In 2019, the Association of Banks in Cambodia (ABC) produced a guiding document entitled "*Cambodian Sustainable Finance Principles Implementation Guidelines*", with the aim to protect the environment, people and cultural heritage. With this aim, ABC sets principles to assess and manage environment, and protect critical natural resources.
39	HR	Human resources management	A	1	Building capacity of PA rangers and staff is one of prioritized areas as mentioned in the PA.	Multiple	In the National Protected Area Strategic Management Plan 2017-2023, MoE's GDANCP pressed the urgent need for building capacity of staff and rangers and proposed that 300 rangers needed to be trained every year to assure effective management of PAs.