Title: Cambodia's "Carbon Forest": Project Development and Implementation

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Major	International Development and Environmental Analysis
Degree	MA
Course Title	
Type of Document	MA Thesis
Year	2009

Cambodia's "Carbon Forest"

Project Development and Implementation

GYM5480 Supervised Research Paper

Masters of International Development and Environmental Analysis

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June 15, 2009

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15/06/2009

Summary

The cardinal aim of this research paper is to understand how emissions trading schemes tied to deforestation could be developed and implemented in the Cambodian forestry sector. The paper also attempts to analyse the implications in terms of opportunities and constraints that such schemes would have on the forest-dependent communities and on biodiversity in general. Two emissions trading mechanisms are selected for this study: (i) the Clean Development Mechanism Afforestation and Reforestation (CDM-A/R) and (ii) the Reducing Emissions from Deforestation and Degradation in developing countries (REDD).

This research is mainly driven by three main reasons. First of all, Cambodia is classified as one of the countries with high forest cover and high deforestation rate (Angelson, Brown et al. 2009), thus stands to gain the most carbon credits from engaging in emissions trading schemes. Second, the implementation of such schemes will assist Cambodia in achieving its commitment of attaining above 60 percent forest cover (Hab 2009), sustainable development, poverty alleviation, and contribution to global fight against climate change. Third, the Cambodian government has recently noted an urgent need to develop more sustainable sources of funding to support the management of its protected areas and forestry in general (Grieg-Gran, de la Harpe et al. 2008).

A systematic literature review and policy analysis was carried out during the course of this research. Sources of information used in this paper spanned across academic publications, journal articles, intergovernmental organizations, environmental think tanks' guidelines, and newspaper articles. The information was then codified into separate categories for analyses.

The analysis and interpretation of the data collected is divided into five main sections. The first section provides an introduction to the global carbon trading schemes in the land use change and forestry sector: the CDM-A/R and the REDD. It examines the negotiating history leading to the global agreement in implementing these mechanisms as a way of reducing the anthropogenic greenhouse gas emissions. The second part reviews the forest land cover, locations, types, uses as well as some of the principle causes of deforestation and forest degradation in Cambodia. It briefly examines the overall estimates of greenhouse gas emissions in Cambodia as per sector with specific focus on emissions from the land use change and forestry sector. This section also

documents how Cambodia has utilized international conventions and schemes to deal with its national emissions.

The third section attempts to address the UNFCCC's procedures and technical requirements necessary for the development and implementation of CDM-A/R and REDD project activities in Cambodia. This section finishes with a discussion on the administrative complexity involved in designing these projects. The fourth section explores the potential benefits and risks that CDM-A/R and REDD projects might have on Cambodia's national forest governance, on forest-dependent communities and on biodiversity. It also outlines several suggestions to ensure the development and implementation of an equitable CDM-A/R and/or REDD project. The final section concludes the paper.

It is beyond the scope and length of this study to candidly analyse and confirm whether CDM-A/R or REDD project will equitably benefit all stakeholders involved because this paper has only managed to scratch the surface of one the most complex international agreements ever negotiated – and implemented. However, I believe this research has engendered various issues and future research agenda required to ensure a well-designed CDM-A/R or REDD project, one that not only contributes to reduced GHG emissions, but also provides opportunities to reform forest governance and alleviate rural poverty in Cambodia.

Declaration

This research paper contains no material that has been accepted for the award of any degree or diploma in any educational institutions and, to the best of my knowledge and belief, it contains no material previously published or written by another person, except where due reference is made in the text of the paper.

Signed:……..… Date: ……..

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Abbreviations and Glossary

Additionality
Reduction in emissions (by sources) or enhancement of removals (by sinks) that is additional to any that would occur in the absence of project activities (often referred to as 'business as usual') under the Kyoto Protocol agreement (such as CDM). This definition may be further broadened to include financial and technological additionally as well in the context of ensuring that the international community is funding projects/providing technical assistance that go above and beyond what they would already be providing.

Afforestation
As defined in the Marrakech Accords, direct human-induced conversion of land that has not been forested for a period of at least 50 years to forested land through planting, seeding, and/or the human-induced promotion of natural seed sources.

Annex I and Non-Annex I Countries
Under the Kyoto Protocol, national governments are separated into two general categories: developed countries, referred to as Annex I countries (who have accepted greenhouse gas emission reduction obligations), and developing countries, referred to as Non-Annex I countries (who have no greenhouse gas emission reduction obligations but may participate in the Clean Development Mechanism).

Baseline
The scenario described in the baseline study, included in the Project Design Document, which reasonably represents the anthropogenic emission by sources of greenhouse gases that would occur in the absence of the Project.

CDM - Clean Development Mechanism
A mechanism under the Kyoto Protocol designed to assist developed (Annex I) countries in meeting their emissions reduction targets. The mechanism reduces emissions through implementing projects in developing (Annex II) countries which are credited to the Annex I countries who finance and implement the project. The CDM aims to not only reduce emissions or increase sinks but also contribute to the sustainable development of the host country.

CDM-A/R – Clean Development Mechanism – Afforestation and Reforestation Project
CDM-A/R is one of the CDM project activities which include afforestation and reforestation activities on degraded land.

CERs – Certified Emission Reductions
CERs refer to units issued pursuant to Article 12 of the Kyoto Protocol and the Kyoto Protocol Rules, and 1 CER is equal to one metric tonne of CO_2 equivalent.

CDM Executive Board
The executive board of the Clean Development Mechanism that is established pursuant to the Kyoto Protocol Rules.

Certification
The written assurance by the Designated Operational Entity that the Project has achieved the GHG Reductions as reported in the Verification Report.

CH_4 – Methane
A colorless, flammable, odorless hydrocarbon that is an important greenhouse gas.

CIFOR
Centre for International Forestry Research. See: http://www.cifor.cgiar.org

CO_2 - Carbon dioxide
A naturally occurring gas that is also a byproduct of burning fossil fuels and biomass, other industrial processes, and land-use changes. CO_2 is the principal anthropogenic greenhouse gas affecting the Earth's temperature.

CO_2-equivalent
The amount of CO_2 by weight emitted into the atmosphere that would produce the same estimated radiative forcing as a given weight of another GHG. One unit of carbon is equivalent to 3.664 units of carbon dioxide.

COP – Conference of the Parties
The supreme body of the UNFCCC or the Convention. It meets annually to review the implementation of the Convention, adopts decisions to further develop the Convention's rules, and negotiates new commitments.

Deforestation
The FAO defines deforestation as "the conversion of forest to another land use *or* the long-term reduction of the tree canopy cover below the minimum 10 percent threshold" (FAO 2001). Massive deforestation is ongoing and contributes to rising GHG emissions due to burning and loss of forests as carbon sinks. It is generally estimated that deforestation contributes to 1/5th of all global GHG emissions.

Degradation – Forest
Changes within the forest that negatively affect the structure or function of the forest stand or site, and thereby lower the capacity of the forest to supply products and/or services. With respect to REDD, degradation refers specifically to a reduction in carbon density.

DNA – Designated National Authority
DNA refers to the national authority acting on behalf of the Host Country and authorises private and/or public entities to participate in CDM project activities.

DOEs – Designated Operational Entities
DOEs refer to entities designated by the Conference of Parties (COP) / Meeting of Parties (MOP) based on the recommendation by the Executive Board as qualified to validate proposed CDM project activities and/or to verify and certify GHG Reductions.

Emission Reductions
Any right, interest, benefit or allowance to emit arising from or in connection with any reduction of GHGs by the Project below the Baseline and measured in metric tones of CO_2 equivalents as monitored in accordance with the Monitoring and Verification Plan.

EPA
U.S. Environmental Protection Agency. See: http://www.epa.gov.

FAO
Food and Agricultural Organization of the United Nations. See: http://www.fao.org.

FFI
Fauna and Flora International. See http://www.fauna-flora.org

Forest Carbon
It is defined in this paper as emissions generated from the land use change and forest sector.

GDP - Gross Domestic Product
The total value of goods and services produced by labor and property located in a given country.

GHG - Greenhouse Gas
Any gas that absorbs and re-emits infrared radiation into the atmosphere. The main greenhouse gases include water vapor (H_2O), carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O).

Gg – Gigagram
1 Gg is equal to 1,000 metric tons (Unit Conversion 2009)

ha – Hectare
1 ha is equal to 10,000 square meters (Unit Conversion 2009)

IPCC - Intergovernmental Panel on Climate Change
An organization established in 1988 by the World Meteorological Organization and the United Nations Environment Programme. It conducts rigorous surveys of the worldwide technical and scientific literature and publishes assessment reports widely recognized as the most credible existing sources on climate change.

IUCN
International Union for the Conservation of Nature. See: http://www.iucn.org

Kyoto Protocol
An agreement made under the United Nations Framework Convention on Climate Change (UNFCCC). Countries that ratify this protocol commit to reducing their emissions of carbon dioxide and five other greenhouse gases, or engaging in emissions trading if they maintain or increase emissions of these gases. The Kyoto Protocol now covers more than 170 countries globally but only 60% of countries in terms of global greenhouse gas emissions. As of December 2007, the US and Kazakhstan are the only signatory nations not to have ratified the act. The first commitment period of the Kyoto Protocol ends in 2012, and international talks began in May 2007 on a subsequent commitment period.See: http://unfccc.int.

Leakage
In the context of climate change, carbon leakage refers to an increase in GHG emissions in one project (or country) as a result of emissions reduction by a second project (or country). For example, if agricultural production is curbed in order to reduce emissions from deforestation in one region, carbon leakage may occur as another region increases its agricultural activity to replace the loss of production from the first region.

LUCF - Land-Use Change and Forestry
Refers to a sector within climate change mitigation activities. LUCF was included under the Kyoto Protocol to take into consideration certain human-induced activities that remove greenhouse gases from the atmosphere, also known as carbon "sinks". The following activities referred to in Article 3, paragraphs 3 and 4 of the Kyoto Protocol, as defined in paragraph 1 of

the annex to decision 16/CMP.1: afforestation, reforestation, deforestation, revegetation, forest management, cropland management, grazing land management.

N_2O - Nitrous Oxide
A GHG emitted through soil cultivation practices, especially the use of commercial and organic fertilizers, fossil fuel combustion, nitric acid production, and biomass burning.

Project Participants or Project Proponents
This means the legal entity or a person authorised by a legal entity whose project(s) may generate emission reductions and/or require environmental consulting services in Cambodia and is not party to this agreement but identified by the parties of this agreement.

REDD – Reducing Emissions from Deforestation and Degradation in developing countries
The REDD concept is predicated on the assumption that forests will contribute to climate change mitigation only if their value increases to a level that makes protecting forests consistent with viable development strategies.

Reforestation
UNFCCC CDM defines reforestation as "the direct human-induced conversion of non-forested land to forested land through planting, seeding and/or the human-induced promotion of natural seed sources, on land that was forested but that has been converted to non-forested land." For the Kyoto Protocol's first commitment period, reforestation activities will be limited to reforestation occurring on those lands that did not contain forest on 31 December 1989.

RGC
Royal Government of Cambodia. See: http://cambodia.gov.kh

R-PIN – Readiness Plan Idea Note
The purpose of this document is to: a) request an overview of your country's interest in the FCPF program, and b) provide an overview of land use patterns, causes of deforestation, stakeholder consultation process, and potential institutional arrangements in addressing REDD.

SBI – Subsidiary Body for Implementation
SBI helps to assess and review the Convention's implementation, for instance by analyzing national communications submitted by Parties. It also deals with financial and administrative matters.

SBSTA – Subsidiary Body for Scientific and Technological Advice
SBSTA provides advice to the COP on matters of science, technology and methodology, including guidelines for improving standards of national communications and emission inventories.

UNCED
United Nations Conference on Environment and Development. See: http://un.org/geninfo/bp/enviro.html

UNEP
United Nations Environmental Programme. See: http://unep.org

UNFCCC - United Nations Framework Convention on Climate Change
A treaty signed at the 1992 Earth Summit in Rio de Janeiro to which nearly all countries of the world have joined. See: http://unfccc.int.

Validation
The assessment by a Designated Operational Entity of the project design, including its Baseline, to determine the compliance of the Project with the Kyoto Protocol Rules.

Verification
The periodic independent review and ex post assessment by a Designated Operational Entity of the monitored GHG reductions that have occurred as a result of the Project during a specified Year, being carried out in conformity with the Monitoring and Verification Plan and in a manner fully consistent with the Kyoto Protocol Rules.

VERs – Voluntary or Verified Emission Reductions
VERs refer to units issued after a recognized verifying authority or entity certifies the GHG reductions with 1 VER equals to one metric tonne of CO_2 equivalent.

World Bank's FCPF readiness mechanism
Under the World Bank's Forest Carbon Partnership Facility (FCPF), the readiness mechanism refers to assistance to 20 forest-rich developing countries to prepare for implementation of a pilot carbon finance mechanism for REDD. Readiness activities include establishing a credible estimate of national forest carbon stocks, sources of forest emissions, and defining reference scenarios based on past emissions rates.

WMO
World Meteorological Organization. See: http://wmo.ch

Sources:
UNFCCC (http://unfccc.int/siteinfo/glossary.html);
EIA (http://www.eia.doe.gov/glossary/glossary_main_page.htm);
IEA (http://www.iea.org/Textbase/stats/defs/defs.htm);
World Bank (www.worldbank.org/data/);

1 Problem Statement and Introduction

Using formal economic models, Stern (2007) estimated that without anthropogenic intervention, the overall costs and risks of climate change will be equivalent to losing at least 5 percent, to a maximum 20 percent, or more, of global gross domestic product each year, whereas the costs of action to reduce greenhouse gas (GHG) emissions to avoid the impacts of climate change can be limited to approximately 1 percent. Stern also specified four strategic elements of future international frameworks to abate the consequences of climate change: (i) emissions trading schemes, (ii) technology cooperation, (iii) action to reduce deforestation, and (iv) adaptation strategies (Stern 2007).

Firstly, he stated that expanding and linking emissions trading schemes is an effective means to promote cost-effective reductions in emissions and to stimulate actions in developing countries where strong targets in developed countries could generate flows of billions of dollars annually to support the transition to low-carbon development. Secondly, he argued that increasing the support for research and development and deployment of innovative low-carbon technologies as well as promoting international product standards through informal coordination and formal agreements can bolster energy efficiency (Stern 2007). Third, Stern argued that reducing deforestation is also a cost-effective way to reduce emissions since the loss of natural forests around the world contributes more to global emissions each year than the transport sector. Finally, climate change needs to be fully integrated into development policy, and developed countries must honour their commitment to increase support through overseas development assistance to improve regional information on climate change impacts and to enhance research on crop varieties that will be more resilient to drought and flood (Stern 2007).

1.1 Research Objectives

Following Stern's suggestions regarding expanding emissions trading schemes tied to reducing deforestation, the cardinal aim of this research paper is to understand how emissions trading schemes could be developed and implemented in the Cambodian forestry sector. The paper also attempts to analyse the implications in terms of opportunities and constraints that such schemes would have on the forest-dependent communities and the biodiversity in general. In other words,

this research paper addressed three of the four (i, iii, and iv) suggestions that Stern recommended.

This research is mainly driven by the fact that Cambodia, according to Angelson and Brown et al. (2009), is classified as one of the countries with high forest cover and high deforestation rate. Based on the Global Forest Resources Assessment of the Food and Agriculture Organization of the United Nations (FAO 2005), Cambodia contains an estimated 15 million hectares of forest, which is about 59 percent of the country's land area, and deforestation is occurring at 219,000 ha or 2 percent per year between 2000 and 2005. Secondly, it is believed that the implementation of emissions reduction scheme(s) in this sector will assist Cambodia in achieving its commitment of attaining above 60 percent forest cover (Hab 2009), sustainable development, poverty alleviation, and contribution to global fight against climate change. In addition, the Cambodian government has recently noted an urgent need to develop more sustainable sources of funding to support the management of its protected areas and forestry in general (Grieg-Gran, de la Harpe et al. 2008).

Some of the current forest carbon policy includes Reducing Emissions from Deforestation and Degradation in developing countries (REDD) activities, forest conservation activities, and the Clean Development Mechanism Afforestation and Reforestation (CDM-A/R). Two emissions trading schemes are investigated in this paper – REDD and CDM-A/R. While CDM mechanism financially incentivize countries for carbon sequestration via afforestation and reforestation, REDD would theoretically pay countries for avoiding deforestation. The CDM-A/R scheme is chosen because of two main reasons. The first is because Cambodia is a developing country or a non-Annex I country according to the United Nations Framework Convention on Climate Change's (UNFCCC 1997) classification, and thus only applicable for participation in implementing CDM related project activities. Second, CDM to date is considered to be the most successful and popular emissions reduction scheme based on the number of project activities registered under the mechanism (UNFCCC 2009).

The REDD mechanism is selected first of all because of its growing popularity since an official proposal on REDD was submitted at the UNFCCC 11th Conference of the Parties (COP) in 2005, Montreal (Cortez and Stephen 2009). Secondly, REDD is an interesting mechanism to explore because of the growing support from both public and private sectors coupled with the anticipation for an agreement to be reached in the upcoming 15th UNFCCC COP in Copenhagen later this year (Angelson, Brown et al. 2009).

To achieve the aim of this research, the paper will address the following specific objectives:

1. To review Cambodia's land use change and forestry sector and its GHG emissions
2. To document in details the technical descriptions, procedures, methodologies, and requirements for developing and implementing a CDM-A/R and REDD project
3. To examine both the positive and negative implications of such projects on the Cambodian forest-dependent communities, biodiversity and forest governance.
4. To recommend further research agenda required to ensure that the benefits from any CDM-A/R and/or REDD project will be equitably distributed amongst the stakeholders.

1.2 Research Method

This research paper is the result of a systematic literature review and policy analysis from various sources spanning academic publications, journal articles, intergovernmental organizations, environmental think tanks' guidelines, and newspaper articles. The process started with me browsing through library databases with such key words "Clean Development Mechanism", "Climate Change", "Economic of Climate Change", "Land Use Change and Forestry", "Emission Reductions Schemes", "Climate Change and Forests", and "Emissions Trading". I later visited the UNFCCC, International Union for Conservation of Nature (IUCN), Centre for International Forestry Research (CIFOR), World Bank, FAO, Cambodian Ministry of Environment, and other relevant intergovernmental organizations' websites to obtain their publications on issues related to CDM and REDD project activities.

The information was then codified into six categories: (i) introduction and science of climate change; (ii) negotiating history of the Kyoto Mechanisms with particular focus on the CDM and the REDD activities; (iii) project development and implementation instruction manual for each mechanism; (iv) Cambodian forest and its management; (v) implications or complications of such project in terms of its technicality, social considerations, biodiversity considerations; and (vi) others.

1.3 Thesis Structure

This report is organized into five major sections. The first section begins with a brief introduction to the science of climate change. It then attempts to provide a comprehensive introduction to the history, purposes, and relevant justifications for the implementation of CDM and REDD projects. It also offers in brief the description of the UNFCCC and the Kyoto Protocol. The second section reviews the Cambodia's GHG emissions, with specific attention to emissions from land use change and forestry sector, based on the IPCC's 1994 inventory. Then, it briefly documents the history of land use change and forest management in Cambodia. The final part of this section traces the potentials of implementing CDM-A/R and/or REDD project in the Cambodian forestry sector.

The third section which constitutes a major part of this paper reviews the technical procedures required to develop CDM-A/R and REDD projects. It also addresses the issues related to the administrative complexity involved in the development of such projects. The fourth section then discusses the implications that these kinds of projects will have on Cambodia's forest-dependent communities, ecosystem, and biodiversity. It also suggests several recommendations to ensure the development and implementation of an equitable CDM-A/R and or REDD project. The final section concludes the paper.

2 The United Nations Institutions Dealing with Climate Change

The primary aim of this chapter is to provide an introduction to the global carbon trading schemes in the land use change and forestry sector: the CDM-A/R and the REDD. It examines the negotiating history leading to the global agreement in implementing these mechanisms as a way of reducing the anthropogenic greenhouse gas emissions. However, it is essential to begin this discussion with the understanding of the basic mechanism of climate change, the global drivers of anthropogenic greenhouse gas emissions, and the international institutions established to combat this problem.

2.1 Science of Climate Change

In 1896 Swedish chemist Svante Arrhenius described the basic mechanism of greenhouse effect, and since then our understanding of how human induced activities influencing the climate and possible consequences of this has significantly improved (Arrhenius 1896). According to Cameron and Zillman (2001), the greenhouse effect is caused by the Sun's radiation that is reflected off the Earth's surface and trapped by carbon dioxide (CO_2) and other greenhouse gases (GHGs) such as Nitrous Oxide (N_2O) and Methane (MH_4) in the atmosphere. This natural greenhouse effect increases the global mean temperature to about 15 degree Celsius, warm enough to sustain life on earth. However, with fossil fuels burning and more GHGs releasing into the atmosphere, humans have altered this basic mechanism leading to an additional human induced greenhouse effect known as "global warming" (Oberthèur and Ott 1999). This term "global warming" is often used interchangeably with the term "climate change", but according to the National Academy of Sciences, the term 'climate change' is growing in preferred use to 'global warming' as it helps convey that there are other changes besides rising temperatures (Environmental Protection Agency 2009).

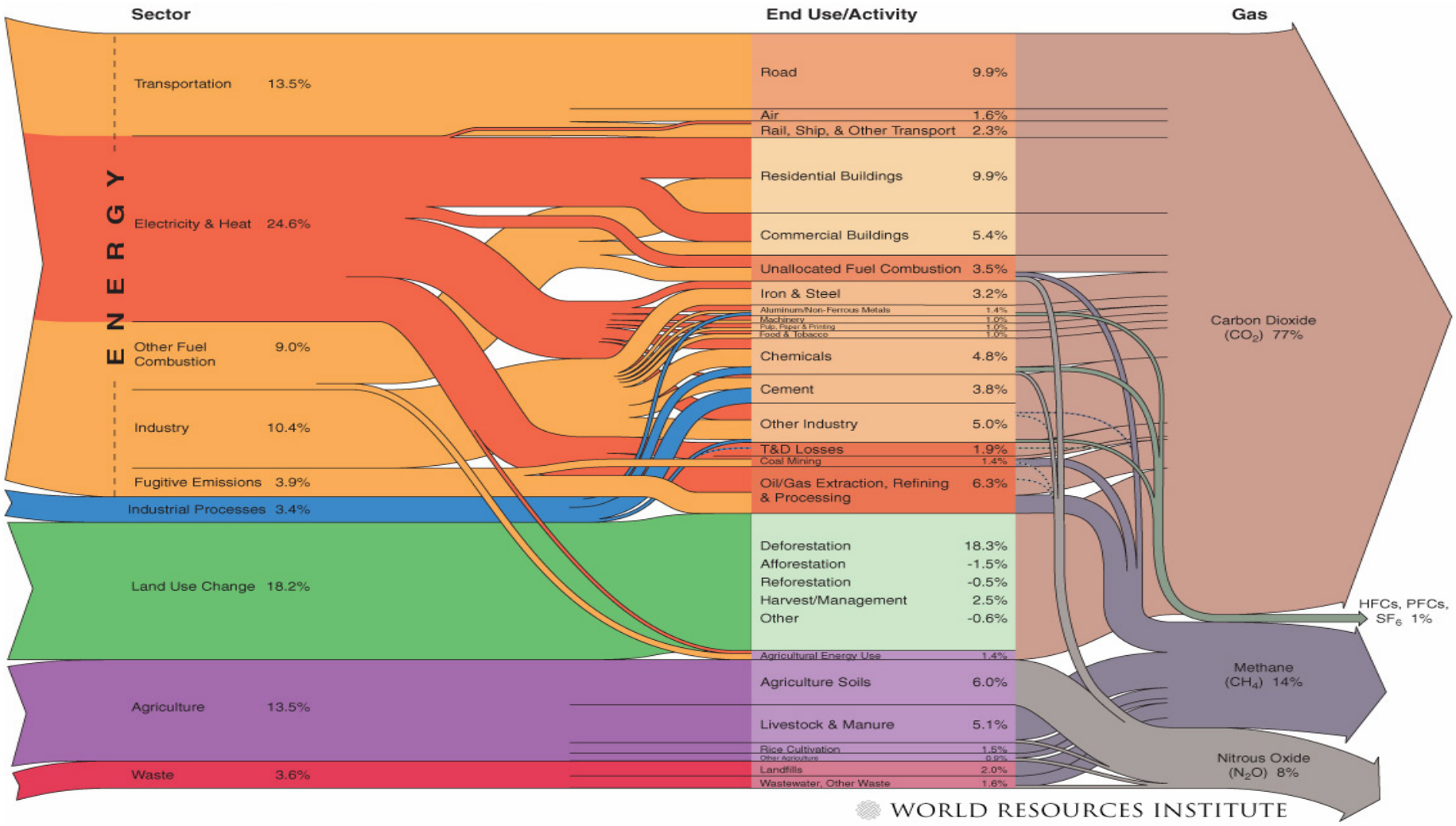
According to Parry (2007), climate change refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer), whereas global warming is an average increase in the temperature of the atmosphere near the Earth's surface and in the troposphere, which can contribute to changes in global climate

patterns. Global warming and climate change can be caused by a variety of factors, both natural and human-induced. The authoritative assessment of the state of the science of climate change, its impacts and its economic and social dimension is provided by the Intergovernmental Panel on Climate Change (IPCC), which was set up in 1988 by the United Nations Environmental Programme (UNEP) and the World Meteorological Organization (WMO). It regularly reviews the states of scientific knowledge on climate change (Lütken and Michaelowa 2008). According to the Fourth Assessment Report of Working Group II of the IPCC, it stated that based on the consistency between observed and modelled changes in several studies and the spatial agreement between significant regional warming and consistent impacts at the global scale, it is sufficient to conclude with high confidence that anthropogenic warming over the last three decades has had significant influence on many of the Earth's physical and biological systems (Parry 2007).

2.2 Drivers of Global Anthropogenic Emissions Growth

Greenhouse gas emissions come from almost every aspect of society including transportation, agriculture, land-use change and forestry, industry, waste, and many other activities. Figure 2.1 presents a diagram which conveniently summarizes the sources of the different greenhouse gases indicating the extent of these activities, and the relative contributions from particular sectors, end-uses, and gases. As outlined in the Figure, the causes of climate change are diverse, but an estimated 18.2 percent of global GHG emissions are attributable to land use change and forestry, making it second only to emissions from electricity and heat (Baumert, Herzog et al. 2005). CO_2 emissions from this sector derived from such activities as land clearing for permanent croplands (cultivation) or pastures (no cultivation), abandonment of croplands and pastures (with subsequent regrowth), shifting cultivation, wood harvest (industrial and fuel wood), and deforestation driven by the conversion of forest to agricultural lands, primarily in developing countries (Houghton 2003).

Figure 2.1 The Greenhouse Gas Flow Diagram: Global Greenhouse Gas Emissions



Source: Navigating the Numbers: Greenhouse Gas Data and International Climate Policy (2005)

2.3 Overview of the UNFCCC and Kyoto Protocol

The spectre of global warming became increasingly recognized in the 1980s, and was a key item for discussion at the 1992 UN Conference on Environment and Development aiming to promote the intergenerational efforts in environmental protection in line with economic and social development (Yamin 2005). One significant outcome of the conference was the United Nations Framework Convention on Climate Change or the UNFCCC (Bodansky 1993). According to Yamin (2005), the UNFCCC establishes an objective, guiding principles, commitments and institutional provisions to actualize the international response to climate change. For instance, Article 2 of the Convention establishes an ultimate objective for the Parties to stabilize GHG concentrations in the atmosphere at a level that would mitigate devastating anthropogenic interference with the climate system (United Nations 1992).

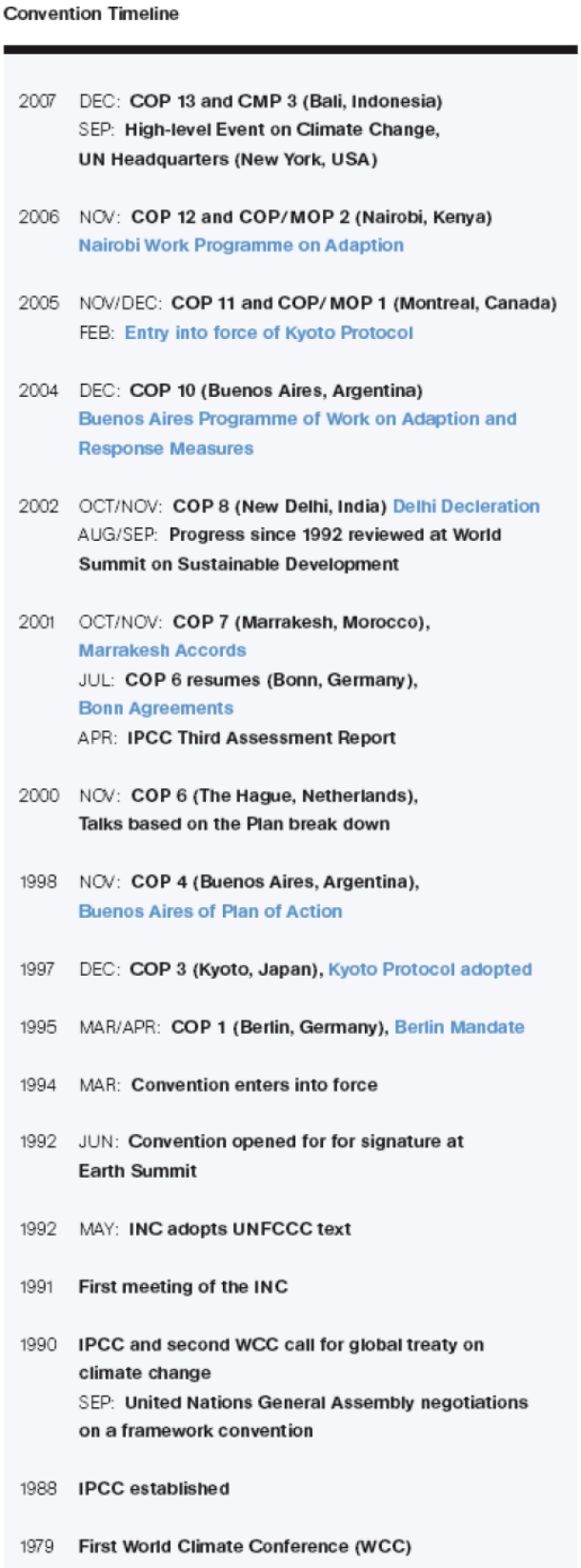
The main institutions under the UNFCCC are the Conference of the Parties (COP), the Secretariat, the Subsidiary Body for Implementation (SBI), the Subsidiary Body for Scientific and Technological Advice (SBSTA), and the Financial Mechanism operated by the Global Environment Facility (United Nations 1992). The COP is the main policy-making body that meets annually and provides chief forum for international discussions on climate change (Yamin 2005). In addition, the SBSTA provides advice to the COP on matters of science, technology and methodology, including guidelines for improving standards of national communications and emission inventories. The SBI is designated to help assess and review the Convention's implementation, for instance by analysing national communications submitted by Parties. It also deals with financial and administrative matters (Cortez and Stephen 2009). Separate to the UNFCCC, the IPCC is an independent scientific network with a separate legal existence. It supports the regime by liaising with SBSTA and by providing advice and technical support through its main assessment reports and work on methodological and technical issues, such as the preparation of GHG inventories (Parry 2007).

The first session of the COP, held in Berlin in 1995 (Figure 2.2), agreed that the mitigation commitments of Annex I Parties or developed countries were inadequate and set in motion negotiations that led to the adoption by COP-3 of the 1997 Kyoto Protocol (Oberthèur and Ott 1999) The rationale of the Protocol is to strengthen the mitigation commitments of Annex I

Parties by establishing legally binding targets for Annex I Parties to reduce their emissions by 5 percent below 1990 levels in the commitment period 2008-2012 (UNFCCC 1997).

Three mechanisms were established under the Kyoto Protocol to allow different kinds of partnerships between Parties towards compliance with Annex I Parties' commitments (Figure 2.3). Two of the Kyoto Mechanisms - Joint Implementation and Emissions Trading - cover Annex I Parties with binding quantitative commitments, while the third – Clean Development Mechanism (CDM) covers projects involving non-Annex I Parties without quantitative commitments and Annex I Parties (UNFCCC 1997). This implicates that the only channel available for developing countries' participation in the global emission trading schemes is via the CDM.

Figure 2.2 Timeline of key events in the UNFCCC process.



Convention Timeline

2007 DEC: **COP 13 and CMP 3 (Bali, Indonesia)**
SEP: **High-level Event on Climate Change, UN Headquarters (New York, USA)**

2006 NOV: **COP 12 and COP/MOP 2 (Nairobi, Kenya)**
Nairobi Work Programme on Adaption

2005 NOV/DEC: **COP 11 and COP/ MOP 1 (Montreal, Canada)**
FEB: **Entry into force of Kyoto Protocol**

2004 DEC: **COP 10 (Buenos Aires, Argentina)**
Buenos Aires Programme of Work on Adaption and Response Measures

2002 OCT/NOV: **COP 8 (New Delhi, India) Delhi Declaration**
AUG/SEP: **Progress since 1992 reviewed at World Summit on Sustainable Development**

2001 OCT/NOV: **COP 7 (Marrakesh, Morocco),**
Marrakesh Accords
JUL: **COP 6 resumes (Bonn, Germany),**
Bonn Agreements
APR: **IPCC Third Assessment Report**

2000 NOV: **COP 6 (The Hague, Netherlands),**
Talks based on the Plan break down

1998 NOV: **COP 4 (Buenos Aires, Argentina),**
Buenos Aires of Plan of Action

1997 DEC: **COP 3 (Kyoto, Japan), Kyoto Protocol adopted**

1995 MAR/APR: **COP 1 (Berlin, Germany), Berlin Mandate**

1994 MAR: **Convention enters into force**

1992 JUN: **Convention opened for for signature at Earth Summit**

1992 MAY: **INC adopts UNFCCC text**

1991 **First meeting of the INC**

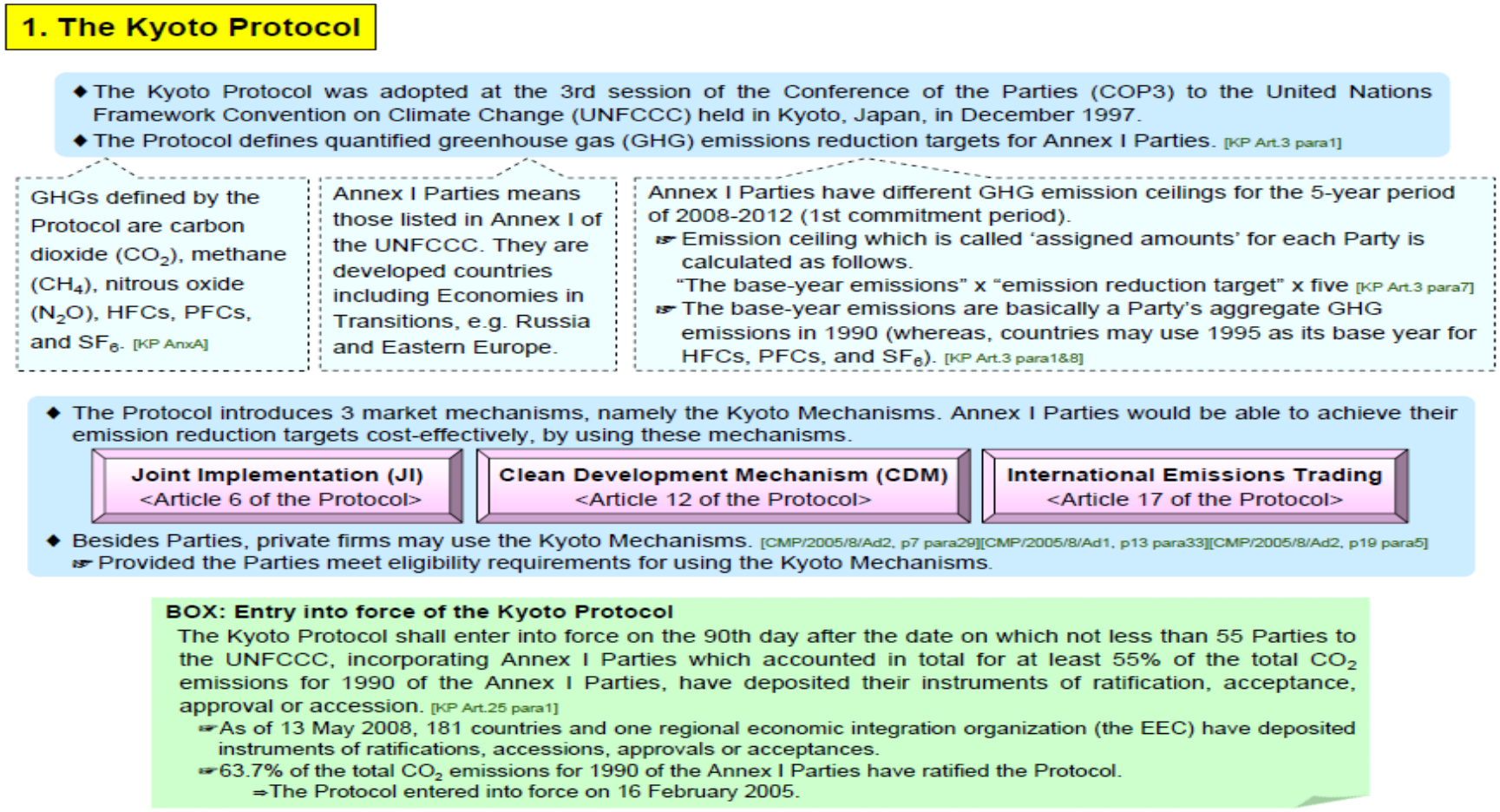
1990 **IPCC and second WCC call for global treaty on climate change**
SEP: **United Nations General Assembly negotiations on a framework convention**

1988 **IPCC established**

1979 **First World Climate Conference (WCC)**

Source: Uniting on Climate: A Guide to the Climate Change Convention and the Kyoto Protocol (UNFCCC 2007)

Figure 2.3 Kyoto Protocol and Kyoto Mechanisms



Source: CDM in Charts Ver. 6.0 (Mizuno 2008)

2.4 The Origins of CDM and REDD

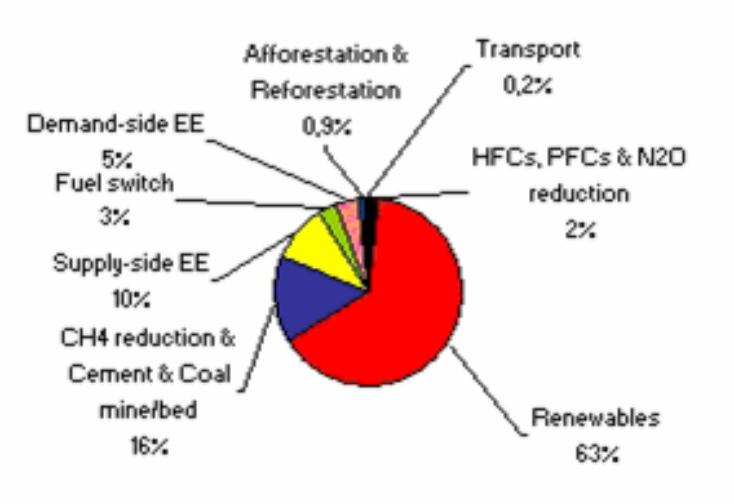
2.4.1 CDM

The CDM has its roots in the proposal for a Clean Development Fund advocated by Brazil, which originally contained two elements. First, the Brazilian proposal suggested a complicated methodology for assigning emission ceilings to individual industrialized countries. Second, Brazil proposed the establishment of a Clean Development Fund financed by contributions from non-compliant industrialized countries at a fixed rate per ton of carbon equivalent above the level of assigned amounts (Oberthèur and Ott 1999).

Any developing countries would be able to apply for funding of specific projects, but would only be eligible for a limited share of the overall amount available. These limits were to be differentiated according to the level of emissions implying that the biggest developing country emitters like Brazil would thus have been eligible for the largest shares of the funding (UNFCCC 1997). This requirement was subject of severe criticism since it left little resources for small and least developed countries. For this, the restrictive element of the Brazilian proposal would need to be dropped. However, the United States was interested in the geographical flexibility of the Brazilian proposal for the implementation of Annex I Parties' commitment, and proposed that industrialized countries would provide resources to acquire emission credits in advance to *any* compliance assessment (Oberthèur and Ott 1999). Thus, the idea of the CDM was born.

Article 12 of the Kyoto Protocol reflects the purposes of CDM projects stating that on the one hand the CDM is to assist non-Annex I countries in achieving sustainable development and in contributing to the ultimate objective of the Convention, on the other the CDM shall assist Annex I countries in achieving compliance with their quantified targets under Article 3 (UNFCCC 1997; Oberthèur and Ott 1999). Quintessentially, according to Werksman (2000) the CDM enables industrialized countries that invest in projects in developing countries to use the GHG emission reductions accruing from such projects to compensate a part of their commitments under Article 3 of the Protocol. Interestingly, the CDM is the only means by which developing countries can participate in the Kyoto markets (Cortez and Stephen 2009). The percentage of different types of CDM projects registered under the UNFCCC CDM project pipeline is summarized in Figure 2.4.

Figure 2.4 Percentage of different CDM projects registered at the UNFCCC



Source: CDM/JI Pipeline Analysis and Database (UNEP Risoe Center 2009)

As illustrated in Figure 2.4, despite the huge contribution that deforestation and degradation make to global carbon emissions, existing regulated carbon market mechanisms relating to forestry in developing countries – CDM – include only afforestation and reforestation projects, which sequester carbon from the atmosphere as trees grow. The reasons for this exclusion include technical issues, moral hazard and high risks (Peskett, Huberman et al. 2008). According to Geist and Lambin (2001), some of the technical issues concern (1) difficulties in estimating carbon emissions from deforestation and especially degradation (which can be hard to monitor using remote sensing techniques); (2) difficulties in understanding the drivers of deforestation and forest degradation which can be due to diverse, layered and linked factors, such as timber extraction, agricultural expansion, urban sprawl and the opening of new roads; and (3) difficulties in establishing 'additionality' – what would have happened in the absence of the project or programme.

In terms of moral hazard, the concern centres around the issue that forests in the developing world are used as a convenient way of tackling climate change, instead of developed countries taking on deeper cuts in their own emissions and making genuine changes in energy consumption within their own societies (Peskett, Huberman et al. 2008). This is a general concern that has contributed to limited investment in A/R projects and is contributing to some of the concerns surrounding REDD. Furthermore, it is argued that inclusion of deforestation and forest degradation will incur further complications or risks particularly related to (1) potential non-permanence of emissions reductions which is likely to be linked to human causes; (2) large

volumes of credits destabilising carbon markets and reducing prices; (3) leakage of emissions by displacement of deforestation and forest degradation activities to other areas; and (4) forest conservation is a sensitive issue that attracts high levels of international attention and public scrutiny (May, Boyd et al. 2004).

Nevertheless, CDM projects can be classified into two categories: (1) projects that reduce greenhouse gas emissions entering into the atmosphere such as renewable energy projects, replacing fossil fuel energy projects, energy efficiency projects, and carbon capture and storage projects; and (2) projects that remove greenhouse gases from the atmosphere, thus mainly being carbon sequestration projects such as afforestation and/or reforestation projects (UNEP Risoe Center 2009). While there were many political reasons for the inclusion of GHG removal projects in the CDM projects (Meinhausen and Hare n.d.), there were also complex technical issues such as measurement of uncertainties and the temporary nature of sinks projects. The Bonn Agreements brokered a compromise that only afforestation and reforestation projects would be included in the CDM (Yamin 2005); these are called CDM-A/R. The complete technical description of CDM-A/R will be presented later in the paper. Internationally, there are 5 CDM-A/R projects currently registered under the UNFCCC (UNFCCC 2009).

2.4.2 REDD

The REDD concept, the original appellation “compensated reductions”, was first introduced at COP-9 by a group of scientists who developed the mechanism as a national approach to reducing deforestation (Environmental Defense and the Instituto de Pesquisa Ambiental da Amazonia 2007). The proposal asserted that countries should be compensated for measurable reductions in their deforestation rate compared to a historical national reference level of deforestation. That is, if a country reduced its deforestation rate below this reference rate, it would generate credits that it could sell in the carbon markets (Cortez and Stephen 2009).

Later, at the 11th session of COP-11 in Montreal, Costa Rica and Papua New Guinea on behalf of the Coalition of Rainforest Nations submitted an official proposal on REDD, which was endorsed by most Parties because of its new focus on a national accounting approaches and the growing awareness of the contribution of deforestation to overall carbon emissions (Cortez and Stephen 2009). The submission resulted in the launching of a two-year process to design an effective REDD mechanism based on the documentation and exchange of relevant scientific, technical, and methodological considerations and experiences, including policy approaches and

positive incentives (Cortez and Stephen 2009). According to the Little REDD Book, numerous proposals for REDD mechanisms (more than 30) have been submitted to the UNFCCC's SBSTA. The proposals differ in key ways, but all present approaches for payment for measurable, reportable, and verifiable emission reductions from REDD activities (Global Canopy Foundation 2008).

Providing financial incentive for forest conservation through international financial transfers connected with carbon or REDD is a concept of high interest on the current international climate agenda (Institute for Global Environmental Strategies 2008). The logic of REDD is that countries that are willing and able to reduce emissions from deforestation should be financially compensated for doing so (Scholz and Schmidt 2008). Some of the main observations and assertions for promoting REDD include (a) deforestation is the second largest source of anthropogenic CO_2 emissions after fossil fuel combustion (Rogner, Zhou et al. 2007), (b) REDD is a relatively low cost mitigation option that would lower the economic costs of achieving global emissions reductions and is thus a highly cost-effective way to reduce emissions (Stern 2006), and (c) the carbon mitigation benefits of REDD over the short term exceed the benefits from afforestation and reforestation (IPCC 2007). The technical procedures required to develop REDD project will be discussed in the later part of the paper. REDD demonstration activities or pilot projects are currently undergoing in several countries including Cambodia. The activities are undertaken by the World Bank's Forest Carbon Partnership, the Kalimantan Forests and Climate Partnership, and the UN-REDD Programme (UNFCCC 2009).

3 Forests and Greenhouse Gases in Cambodia

There are three main purposes in this chapter. First, it is to review the forest land cover, locations, types, uses as well as some of the principle causes of deforestation and forest degradation in Cambodia. Second, it briefly examines the overall estimates of greenhouse gas emissions in Cambodia as per sector with specific focus on emissions from the land use change and forestry sector. Third, this section documents how Cambodia has utilized international conventions and schemes to deal with its national emissions.

3.1 Cambodia's Forest

Cambodia's forests constitute a significant part of the country's land cover and are predominantly distributed (i) in the north-eastern part of the country, bordering Lao and Vietnam, covered by a lowland tropical moist forest and deciduous dipterocarp forest; (ii) in the hilly country around the Gulf of Thailand and West of the Mekong River, covered by a medium-altitude closed forest; (iii) in the north and north-western part of the country covered by a mix of closed deciduous forests and open forests (Figure 3.1) (World Bank Carbon Finance Unit 2009). Four main forest types are recognized in Cambodia: evergreen forest, semi evergreen forest, deciduous forest, and other forest class which combine regeneration, stunted forests, mangroves, flooded forests, forest plantation and bamboo (Sawada, Araki et al. 2007).

The Remote Sensing and Geographic Information System Unit within the Forestry Authority's Watershed Management and Forest Land Office conducted the forest cover change assessment using Landsat ETM+ data. Independent quality assurance and data verification was carried out by the University of Copenhagen (Technical Working Group Forest and Environment 2007). According to the study, during the 1960s Cambodia's forests covered 73 percent of the total land area of the country (Table 3.1). However, based on the World Bank report dated January 8, 1999, the forest cover for the year 1997 and 1998 had decreased to 58 percent of the total land area. The reduction has been attributed mainly to commercial logging and agricultural encroachment. The annual deforestation rate between 1993 and 1997 is estimated at 140,000-175,000 hectares (World Bank 2009).

Under its 2002 Forestry Law, Cambodia's forest is divided into the permanent forest reserve, private forests, and protected areas. The permanent forest reserve is state public property and

falls under the jurisdiction of the Forestry Administration (Forestry Administration 2007). It is divided into 1,434,032 hectares of protected forests (8 percent of the total land area), 3,374,328 hectares of former or suspended forest concessions (19 percent), and 330,732 hectares of community forestry (2 percent). Other remaining forests are not yet classified, but the Forest Administration is committed to increasing the area under community forestry to a total of 2 million hectares (11 percent). Under the Community Forestry Sub Decree (2003), community forest land is owned by the state but may be allocated for local management according to Community Forest Agreements for up to 15 years (Forestry Administration 2007). All forest concessions in Cambodia have officially been under a logging moratorium since 2002. Protected areas are also state public property and fall under the jurisdiction of the Ministry of Environment and cover about 3 million hectares (17 percent).

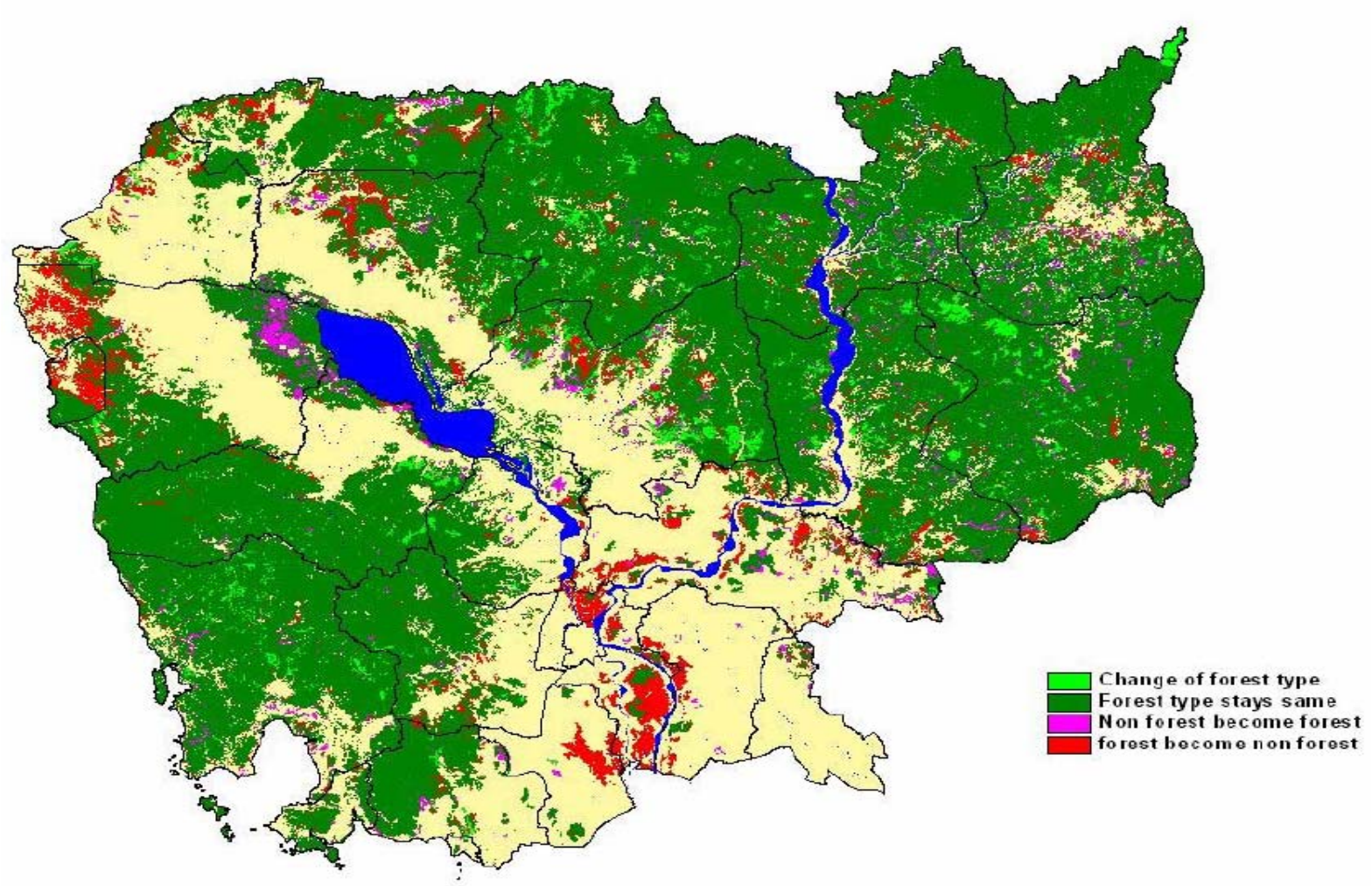
According to the World Bank Carbon Finance Unit (2009), the principle causes of deforestation and forest degradation in Cambodia is the combined result of limited capacity and funds to implement sustainable forest management, illegal timber harvesting, conversion of forest land to other land uses, unsustainable exploitation of forest resources, agricultural encroachment due to population growth and rural migration, lack of financial incentives for forest conservation, and forest fires especially in the dry deciduous forests and restraint natural regeneration. Further discussion on issues related to Cambodian forest governance is detailed in Appendix 2.

Table 3.1: Cambodia Forest Cover Estimates between 1965 and 2006

N	Assessment by year	Land				Total Land (Hectares)
		Forest land		Non forest land		
		Hectares	%	Hectares	%	
1	1965	13,227,100	73.04	4,883,400	26.96	18,110,500
2	1992/93	10,859,695	59.82	7,293,290	40.18	18,152,985
3	1996/97	10,638,209	58.60	7,514,776	41.4,	18,152,985
4	2002*	11,104,293	61.15	7,056,383	38.85	18,160,677
5	2005/06	10,730,781	59.09	7,429,893	40.91	18,160,674

Source: TWG Forestry & Environment (2007); Global Forest Resources Assessment (FAO 2005)
* Political insurgency started in 1997 resulted in the suspension of various logging activities

Figure 3.1 Cambodia Forest Cover Changes 2002-06



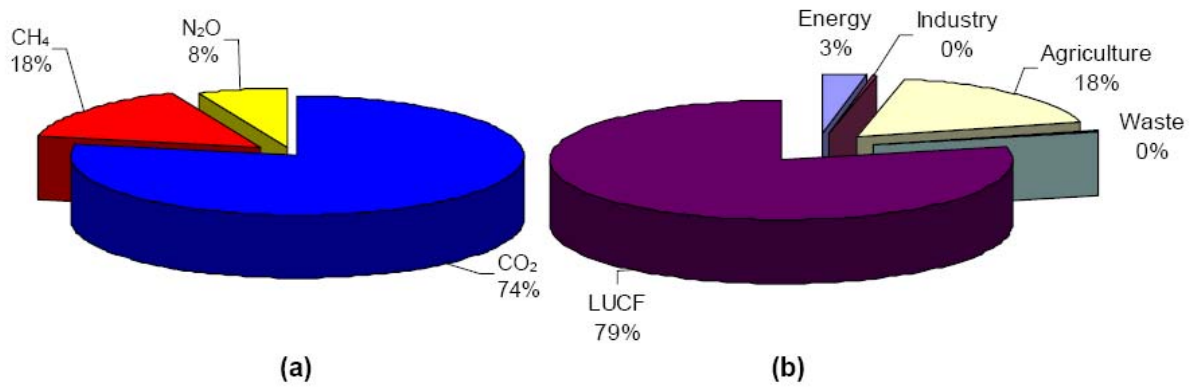
Source: TWG Forestry & Environment (2007)

3.2 Cambodia's Greenhouse Gas Emissions

As a signatory to the UNFCCC, Cambodia is obliged to undertake a national GHG inventory in accordance with Article 4.1.a of the Convention (Ministry of Environment 2002). The country's *Initial National Communication* submitted to COP-8 in 2002 followed a *National Greenhouse Gas Inventory for 1994* completed in 2001 covered three mandatory greenhouse gases: CO_2, CH_4 and N_2O for five major sectors: energy, industrial processes, agriculture, waste, and land use change and forestry (UNFCCC 2005). Calculations were based on 1994 national statistical data from the Forest Authority and were completed following the IPCC's guidelines for national GHG inventories. The Cambodia Climate Change Office is currently preparing the *National Greenhouse Gas Inventory for 2000* as part of the country's *Second National Communication* to the UNFCCC (World Bank Carbon Finance Unit 2009).

The result of the inventory (UNFCCC 2005) indicated that in 1994, Cambodia removed 64,850 Gigagram (Gg) of CO_2-eqvivalent from the atmosphere and emitted 59,708 Gg of CO_2-eqvivalent. Therefore, in 1994, Cambodia was a net carbon sink country with a net total carbon removal of 5,142 Gg of CO_2-equivalent. CO_2 accounted for 74 percent of all the GHG emitted in 1994, while methane and nitrous oxide contributed approximately 18 and 8 percent, respectively (Figure 3.2 a). By sector, LUCF was responsible for approximately 79 percent of the GHG emissions, while agriculture and energy contributed to approximately 18 and 3 percent, respectively (Figure 3.2 b).

Figure 3.2 Cambodia GHG Emissions Inventory divided by types of GHG and sectors



Source: Inventories of anthropogenic emissions by sources and removals by sinks of greenhouse gases (2005)

In regards to the land use change and forestry sector, the projection in Table 3.2 below showed that the total CO_2-equivalent emissions from this sector for the years 2000, 2010, and 2020 would be approximately 58,379; 57,627; and 61,512 Gg, respectively. During these years forests would absorb approximately 67,118; 61,090; and 53,769 Gg of CO_2-equivalent, respectively.

Thus, in 2020, the status of Cambodia's forests would change from a net sink to a net emitter. Net emissions of CO_2-equivalent in 1994 were approximately -17,907 Gg and in 2020 that would increase to approximately 7,744 Gg (UNFCCC 2005). In 2020, the net emissions would increase to approximately 43,848 Gg of CO_2-equivalent. Among the sectors, LUCF would be the main source of GHG emissions (63 percent), followed by agriculture (27.5 percent). Energy would only contribute to approximately 9 percent of the total national emissions (UNFCCC 2005).

Table 3.2: Projection of Cambodia's GHG Emissions and Removals in LUCF (Unit: Gigagram)

Activity		**GHG**	**1994**	**2000**	**2010**	**2020**
Changes in forest and other woody biomass stocks	Emissions	CO_2	8,272	9,270	13,031	16,916
	Uptake	CO_2	73,122	67,118	61,090	53,769
Forest/land use change	Emissions	CO_2	45,214	47,300	42,954	42,954
		CH_4	75	78	71	71
		CO	654	684	621	621
		N_2O	1	1	0	0
		NOx	19	19	18	18
Total CO_2-eqv. emissions			55,216	58,379	57,627	61,512
Total CO_2-eqv. uptake			73,122	67,118	61,090	53,769
Total CO_2-eqv. net emissions (+)/uptake (-)			- 17,907	- 8,739	- 3,462	7,744

Note: CO and NOx are excluded from the CO_2 equivalent emissions/removals.

Source: Inventories of anthropogenic emissions by sources and removals by sinks of greenhouse gases (2005)

3.3 Cambodia and Emissions Trading Schemes

The Royal Government of Cambodia is strongly committed to the Kyoto Protocol and considers the CDM and associated carbon reducing initiatives as opportunities to achieve national sustainable development and poverty reduction objectives, while at the same time reducing GHG emissions (Ministry of Environment 2002). Cambodia ratified the UNFCCC in December 1995 and the Kyoto Protocol in August 2002, and subsequently in June 2003, the Cambodia Climate Change Office was established in the Ministry of Environment with funding from international donors and the government (Cambodia Climate Change Office 2009).

The government has been working to establish institutional and human capability to fully utilize CDM and contribute both towards the sustainable development of Cambodia and global GHG emissions reduction. Cambodia has been quite successful in attracting international and bilateral donors for its CDM capacity building projects (Hanh 2006). These projects have significantly contributed to the establishment of CDM institutions in this country, especially to the operational of the Designated National Authority as well as building capacity with project developers. This designated authority is responsible for assessing proposed CDM projects against national sustainable development criteria and is authorized to provide written approval for proposed CDM projects in accordance with these criteria. Cambodia uses a sustainable development matrix as a tool for assessing the contribution of CDM projects in four aspects of sustainable development: economic, social, environmental and technology transfer (Cambodia Climate Change Office 2009). Details on the assessment procedures, relevant legal framework, and instructions on how to evaluate proposed CDM project activity against Cambodia's national sustainable development criteria are in Appendix 1.

As of February 2009, the UNFCCC CDM project pipeline in Cambodia has a total of five projects, three registered and two under validation (Table 3.3). And, according to the World Bank Carbon Finance Unit (2009), two REDD pilot projects are being developed in Oddar Meanchey and Mondulkiri province (Appendix 2).

Table 3.3: Cambodia CDM Project Activities, as of February 2009

Name of CDM Project Activity	Type of Project	Supplemental information	Host Party Approval Date	Annual emissions reduction (tCO_2/yr)	Project Participants (Host Country)	Project Participants (Others)	Status
Angkor Bio Cogen Rice Husk Power Project	Biomass	Rice husk	19 Jan. 2006	51,620	Angkor Bio Cogen Co., Ltd.	Mitsubishi UFJ Securities Co., Ltd. (Japan)	Registered (10 Aug. 2006)
T.T.Y. Cambodia Biogas Project	Biogas	Animal Waste	4 Jul. 2007	50,036	T.T.Y Corporation Ltd. Carbon Bridge Pty Ltd.	None	Registered (3 Sept. 2008)
Methane fired power generation plant in Samrong Thom Animal Husbandry, Cambodia	Biogas	Animal Waste	15 Oct. 2007	6,262	Samrong Thom Animal Husbandry	Mitsubishi UFJ Securities Co., Ltd. (Japan)	Registered (3 Dec. 2008)
Kampot Cement Waste Heat Power Generation Project	Waste heat/gas utilisation	Cement production line	20 Nov. 2008	17,249	Kampot Cement Company Co., Ltd.	None	Under validation
Kamchay Hydroelectric BOT Project	Hydro	New reservoir	20 Nov. 2008	370,496	Sinohydro Kamchay Hydroelectric Project Co., Ltd.	None	Under validation

Sources: IGES CDM Project Database (Institute for Global Environmental Strategies 2009); UNFCCC CDM Pipelines (UNFCCC 2009)

4 CDM-A/R and REDD Project Development

It is essential to note that no actual CDM-A/R or REDD project activities of any size has existed in Cambodia yet (Table 3.3). This is interesting because considering the significant amount of GHG emitted from the forestry and land use change sector and the positive environment established by the government to encourage investment in carbon market sector. According to Ellis and Kamel (2007), lack of investment and exploration into carbon markets of any sector might be due to the lack of capacity building and awareness-raising for key stakeholders involved in projects development. Thus, the following section attempts to address the procedures and technical requirements determined by the UNFCCC regarding development and implementation of CDM-A/R and REDD projects in Cambodia in order to understand how the projects under these mechanisms are developed and implemented. This section finishes with the discussions on the administrative complexity involved in designing these projects.

4.1 CDM-A/R Project Cycle

According to the UNFCCC Secretariat (Yamin 2005), for CDM-A/R project, as for any particular CDM projects, to commence its journey through the project cycle, the following preliminary steps are necessary:

1. designation of a national authority in order to provide written approval of the voluntary participation of each party involved in the proposed project and to confirm the project's sustainable development credentials;

2. designation of one or more applicant entities to carry out key functions in the project cycle by the CDM executive board on a provisional basis. Once confirmed, these are known as designated operational entities (DOE). These entities must be hired on a contractual basis by project participants to perform specific functions;

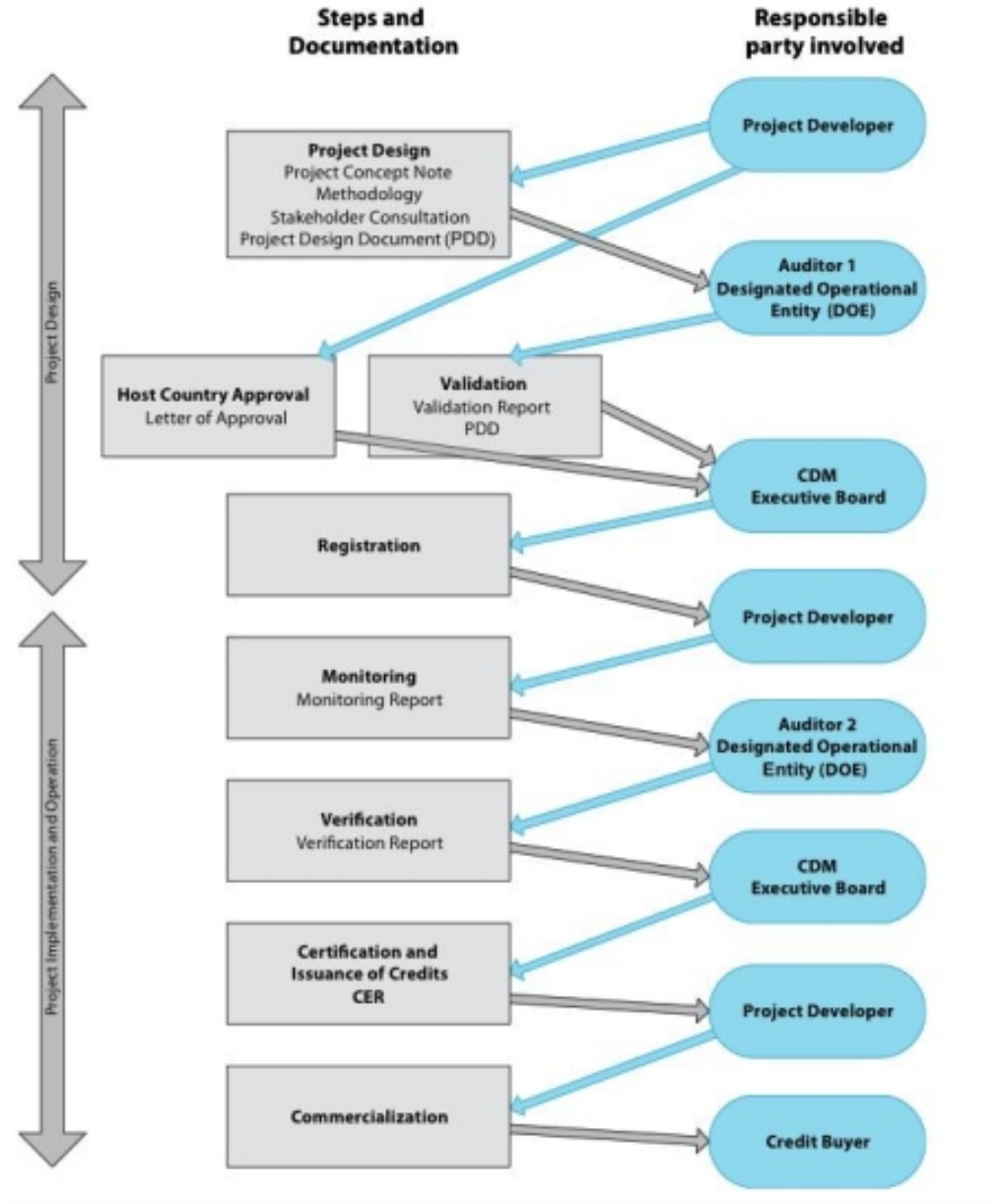
3. written clarification by project participants of their respective roles, including, crucially, how Certified Emission Reductions (CERs) arising from the project are to be distributed and the communication modalities necessary for the proponents to liaise with the CDM

executive board and the UNFCCC Secretariat. The proponents can be any of the Annex I countries or private and/or public entities;

4. establishment of a CDM registry by the CDM executive board to ensure the accurate accounting of the issuance, holding, transfer and acquisition of CERs by non-Annex I countries.

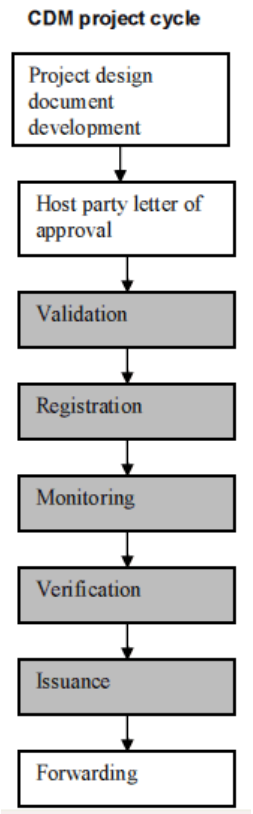
Lead institutional actor with responsibility for the steps needed to progress from one stage to the next stage of the CDM project cycle is set out in Figure 4.1.

Figure 4.1 Institutional Actors Involved in CDM Project Cycle



Source: How to Develop CDM Projects (Kollmuss, Zink et al. 2008; UNFCCC 2009)

This project cycle applies to all CDM activities except for CDM small-scale project activities for which a more streamlined cycle has been agreed (Yamin 2005). The next five steps (Yamin 2005; Kollmuss, Zink et al. 2008; Carbon Association Australasia Ltd. 2009) of the CDM project cycle are (i) design, (ii) validation and registration, (iii) monitoring, (iv) verification and certification, and (v) issuance of CERs.



First, a project proponent should design and submit information about a proposed project using a specific format of a document called the project design document. Submission of this document is necessary to commence the process for validation. Second, validation is the process of independent evaluation of a project activity by the DOE on the basis of the design document to assess whether the proposed activity conform to the CDM modalities. Registration is the final acceptance by the CDM executive board of a validated project as a CDM project activity. Registration is the prerequisite for the verification, certification, and issuance of CERs related to that project activity. Validation ensures that all CDM projects fall under the purview of the CDM executive board and are thus subject to international scrutiny.

Third, monitoring refers to the identification, collection and archiving of information necessary to design and implement a monitoring plan as required by the CDM modalities. Implementation of the monitoring plan by the project proponent is a condition for the verification, certification and issuance of CERs. Fourth, verification refers to the periodic independent review and ex post determination by the DOE of the monitored reductions in anthropogenic GHG emissions by sources that have occurred as a result of a registered CDM project activity during the verification period. Certification is the written assurance by the designated operational entity that, during a specified time period, a project activity achieved the reductions in anthropogenic emissions as verified. Finally, certification results in a certification report by the DOE which form the basis of a request by the DOE to the CDM executive board for the issuance of CERs. Issuance refers to the instruction by the board to the CDM Registry Administrator to issue a specified number of CERs into the pending account of the board. The responsibility to forward CERs to the registry account of the project proponents rests with the CDM Registry which must also forward the CERs to

cover the share of the proceeds for administrative expenses and adaptation to the appropriate accounts. Thus, the CDM executive board has no role in the final allocation of CERs to project proponents as this is purely an act undertaken by the CDM Registry Administrator.

4.1.1 CDM-A/R Approved Methodology

A CDM methodology defines the rules that a project developer needs to follow to establish a project "baseline" and to determine project "additionality", to calculate emission reductions and to monitor the parameters used to estimate actual emission reductions (UNFCCC 2007). It is a generic recipe that can be applied to different projects within a given project type and applicability conditions. If no approved methodology exists for a specific project type, a project developer can submit a new methodology for approval to the CDM Methodology Panel. 236 methodologies have been submitted for approval, 110 have been rejected, 28 are pending and 98 methodologies have been approved so far (Kollmuss, Zink et al. 2008).

Thus far, the UNFCCC divides methodologies for CDM-A/R projects into small-scale and large-scale. Small-scale CDM-A/R projects are those that are expected to result in net anthropogenic greenhouse gas removals by sinks of less than 8 kilo tonnes of CO_2 per year and are developed or implemented by low-income communities and individuals as determined by the host country (UNFCCC 2006). And, large-scale CDM-A/R projects are those that are expected to result in net anthropogenic greenhouse gas removals by sinks of more than 8 kilo tonnes of CO_2 per year (UNFCCC 2006). While Table 4.1 summarizes the UNFCCC approved methodologies for small-scale CDM-A/R projects, Table 4.2 summaries those for the large-scale projects.

Table 4.1: Approved small-scale CDM-A/R methodologies

Reference	Methodologies Title (including baseline and monitoring methodologies)
AR-AMS0001	Simplified baseline and monitoring methodologies for small-scale afforestation and reforestation project activities under the clean development mechanism implemented on **grasslands or croplands (CDM Executive Board 2009)**
AR-AMS0002	Simplified baseline and monitoring methodologies for small-scale afforestation and reforestation project activities under the CDM implemented on **settlements (CDM Executive Board 2009)**
AR-AMS0003	Simplified baseline and monitoring methodology for small scale CDM afforestation and reforestation project activities implemented on **wetlands (CDM Executive Board 2009)**
AR-AMS0004	Simplified baseline and monitoring methodology for small-scale **agroforestry - afforestation**

	and reforestation project activities under the clean development mechanism (CDM Executive Board 2009)
AR-AMS0005	Simplified baseline and monitoring methodology for small-scale afforestation and reforestation project activities under the clean development mechanism implemented on **lands having low inherent potential to support living biomass (CDM Executive Board 2009)**

Table 4.2: Approved large scale CDM-A/R methodologies

Reference	Methodologies Title (including baseline and monitoring methodologies)
AR-AM0001	Reforestation of degraded land (CDM Executive Board 2009)
AR-AM0002	Restoration of degraded lands through afforestation/reforestation (CDM Executive Board 2009)
AR-AM0004	Reforestation or afforestation of land currently under agricultural use (CDM Executive Board 2009)
AR-AM0005	Afforestation and reforestation project activities implemented for industrial and/or commercial uses (CDM Executive Board 2009)
AR-AM0006	Afforestation/Reforestation with trees supported by shrubs on degraded land (CDM Executive Board 2009)
AR-AM0007	Afforestation and Reforestation of land currently under agricultural or pastoral use (CDM Executive Board 2009)
AR-AM0008	Afforestation or reforestation on degraded land for sustainable wood production (CDM Executive Board 2009)
AR-AM0009	Afforestation or reforestation on degraded land allowing for silvopastoral activities (CDM Executive Board 2009)
AR-AM0010	Afforestation and reforestation project activities implemented on unmanaged grassland in reserve/protected areas (CDM Executive Board 2009)

4.1.2 CDM-A/R Technical Requirements

As required by the UNFCCC, to be eligible in obtaining CER credits, all CDM projects must satisfy the host country sustainable development criteria (Kenber 2005) and four other criteria

such as additionality, baseline, permanence and leakage (Australian Centre for International Agricultural Research 2008).

4.1.2.1 Cambodia Sustainable Development Criteria

The sustainable development matrix is a tool that Cambodia has developed to assess proposed CDM projects to ensure they meet the country's sustainable development objectives. The matrix focuses on the economic, social, environmental, and technology transfer aspects of development, which are articulated in Cambodia's existing laws, regulations, policies, statements and commitments to international conventions (Cambodia Climate Change Office 2009). The assessment focuses on all impacts of the project, both within and outside the project boundary. Assessment of the project focuses on all stages of the project cycle: from project construction to project decommissioning to ensure that sustainable development benefits are maximized over the life of the project. Appendix 1 provides details on guidelines for project proponent on how to assess its CDM project against the Cambodian sustainable development criteria. It also includes sample application form for the Cambodian designated national authority to assess the proposed CDM project and Cambodia's relevant legal frameworks.

4.1.2.2 Additionality

Under the Kyoto Protocol, projects that qualify for credits have to satisfy the *additionality* requirement that reductions in emissions must be additional to any that would occur in the absence of the project (UNFCCC 1997). According to Smith and Molongoy et al. (2000), this means sequestration projects, such as afforestation or reforestation, qualify only if the project is not financially viable without CDM, or if CDM funding is required to overcome other barriers to implementation.

Additionality can be established by showing that afforestation or reforestation would be less profitable than the land use systems it replaces, or by showing there are barriers to tree establishment. Adoption might be limited by lack of finance for establishment costs, access to planting materials, or lack of technical assistance and marketing infrastructure (Smith and Scherr 2002). Additionality could also be expressed in terms of higher risk than a conventional investment (Moura Costa, Stuart et al. 2000). In order to establish additionality, it is necessary to establish a baseline scenario of business-as-usual emissions and an updated emissions baseline where CDM project is incorporated. Only those emissions offsets above the baseline will be eligible in the CERs market.

4.1.2.3 Baseline

The baseline over the period of a proposed project activity could be static, if the project replaces a stable system such as pasture, or dynamic, when expected trend in deforestation and land-use changes must be accounted for. In general, baseline should be easier to establish for afforestation and reforestation projects on degraded, as oppose to forest protection projects that require assumptions about future rates of deforestation in the absence of the project (ACIAR, 2008). The baseline is an important area of uncertainty and may need to be revised as the project progresses.

Establishing baselines will require information such as identification of pressures on the land and its resources, history of land use in the project area, soil types and topography, and socioeconomic activities (Brown 2001) as well as the likely evolution of these factors through time. Possible approaches to baseline estimation range from a case-by-case basis to a generic estimate based on sectoral and regional characteristics (Moura Costa, Stuart et al. 2000).

One way of estimating a baseline was illustrated by de Jong and Tipper et al. (2000) who used a series of land-cover maps of Mexican forests and estimated historical rates of carbon storage depletion. On the basis of these historical rates, they projected trends of carbon losses 50 years into the future. Another strategy has been followed by the Forests Absorbing Carbon Dioxide Emission (FACE) Foundation, which uses a monitoring and information system (MONIS) to estimate the amount of carbon sequestered. The system stores graphical site information as well as administrative, financial, and technical information. The CO_2FIX model is used for establishing baseline and project scenarios. The project partners collaborate with national and international research institutes to acquire the measurements needed (Forests Absorbing Carbon Emissions 2001).

4.1.2.4 Permanence

The problem of permanence arises because land use change and forestry projects tend to be temporary in that CO_2 captured during forest growth is released upon harvest. In contrast, projects in the energy sector that reduce emissions are permanent, in the sense that an avoided emission will never reach the atmosphere (ACIAR, 2008). In addition, Smith and Molongoy et al. (2000) stated that non-permanent forestry projects slow down the build up of atmospheric concentrations, unlike energy projects, which actually reduce emissions. Non-permanent forestry projects should therefore be regarded as an intermediate policy option. Grainger (1997), as cited

in ACIAR (2008), points out that biological mitigation can sequester large amount of carbon over a much shorter timescale than is required for energy consumption patterns to change.

The problem of permanence must be solved before land use change and forestry projects are accepted in a CER market. Proponents of these projects point to several advantages of temporary sequestration, such as (i) some proportion of temporary sequestration may be prove permanent; (ii) temporary sequestration 'buys time' while affordable energy technologies are being developed; and (iii) temporary sequestration projects have value in saving time to gain information on the process of global warming (Lecocq and Chomitz 2001). Moreover, Cacho and Hean et al. (2003) explored the issue of permanence and incentives under different accounting methods and found that some of the proposed approaches offer very little incentive to sequester carbon beyond that provided by the timber market.

Many authors believe that permanence is not an insurmountable problem (Sedjo 2001; Sedjo and Toman 2001). Sedjo (2001) argues that carbon sequestration should be viewed more as a temporary activity like the parking of a car than a long term activity like the purchase of a parking space. This and similar ideas, such as the Columbian proposal for 'expiring CERs' (Blanco and Forner 2000) may provide feasible alternatives, but they require further economic analysis to determine if they will provide incentives adequate to effect desired behavioural change. However, it is still one of the ongoing debates whether permanence is a deciding principle or temporary is good enough.

4.1.2.5 Leakage

Leakage concerns when the emission reduction achieved within the project causes increased emissions outside the project boundary, or at a later period of time. Leakage could occur for example if local communities agree to preserve a forested area, with the intention of increasing deforestation in other areas, as compensation (Smith, Molongoy et al. 2000). Leakage may work through the price system, as reduced wood supply may lead to price increases and hence provide incentives to increase forest clearing elsewhere. Leakage is not unique to land use change and forestry projects. It can also arise in the energy sector.

According to IPCC (2001), leakage of 2 to 20 percent may occur through relocation of carbon-intensive industries from Annex I to non-Annex I countries. Almost all tropical forests have people living in or around them, so failure to compensate communities for forest protection projects can lead to leakage. To prevent leakage in LUCF afforestation and reforestation

projects, productivity of agricultural land will have to be increased, adequate food supply must be ensured, and alternative employment for those displaced from forests must be provided (Smith and Scherr 2002). Ideally, project leakage could be accounted for by country-wide baselines, but a second-best alternative may be to have rules of thumb or rough corrections in the amount of CERs obtained depending on type of project and location (Sedjo and Toman 2001).

It is essential to point out that most of these debates are not distinct to CDM-A/R projects; other types of CDM projects such as energy efficiency also experience the same phenomena. Regardless of these debates, CDM-A/R as well as other CDM projects are being registered and validated at the UNFCCC and are being implemented in various countries.

4.2 REDD Projects

Although deforestation and degradation are often combined together as the acronym REDD suggests, they have distinct drivers and result in different forest conditions making the processes of identifying and abating deforestation and degradation very different (Myers Madeira 2008). Hence, it is important to clarify the differences.

The IPCC defined ‘deforestation’ as the permanent removal of forest cover and withdrawal of land from forest use, whether deliberately or circumstantially. Forest conversion to pasture, cropland, or other managed uses is considered the same as deforestation unless noted otherwise. The UNFCCC and IPCC employ a minimum crown cover criterion of 10 to 30 percent to differentiate between forests and non-forests. If crown cover is reduced below this threshold, deforestation has occurred (Watson, Noble et al. 2000).

Forest ‘degradation’, in the context of REDD project, is the result of selective logging, grazing within forests, and under-story fires as well as over-cutting for fuelwood and subsistence agriculture (Myers Madeira 2008). Degradation causes the gradual thinning of forests and can lead to deforestation, as seen in studies from the Brazilian Amazon (Asner, Broadbent et al. 2006). In the vicinity of roads and settlements, degradation may be at least as widespread as deforestation (Trines, Hohne et al. 2006).

4.2.1 REDD Project Cycle

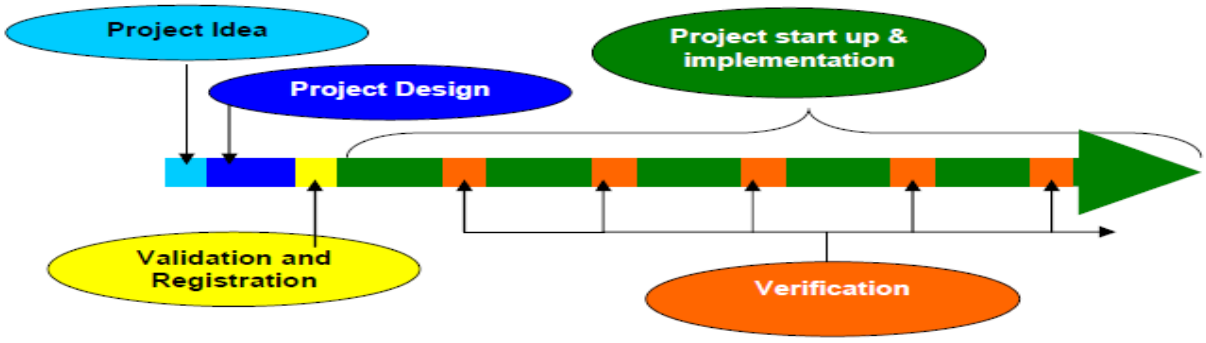
Similar to the CDM-A/R project cycle, REDD project cycle has 5 main steps including (i) project idea, (ii) project design, (iii) project validation and registration, (iv) project implementation, and (v) project verification involved in implementing REDD forest carbon projects (Myers Madeira 2008; Cortez and Stephen 2009).

The goal of the first phase is the creation of a project concept note, which could take between 6 months to 2 years to accomplish. The project idea phase takes time and it is important to devote sufficient resources to elaborate the project concept. Costs associated with travel, consultant fees, capacity building, meetings, and logistics can be significant during this stage. Additionally, it is very important to initiate and foster government involvement in the project during this stage to ensure their support. Compiling background information early to develop a credible concept note is critical to generating this donor and government support for the project. Second, the final product of phase two is the project design document, which includes the project concept and duration, the baseline methodology and emissions reduction calculation, the monitoring plan, the social and environmental impacts, and a summary of the process and inputs of stakeholder consultations. The contents and format of this document will depend on the requirements of the standards that the project intends to apply.

After the project design document has been completed, the third phase begins with a third-party auditor evaluating and validating the project design. If the auditor determines that the project has met all the requirements, the auditor will approve the project. The project will then be registered and certified. The validation process can take 2 months or more to complete and may cost anywhere from US$7,000-40,000 depending on the size of the project. The fourth phase, which is the project implementation, can begin slightly before the auditor has verified the project and lasts for the duration of the project, usually at least 30 years. It is important to note that forest carbon projects require more active management throughout the life of the project than traditional forest conservation projects and this must be accounted for in the project plan. One key factor in the success of many projects is that benefits reach the communities early on. If communities do not see immediate benefit from the project, interest will fade quickly and support may begin to erode. Therefore alternative livelihood activities must begin at the same time, or prior to, forest protection activities and capacity building activities should be ongoing during the initial phases of the project.

As a final phase, the verification of the project by a third-party auditor occurs after the project has been implemented and will continue throughout the life of the project. Once the auditor has validated the project according to the selected standard, the project is awarded emissions reductions credits that it can sell. REDD projects are unique in the level and variety of expertise needed to design and implement the project. For this reason, project design and start-up can be a lengthy, complex, and expensive process. It is important to identify project goals and methodologies early on so that major changes are not needed once the project has already incurred significant costs. A variety of expertise will be needed during all phases of the project, including technical, financial, legal, and management. Though projects can be complex and time-consuming, carbon financing represents a promising new funding tool for forest conservation that could lead to stable and effective long-term projects. It is important to note that project phases do not always have concrete start and end points. Nevertheless, various inputs of time, funding, and expertise will be required at specific points of time, and certain deliverables may be required before other steps in the process can begin. Figure 4.2 illustrates the key phases, timing and the order in which the phases are undertaken.

Figure 4.2 Timing of key project phases



Source: Introductory Course on Reducing Emissions from Deforestation and Forest Degradation (REDD): A Participant Resource Manual (Cortez and Stephen 2009)

4.2.2 REDD Technical Requirements

Although a significant focus at the international level is on policy and credit design, the success of REDD ultimately lies in the hands of host countries and their abilities to reduce deforestation. Many countries do not currently have the capacity to create a national level approach to REDD. Some countries have begun to engage in readiness activities so that they will be able to participate in a REDD mechanism once it is fully established (Cortez and Stephen 2009). The Forest Carbon Partnership Facility managed by the World Bank is supporting these activities by

assisting developing countries to complete a Readiness Plan Idea Note which offers insight into the activities that each country is undertaking at the national level to prepare for REDD and provide an excellent overview of the data and capacity needed to create a national level REDD program (World Bank Carbon Finance Unit 2009). The Cambodia' Readiness Plan Idea Note is attached in Appendix 2.

Similar to the CDM projects, the UNFCCC required that for any REDD project to be eligible in obtaining CERs credits, it must take into consideration the following criteria: scale of REDD projects, additionality, baseline, permanence and leakage (Australian Centre for International Agricultural Research 2008; Myers Madeira 2008; Cortez and Stephen 2009).

4.2.2.1 Scale of REDD Project

There are three basic levels at which REDD activities could operate.

National-level REDD program: A national government implements a national accounting system based on a national baseline. Credits are allocated to the national government based on performance against this national baseline (Angelson, Streek et al. 2008). A national monitoring system and credit registry would also be part of the program. National approaches do not necessarily imply that implementation of emissions reductions strategies would need to occur at the national level (Myers Madeira 2008).

Sub-national-level REDD program: REDD activities are implemented at a sub-national scale but at a governmental level such as a state, a province or a district. Credits are allocated to the sub-national government based on performance against the sub-national baseline (Angelson, Streek et al. 2008).

Hybrid or Nested approaches: Project or sub-national-level REDD activities are undertaken, but are somehow linked to national-level performance (Pedroni and Streek 2007).

In a national approach, buyers of emissions reductions interact only with national governments. In a sub-national approach buyers interact directly with the sub-national entity that produces the credits. In a nested approach, the option exists for buyers to interact with owners of credits at either the national or sub-national level.

4.2.2.2 Additionality

Like CDM, the fundamental challenge for REDD mechanisms is to demonstrate "additionality", which is defined as carbon emission reductions that are additional to what would have occurred without the REDD mechanism (Cortez and Stephen 2009). In order to provide real climate change mitigation, emission reductions financed through carbon markets must be additional. To be additional, nations or projects claiming REDD credits must show that reduced deforestation rates attributed to the project would not have occurred in the absence of carbon finance (Brown, Pedroni et al. 2008).

Suggested measures (Brown, Pedroni et al. 2008; Global Canopy Foundation 2008; Cortez and Stephen 2009) to determine REDD projects additionality are as follow:

Baseline Test: First and foremost, emissions reductions are generally considered additional if they are below an accepted baseline representing the expected emissions in the absence of REDD interventions. In other words, emissions must be reduced against a 'business-as-usual' scenario.

Legal Test: A second common category of additionality test is whether or not the activities are required by any legal regulations or compliance codes of practice. If the law requires something to be done, then doing it is not additional – it is merely complying with the law. Exceptions may be:

- If the REDD mechanism is instigated by the national government in agreement with international commitments – new laws pertaining to REDD become part of the legal framework.

- In many developing countries, legal requirements are not met on such a grand scale that to meet the law is actually 'additional' to common and regular practice.

Financial Test: This is typically a demonstration that a carbon investment or activity would have a low or unacceptable internal rate of return without carbon finance. Thus the funds generated by climate mitigation are the reason for undertaking activities that would otherwise be commercially unattractive.

Common Practice Test: This means that practices routinely adopted and commonplace within a sector are not additional.

4.2.2.3 Baseline

For any type of REDD program to succeed, it must exhibit quantitative reductions of deforestation rates below baseline or business-as-usual scenarios (Brown, Pedroni et al. 2008). Although historical deforestation rates can be established based on existing remote sensing imagery, because of heterogeneity in countries' recent patterns of deforestation and in the availability of forest carbon inventories, finding a single baseline methodology appropriate for all would-be participants is difficult (Myers Madeira 2008). For example, some countries experiencing political instability have a low rate of deforestation because domestic turmoil suppresses access to forests and markets. They predict that deforestation pressure will increase if the domestic situation stabilizes, and thus the historical baseline underestimates the real pressure. Countries that have already taken action to prevent deforestation argue that they should be incentivized to keep their deforestation rates low (Schlamadinger, Ciccarese et al. 2005).

Mollicone and Achard et al. (2007) propose a global baseline against which national baselines could be compared to create incentives for both (a) countries with high deforestation rates to reduce their rates of forest conversion and (b) countries with low deforestation rates to maintain them. For countries in category (a), credits are generated based on decreases in national rates of deforestation; for countries in category (b), credits are based on the difference between the global reference rate and the national rate. Although data to set national and international forest cover baselines are available at relatively low cost, information on carbon stocks and forest inventories is not uniformly available (DeFries, Achard et al. 2006; Mollicone, Achard et al. 2007).

4.2.2.4 Permanence

Whether reduced emissions from deforestation can be considered permanent is part of the current debate about REDD. Concerns over permanence are rooted in the idea that emissions reductions are potentially reversible because of forests' vulnerability to fires, pest outbreaks, changes in management, and other natural and anthropogenic disturbances (Myers Madeira 2008). Thus the gain from lower emissions in one year might be undone by exceptionally high emissions in a later year. In response to concerns over permanence, three types of accounting mechanisms have been proposed to manage risks of impermanence in REDD credits.

1. *Buffers*, *credit banking* and *reserve accounts* are arrangements in which a percentage of the credits that could be generated are held in reserve to counter the risk that deforestation will increase in the future (Myers Madeira 2008). For example, if ex post verification determined that

deforestation rates below the baseline had averted the emission of 100 tons of carbon, 70 permanent credits could be traded on the carbon market, and 30 would be deposited in the reserve account. The percentage of REDD credits to be deposited into the reserve account or buffer would be determined by the risk of the project and the number of years since the project's initiation (Brown, Pedroni et al. 2008).

2. The *ton-year approach* is based on the premise that 1 ton of carbon released into the atmosphere decays over time until it is absorbed into the ocean or biosphere. The turnover time of carbon in the atmosphere essentially becomes the defining factor in determining permanence (Myers Madeira 2008). This is the equivalency factor that relates a ton-year to a permanent reduction.

3. *tCERs, or the Rental Credit Approach***:** REDD credits could follow the CDM model, in which credits generated by AR activities are temporary certified emissions reductions (tCERs) (Myers Madeira 2008). Forestry tCERs are valid for one five-year interval, after which they expire; new tCERs are issued upon re-verification. The buyer would be responsible for finding a new source of emissions reductions upon the expiration of the tCERs. Essentially, the buyer has two options: purchase new tCERs that will expire in five years, or purchase permanent credits (Locatelli and Pedroni 2004; Neef and Henders 2007).

Currently, consensus is lacking as to whether this characteristic of forest carbon makes REDD inherently different from avoided fossil fuel emissions. On one hand, forest carbon is considered to carry a greater risk of impermanence, and the benefits of carbon storage in one time period risk being undone in a future time period (Chomitz 1999; Watson, Noble et al. 2000; Sedjo and Marland 2003). On the other hand, all emissions reductions carry some risk of impermanence that is, lowered emissions in one year somehow lead to higher emission rates in a future year. It can be argued that the permanence risks associated with forest carbon can be managed such that a reduction in forestry emissions is no different from a reduction in other emissions (Myers Madeira 2008). However, obviously this is only one point of view.

4.2.2.5 Leakage

In the context of REDD, leakage means that preventing deforestation in one place might actually encourage deforestation somewhere else meaning the agents of deforestation might shift their equipment and labour to a nearby patch of unprotected forest, or REDD activities could create market leakage by forcing up the market prices of timber, livestock, and crops, making

deforestation somewhere else more profitable (Myers Madeira 2008). Unless all global forests are included in a REDD policy, leakage cannot be eliminated; however, it can be minimized through careful project design. Furthermore, leakage can be accounted for by requiring that a percentage of a project's REDD credits be held in reserve and not be sold. In this manner, the reserve account would offset or neutralize the leakage that was assumed to have taken place (Sohngen and Brown 2004; Chomitz 2006). Leakage can be largely controlled at the project level through project selection and project design measures that address both the proximate causes of deforestation (land-use change and forest conversion) and the underlying drivers (i.e. poverty, agricultural policies, and land tenure) (Schwarze et al. 2002; Sohngen and Brown 2004). Thus it is possible to develop design standards and protocols to minimize the risk of activity-shifting leakage for a REDD project.

In spite of these debates, REDD has been growing rapidly since its first introduction into the COP agenda at its 11th session in Montreal with more than 30 proposals currently at the international negotiation table (Global Canopy Foundation 2008). Although it is beyond the scope of this study, I think it would be fascinating to investigate the driving forces behind this rapid development.

4.3 Discussions on Administrative Complexity

This chapter has so far introduced the five complex and interlinked concepts for REDD and four for CDM-A/R that need to be understood to develop projects and acceptable methodologies to deliver credits under the mechanisms. They are (i) scale of the project – attributed only to REDD, (ii) additionality, (iii) baseline, (iv) leakage and (v) permanence. However, the technical, methodological and market issues for these projects are far from resolved and require considerable progress before emissions reductions under REDD and CDM-A/R can be additional, measurable, verifiable, and long-term. According to Locatelli and Pedroni et al. (2008), this is in part the consequence of the complex political process that produced the mechanisms. Forestry projects were debated extensively because of concerns about their real contribution to climate change mitigation and their possible negative effects on host countries' sustainable development. It was feared that too inadvertent regulations would jeopardize the environmental integrity of the Kyoto Protocol and create negative effects on local communities or biodiversity and that too stringent regulations would discourage project development

(Locatelli, Pedroni et al. 2008). Although this debate has engendered various issues of contention to be explored, this section only reviews the funding and level of implementation.

To begin, the issue of how a CDM-A/R or REDD project should be funded is perhaps the issue over which the opinions of UNFCCC Parties are most clearly divided. The disagreement is over the funding approaches with one side argues for non-market based approaches, while the other proposes the market-based approaches (Institute for Global Environmental Strategies 2008). The main issue with the non-market based approaches is that while these funds could be tapped for the building of national capacities or for implementing carbon forest pilot projects, they cannot be expected to provide the large volume of funding required because of the opportunity costs of competing land-use alternatives (Stern 2006). In addition, Robledo and Maera (2007) suggested that it is difficult to envision how a non-market based approach could provide the fund required since the official development assistance flows for the conservation of forests and biodiversity have decreased significantly and other funds suggested are already being targeted by other climate change interests. Also, there are good reasons for debating the market-based approaches. First, as with CDM-A/R, investors may avoid REDD because of the high methodological uncertainties, technical complexity and risks involved. Second, REDD could be a disincentive for Annex I countries to reduce their own emissions. Third, the integrity of carbon trading could be threatened if credits from forestry sector are traded in the same market as other credits, due to the uncertainty of forest carbon balance estimations and permanence (Institute for Global Environmental Strategies 2008).

It is beyond the scope of this paper to review and debate all the proposed funding mechanisms. But, a mixed basket of non-market and market-based financial resources could be the most realistic option for building capacities and providing positive incentives for CDM-A/R and REDD projects. That is, while non-market funds are required to build the capacities of participating countries and to cover further upfront financing necessary to manage the transition (Stern, 2006), an innovative market-based financing mechanism will be required to cover the opportunity costs of implementing the projects (Institute for Global Environmental Strategies 2008).

The second disagreement is whether the projects should be implemented on a national or a project level. It is argued that a national approach would reduce, but not eliminate, leakage as the country or its entire national forest system is used as the unit of account. A national approach would also reduce the cost of baseline development, monitoring and verification costs since a

baseline would only have to be developed at the national level, rather than for each project (Institute for Global Environmental Strategies 2008). Yet, a project-based approach remains attractive because countries with the highest rates of deforestation often have poor data sets for establishing baseline and suffer from weak governance. A project approach would also avoid the costs of preparing national GHG inventories in accordance with the IPCC guidelines (Karousakis and Corfee-Morlot 2007).

5 Implementing 'Carbon Forest' Projects in Cambodia

The complication does not stop at the development process of the projects, ensuring the success of these carbon projects, where all stakeholders equitably benefit, needs to take into consideration various issues, for example social consideration for forest-dependent communities, and biodiversity conservation. That is because without doubts CDM-A/R and REDD projects will result in a flow of funds for forests that have previously had little economic value. This section thus explores the potential benefits and risks that CDM-A/R and REDD project might have on the national forest governance, forest-dependent communities, and biodiversity. The final part of this section recommends several measures to ensure the success of carbon projects implementation in Cambodia based on experiences from other developing countries.

5.1.1 National Forest Governance

It is envisioned that the introduction of carbon forest projects mainly CDM-A/R and REDD will generate both opportunities and risks that the Cambodian government need to address. Some of the benefits include: (i) national forest demarcation, classification and registration; (ii) sustainable forest management; (iii) community forestry; (iv) forest law enforcement and governance; (v) forestry, climate change and innovative financing; and (vi) capacity development and research. However, some of the potential challenges that the development of such project will face in Cambodia are: (i) the limited human capacity and financial resources to carry out rigorous carbon accounting at the project and national level; (ii) the limitations of capacity in forest monitoring and inventory and GIS skills; (iii) the fight against illegal forest exploitation; (iv) clashes with other Cambodian principle development priorities such as agricultural expansion; and (v) the coordination problems between inter-sectoral and inter-provincial planning (World Bank Carbon Finance Unit 2009). Each of these points deserves further elaborations, but it is beyond the scope and length of this research to do so. However, a brief discussion for each of these points is attached in Appendix 2.

5.1.2 Social Considerations for Forest-Dependent Communities

The potential benefits of CDM-A/R and REDD for forest-dependent communities include direct payments based on the maintenance of intact forest, employment, training in natural resource management, and the continued use of the forest for traditional livelihoods and other cultural values (Luttrell, Schreckenberg et al. 2007). In addition, REDD does not preclude the use of the forest for other activities like ecotourism and sustainable forest management. Both CDM-A/R and REDD project activities operate over a long time scale, and the benefits have the potential to be continuous for decades (Peskett, Huberman et al. 2008).

However, new financial flows to forests also carry significant social risks. If the CDM-A/R and/or REDD scheme is controlled by elites, then benefits might not reach local communities. In areas with unclear land tenure, people with traditional claims to land could lose access to this land, and in extreme cases of abuse, lands could be expropriated and local people could be displaced. The complex nature of the mechanisms may lead to abusive contracts with local people who lack access to information about the mechanisms (Peskett, Brown et al. 2006). Decreased access to new agricultural lands could result in less agricultural production or higher food costs. The inequitable distribution of funds within local communities could also lead to serious social conflicts (Cortez and Stephen 2009).

In addition, land tenure, revenue distribution, and public participation in land use decisions traditionally fall under the realm of national regulations rather than international agreements. Therefore, how to address the interests of indigenous peoples and forest-dependent communities in a forest carbon financing mechanism is still under debate (Cortez and Stephen 2009).

5.1.3 Implications for Biodiversity and Ecosystem

The logics of CDM-A/R and REDD are based on maintaining existing and increasing tropical forest in order to prevent the carbon that it contains from entering the atmosphere. Maintaining tropical forest has the added benefit of preserving the habitat of the most biologically diverse communities on earth because tropical forests harbour an incredible 70 percent of known terrestrial species (United Nations Environment Program 2008). In addition to serving as the home of countless species, Cambodian forests also are the sources of vital ecosystem services by helping to regulate rainfall patterns and regional climate systems; maintaining water quality and quantity; reducing risks of erosion; maintaining populations of natural crop pollinators; conferring landscape values that promote non-extractive activities like tourism; and providing

numerous valuable products like food, construction materials, fuelwood, and medicine (Kapos, Herkenrath et al. 2007; Sawada, Araki et al. 2007).

Those benefits are not guaranteed, however. CDM-A/R and/or REDD is unlikely to benefit all forests equally. For these mechanisms to make a successful contribution to combating climate change, countries implementing them will have to target threatened forests with a total high volume of carbon in their biomass and soils. If priorities are given to forests with the highest carbon levels, this could mean that deforestation activities would be diverted to forests with smaller amounts of carbon. This could potentially have unintended consequences for species that live in those low carbon forests (Miles and Kapos 2008).

In addition, the current definition of a forest used for reporting and accounting purposes under the Kyoto Protocol does not recognize the difference between plantation forests and natural forests (Cortez and Stephen 2009). The distinction is important because depending on the definition applied land managers could potentially convert primary forests to short-rotation crops for a period of time and then replant the land as a plantation forest, without technically deforesting. This could have dramatic negative consequences for biodiversity and also for carbon. This risk could be reduced by changing the definition of forests to distinguish between primary and plantation forest, and by using monitoring techniques that assess actual carbon stocks and not just forest cover (Intergovernmental Panel on Climate Change 2003). Finally, although forest conservation through CDM-A/R and/or REDD is almost certain to carry significant benefits for biodiversity, it is important that the schemes be designed to mitigate the known potential risks and use appropriate monitoring methods to identify and address unintended effects.

5.1.4 Overall Reflection and Recommendations

Similar to other forest-rich countries that stand to gain the most carbon credits from CDM-A/R and REDD projects, Cambodia's forest governance is described as weak (Agrawal, Chhatre et al. 2008; World Bank Carbon Finance Unit 2009). This means that powerful business, government, military or other elites have excessive influence over the allocation of forest resources and the distribution of benefits from forest exploitation. Millions of Cambodian dwelling in or near forests are marginalized from decision-making processes and suffer the consequences of this exploitation, whether formalized or illegal, in the form of diminished livelihoods and poverty (Chan and Acharya 2002).

In addition to the World Bank's (2009) analysis of the opportunities and risks associated with inadvertent introduction of CDM-A/R and REDD, Cambodian forest conservation need to be cautiously approached. Although large international financial transfers have already been directed toward Cambodia's forest governance and conservation, the success of such effort requires more than financial resources. It requires strong and motivated government institutions and public support (Metz, Davidson et al. 2007). Finally, it is believed that a well-designed CDM-A/R and REDD mechanism would thus not only contribute to reduced GHG emissions, it would also provide opportunities to reform forest governance and alleviate rural poverty in Cambodia.

Based on the analyses in this paper and several recommendations from the IUCN (Peskett, Huberman et al. 2008), several key suggestions important in ensuring that a fair and equitable development of CDM-A/R and/or REDD project include:

1. *Provision of information*

Provision of information outlining details of how CDM-A/R and REDD mechanisms work, and providing realistic expectations of benefits, will be required at all levels to ensure equal participation in the negotiation of equitable agreements between buyers or investors and providers of carbon (be they governments, local governments, communities or individuals). At national levels this would include further support to governments to help them understand the CDM-A/R and REDD options currently on the negotiating table, the interests that are driving these and analysis of the potential implications of the different options. This will help to strengthen positions in the development of international frameworks and may increase the likelihood that Cambodia's concerns are taken on board. At individual and community levels, this would need to include details of the basic operation of carbon markets or funds and how CDM-A/R and REDD fit into these mechanisms; what CDM-A/R and REDD might mean for local and community interests; the roles of different actors; and information on realistic bargaining positions to take with possible investors (Peskett, Huberman et al. 2008).

2. *Use of 'soft' enforcement and risk reduction measures*

'Hard' enforcement measures such as financial penalties for ensuring compliance in CDM-A/R and REDD systems are likely to disproportionately affect the poor. This will be the case whether they are applied by developed countries to developing countries running national systems or more directly to CDM-A/R or REDD projects, as the effects are likely to cascade down to those

on the ground (Peskett, Huberman et al. 2008). Project investors and/or developing country governments could apply 'soft' enforcement nonbinding emissions commitments where no penalties are applied if commitments are not met. Payment on delivery of emissions reductions could also reduce risks.

3. *Provision of technical assistance to national and local governments, NGOs and the private sector*

Current discussion about technical assistance needs for developing countries in order to implement CDM-A/R and/or REDD systems tends to focus on technical considerations related to monitoring and accounting of emissions. Further support will be required in this area, but significant technical assistance will also be required in other areas to ensure benefits for the poor. First of all, there are urgent needs to provide supports to national governments in order to increase their chance of being included equitably when financing is allocated globally from established REDD markets and CDM-A/R funds, and to establish nationally appropriate reference scenarios in a manner that maximises the chances of benefiting the poorer sections of their societies (Peskett, Huberman et al. 2008). Second, support to national and local governments in building data collection and analytical capacity to evaluate opportunity costs will be necessary. Such support could focus on collecting data on small-scale and informal forest enterprise, subsistence and even cultural values as these are areas which often have most relevance for the poor but where data is most lacking.

Third, studies of the CDM have highlighted that the role of rural and community development banks in leveraging financing needs to be stronger (Cosbey, Murphy et al. 2006). Therefore, the understandings of carbon credit markets, how they work and who the players are will help proponents of projects with high development dividends incorporate the benefits of carbon credits into the project's cash flow, risk mitigation analysis and financing needs. Finally, given the requirement for spatial and social planning around CDM-A/R and REDD (as well as the historic link between increasing agricultural commodity prices and increased deforestation which could affect permanence of carbon forests), there is a clear requirement for a thorough long-term land use planning (Peskett, Huberman et al. 2008).

4. *Use of participatory processes in the design and implementation phase*

A high degree of participation in the design and implementation of carbon forest projects will be essential for ensuring equal participation. At international levels it is particularly important to improve access to international debates by governments and local NGOs, by supporting

attendance at negotiations and in international, regional and local technical workshops (Peskett, Huberman et al. 2008). However, this will only be effective with a more concerted effort to provide information about CDM-A/R and REDD and its possible implications. In addition, local governments may in some cases be best placed to increase accountability and ensure participation for example in budget formulation and implementation relating to CDM-A/R and REDD. At community and individual scales extensive consultation will clearly be crucial, whilst acknowledging existing power structures in communities, for example in terms of gender.

5. *Apply measures to improve the equity of benefit distribution*

Within the national context, strengthening the role of local governments in benefit distribution and regulation of CDM-A/R and REDD could also help deliver benefits to the poor. Forest authorities are often one of few government departments with a physical presence in rural areas which can get information to, and receive information from, communities. The private sector could also play a part for example through providing roles for local government staff in project monitoring and training on technical skills. At local scales, partnerships between investors and communities could be used to strengthen equitable benefit sharing bearing in mind risks related to elite capture and asymmetries in information in their negotiation (Peskett, Huberman et al. 2008).

6 Concluding Remarks

This paper started with the attempt to discuss the benefits and constraints of CDM-A/R and REDD projects on Cambodia for the obvious reason that Cambodia, as a signatory of the UNFCCC and Kyoto Protocol, has both a high rate of forest cover and a high rate of deforestation thus qualify for carbon forest projects implementation. During the course of reviewing literature on this topic, I realized that that is an audacious task as I need to first of all understand the technicalities required to develop and implement such projects, the governance of Cambodian forest resources, and the issues of contention that these mechanisms will engender. Due to time constraint and limited knowledge on both of the mechanisms, I only achieved the partial understanding of the phases involved in the development and implementation of the mechanisms with a bit of an awareness on some of the associate issues such as technicality, funding, social and biodiversity considerations. Therefore, I believe it would be naïve to conclude in this paper whether the carbon forest projects, be it CDM-A/R or REDD, will benefit or harm Cambodia's forest governance because further detailed discussions are required to make such assumption.

Therefore, future research agenda should:

1. carefully analyse the evolution of deforestation and forest degradation trends in Cambodia

2. investigate appropriate modalities and procedures required to establish additionality, baseline, leakage, and permanence for carbon forest projects in Cambodia

3. study the interaction between local communities and forestry resources in terms of livelihood strategy, conservation practice, and institutional arrangement in response to changes in national policies on forestry management

4. study the political, social and economic forces that shape Cambodia's forest governance and responses to international emissions trading schemes

5. propose in details how CDM-A/R and REDD can be integrated into the current implementation of local and national forest resource management to increase local socio-

economic livelihood development, improve sustainable use of forest resources, and reduce national greenhouse gas emissions in the future

In short, I believe my paper only scratches the surface of one of the most complex international agreements ever negotiated – and implemented. I am in fact motivated to further my research into a doctoral dissertation to address the research issues that I suggested.

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8 Appendices

Appendix 1: Cambodia's CDM Assessment Criteria

This document contains the following sections:

I. Flow Diagram of the Assessment Process for Proposed CDM Projects

II. Timeframe and Activities for Assessment of Proposed CDM Projects

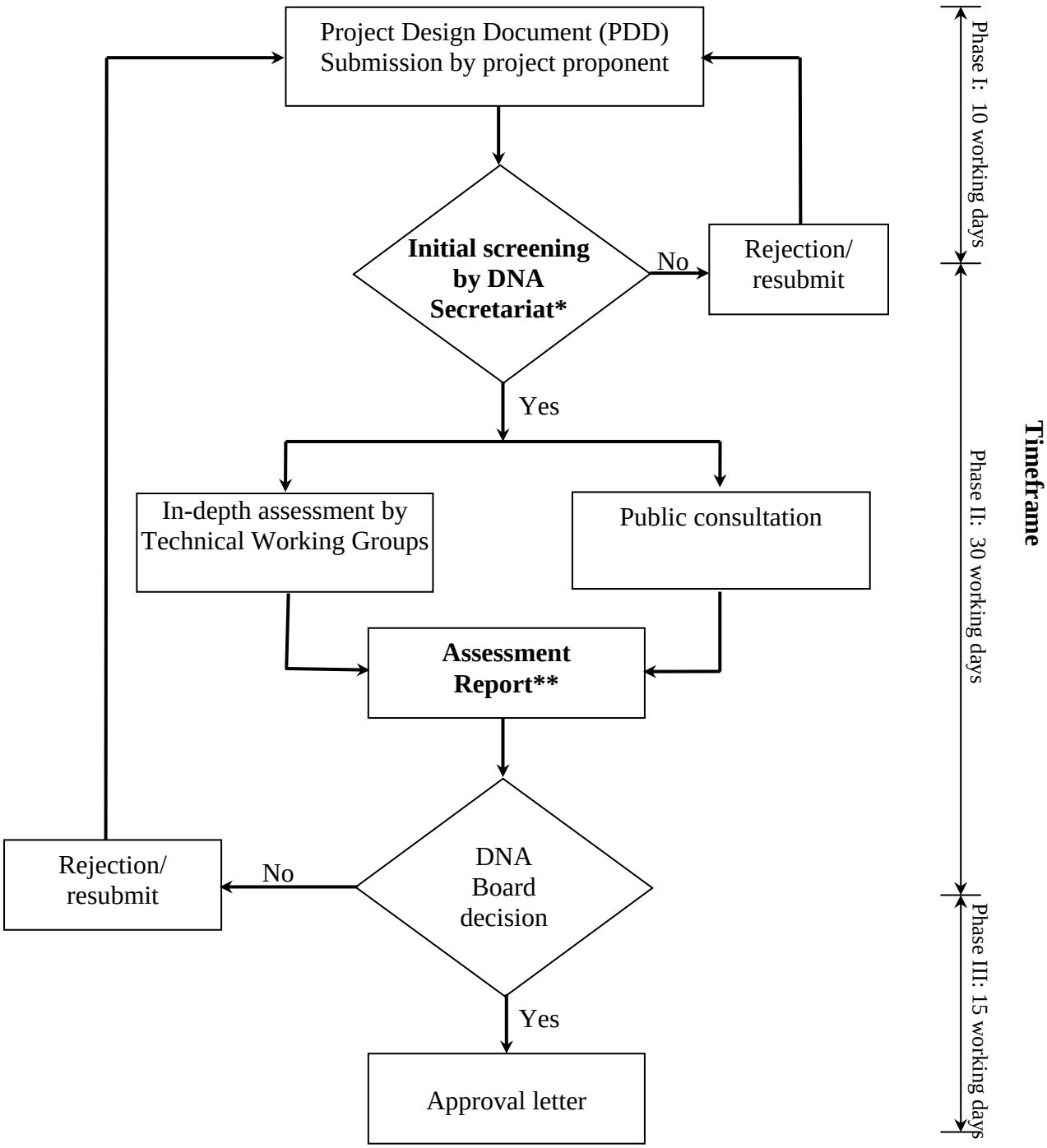
III. Sustainable Development Criteria for Proposed CDM Projects

Appendix A - Application Form for Cambodian DNA Assessment of CDM Projects

Appendix B - Sustainable Development Compliance Checklist

Appendix C - Legislation and Policy Reference Table

Section I - Flow Diagram of the Assessment Process for Proposed Clean Development Mechanism (CDM) Projects in Cambodia (Time to Approval: 55 working days)

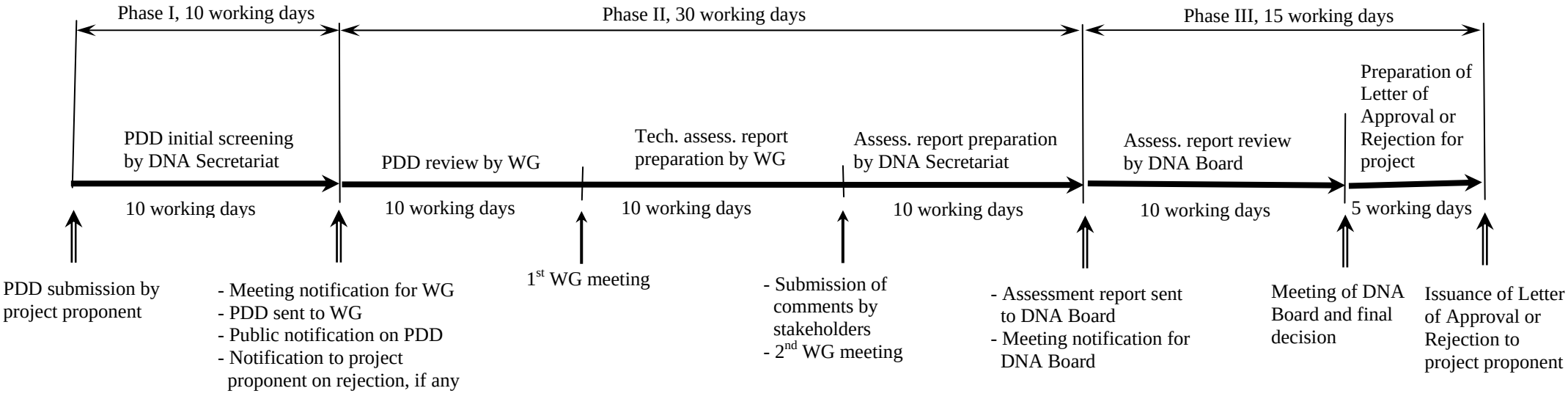


Note:

* All documentation will be reviewed for completeness: the PDD document shall be complete and submitted with the required information as requested in the Application Form (Appendix A)

** Including project technical assessment report by Working Groups and a summary of the positions of the main stakeholders groups.

Section II - Timeframe and Activities for Assessment of Proposed CDM Projects in Cambodia



Section III - Sustainable Development Criteria for Proposed CDM Projects

The sustainable development matrix is the tool that Cambodia has developed to assess proposed CDM projects to ensure they meet Cambodia's sustainable development objectives. The matrix focuses on the economic, social, environmental and technology transfer aspects of development, which are articulated in Cambodia's existing laws, regulations, policies, statements and commitments to international conventions (see Appendix C).

The Project Proponent must submit a PDD which outlines how sustainable development objectives are met via each of these criteria. For the DNA to be able to evaluate the project, the Project Proponent must fill out the Application Form (Appendix A) for Cambodian DNA Assessment of CDM Projects, which includes the Sustainable Development Compliance Checklist (Appendix B). The substantive parts of the information contained within the Compliance Checklist must be included in the PDD.

How to Use the Sustainable Development Matrix

The matrix tool provides guidance to the Project Proponent and assessor for each eligibility criteria, while not being prescriptive. The project should be compared against the defined baseline as outlined in the PDD:

- a positive rating would indicate best practice of a particular criterion.
- a neutral rating would indicate that the project has no significant impact (positive or negative) against a particular criterion, or is business as usual.
- a negative rating would mean that the project has serious impact against a particular criterion

The assessment shall focus on all impacts of the project, both within and outside the project boundary. Assessment of the project shall focus on all stages of the project cycle: from project construction to project decommissioning to ensure that sustainable development benefits are maximised over the life of the project.

The project must achieve a positive or neutral rating for each criterion of the 4 mentioned categories - Economic, Social, Environmental and Technology Transfer. A negative rating in one of the criteria indicates that the project does not fully meet the sustainable development goals of Cambodia (as outlined in the related laws, regulations, policies, statements and conventions); and the project should be reworked and resubmitted to the DNA. The absence of negative impacts for each criterion is considered to be the minimum threshold with which project proponents must comply.

Monitoring and Verification Plan

The Monitoring and Verification Plan (M&V) should not be limited to emission reduction aspects as outlined in the PDD. The Monitoring and Verification Plan must also cover all commitments made in the PDD as they relate to the Sustainable Development Criteria outlined in the Matrix.

The Designated Operational Entity shall verify and certify the performance of the project against commitments made in the PDD as they relate to emission reductions and the above mentioned sustainable development criteria. Failure of the project to comply with these commitments will result in the Designated National Authority formally notifying the Executive Board of the Clean Development Mechanism and other relevant project participants.

Sustainable Development Criteria and Assessment Matrix

ELIGIBILITY CRITERIA	ASSESSMENT
Category 1. Environmental Protection and Improvement	
1.1 Contribution to mitigation of global climate change	**+** Reduction or avoidance in GHG emissions ↑ **0** No significant change in GHG emissions ↓ **-** Increase in GHG emissions
1.2 Reduction in air pollution compared with the baseline scenario identified in the PDD	**+** Reduction in air pollutant levels compared with the baseline scenario identified in the PDD ↑ **0** No significant change in air pollutant levels compared with the baseline scenario identified in the PDD ↓ **-** Increase in air pollutant levels compared with the baseline scenario identified in the PDD
1.3 Reduction in water pollution compared with the baseline scenario identified in the PDD	**+** Reduction in water pollutant levels compared with the baseline scenario identified in the PDD ↑ **0** No significant change in water pollutant levels compared with the baseline scenario identified in the PDD ↓ **-** Increase in water pollutant levels compared with the baseline scenario identified in the PDD
1.4 Reduction in soil pollution compared with the baseline scenario identified in the PDD	**+** Reduction in soil pollutant levels compared with the baseline scenario identified in the PDD ↑ **0** No significant change in soil pollutant levels compared with the baseline scenario identified in the PDD ↓ **-** Increase in soil pollutant levels compared with the baseline scenario identified in the PDD
1.5 Reduction in noise pollution compared with the baseline scenario identified in the PDD	**+** Reduction in noise pollution levels compared with the baseline scenario identified in the PDD ↑ **0** No significant change in noise pollution levels compared with the baseline scenario identified in the PDD ↓ **-** Increase in noise pollution levels compared with the baseline scenario identified in the PDD
1.6 Biodiversity conservation	**+** Increase in indigenous biodiversity resources at the ecosystem, species and/or genetic levels, for example: • Extension of habitat for endangered species • Multiple indigenous species activities ↑ **0** No significant impact on indigenous biodiversity resources at the ecosystem, species and/or genetic levels, for example: • Single species activities adequately addressed with corridors and buffer zones; • Management/implementation plan in place to protect species and their habitats; ↓ **-** Reduction in indigenous biodiversity resources at the ecosystem, species and/or genetic levels, for example: • Clearing or flooding of ecological habitats • Removal and/or impact on endangered species and/or their

ELIGIBILITY CRITERIA	ASSESSMENT
	habitat • Removal of existing diverse species cover and replacement with single or dual species
1.7 Sustainable use of land resources	**+** Improvement of land resources ↑ **0** No significant impact on land resources ↓ **-** Unsustainable land use or degradation of land
1.8 Rational use of mineral resources	**0** Rational use of mineral resources ↓ **-** Inefficient use of mineral resources
1.9 Sustainable use of forest resources	**+** Improvement of forest resources ↑ **0** • No significant impact on forest resources • Management/implementation plan in place to mitigate the impacts ↓ **-** Unsustainable use or depletion of forest resources
1.10 Sustainable use of water resources	**+** Improvement of water resources ↑ **0** • No significant impact on water resources • Management/implementation plan in place to mitigate the impacts ↓ **-** Unsustainable use or depletion of water resources
1.11 Archaeological, cultural, historical and spiritual heritage	**+** Enhancement of the preservation of archaeological, cultural, historical or spiritual sites ↑ **0** No significant impact on archaeological, cultural, historical or spiritual sites ↓ **-** • Adverse impact on archaeological, cultural, historical or spiritual sites • Adverse impact on people's access to archaeological, cultural, historical or spiritual sites
Category 2. Social – Enhancement of Income and Quality of Life	
2.1 Poverty alleviation	**+** • Increase of income generation opportunities for local people • Improvement of livelihood of local people, in particular the poor and the disadvantaged groups ↑ **0** No significant impact on livelihoods of local people ↓ **-** • Removal of ability of local people to access resources for income generation • Displacement of people without provision of alternatives for income generation
2.2 Provision of community infrastructures	**+** Provision of community infrastructures (wells, roads, schools etc.) ↑ **0** No significant impact on community infrastructures ↓ **-** Degradation of community infrastructures (wells, roads, schools etc.)

ELIGIBILITY CRITERIA	ASSESSMENT
	by project related activities
2.3 Stakeholder consultation	**+** • Stakeholder consultation from the beginning of the project • Project designed in collaboration with stakeholders • Local stakeholders support the project • Participation of stakeholders in the decision making process **↑** **0** Stakeholders were consulted and minimal impact identified **↓** **-** • No consultation of stakeholders • Disregard of stakeholders' comments • Consultation of stakeholders only at the end of the project design with no opportunity to modify the project • Local stakeholders do not support the project or are opposed to it
2.4 Access to community assets	**+** Improved access for the target communities to community assets **↑** **0** No significant change in access for the target communities to community assets **↓** **-** Reduction of access for the target communities to community assets
2.5 Equity in accessing the community benefits of the project for the target communities	**+** Support the most disadvantaged groups of the target communities to access to the community benefits of the project **↑** **0** Equitable access for the target communities to the community benefits of the project **↓** **-** Inequitable access for the target communities to the community benefits of the project
2.6 Creation of employment in country	**+** Increase in number of jobs at national/regional or local levels **↑** **0** No significant change in employment compared to the baseline; no jobs are created or lost **↓** **-** • All jobs identified in the baseline are eliminated; • Job losses
2.7 Impact on public health	**+** Improvement in public health **↑** **0** No significant impact on public health **↓** **-** Adverse impact on public health
2.8 Gender equity	**+** Promotion of gender equity and women empowerment **↑** **0** No significant change in gender equity and women empowerment **↓** **-** Reduction in gender equity, discrimination against women
Category 3. Technology Transfer	
3.1 Transfer of appropriate and best available technology	**+** • Best available technology in advanced industrial economies • Best available technology and technology well proven • Best available technology and technology can easily be maintained locally • Best available technology and technology appropriate for local

ELIGIBILITY CRITERIA	ASSESSMENT
	economic and social conditions ↑ **0** Standard technology used ↓ **-** • Inappropriate technology, not adapted to local needs and capacity • Equipment and skills for maintenance not available in Cambodia • Technology not proven, using Cambodia as a testing ground • Technology would not be allowed in investors' countries
3.2 Capacity building	**+** • Transfer of skills for use and maintenance of technology/equipment • Use of local companies to install and maintain equipment • Training of local technicians in areas of expertise not available in Cambodia ↑ **0** Training of local technicians in areas of expertise already available in Cambodia ↓ **-** • No transfer of skills for use and maintenance of technology/equipment • No use of local companies to install and maintain equipment • Reliance on international experts to install/maintain equipment
Category 4. Economic Benefits	
4.1 Use of local businesses and industries	**+** • Project working directly in local partnership • Use of local companies to manufacture equipment ↑ **0** Minimal use of local businesses and industries ↓ **-** • No local companies employed during the designing, construction, implementation or maintenance stages • No local companies employed to produce equipment
4.2 Share of project budget spent in country	**+** Significant proportion of total budget spent in country on Cambodian economy ↑ **0** Reasonable proportion of total budget spent in country on Cambodian economy ↓ **-** Minimal total budget spent in country on Cambodian economy
4.3 Reduced dependence on fossil fuels (energy projects only)	**+** • Reduction of dependence on fossil fuels • Increased use of renewable and/or clean energy resources ↑ **0** No significant impact on dependence on fossil fuels ↓ **-** Increased dependence on fossil fuels
4.4 Reduced dependence on imported energy (energy projects only)	**+** Reduction of dependence on imported energy ↑ **0** No significant impact on dependence on imported energy ↓ **-** Increased dependence on imported energy

APPLICATION FORM FOR CAMBODIAN DNA APPROVAL OF CLEAN DEVELOPMENT MECHANISM PROJECT

Title of the Project: .....
.....
Name and Position of Representative in Charge of Application: .....
.....
.....
Organization: .....
.....
Address of Organization: .....
.....
.....
Tel: ..... Fax: .....
E-mail: .....
Name of Project Partner(s): .....
.....

Applying for:

☐ Letter of No Objection
- ☐ PIN attached (mandatory)

☐ Letter of Approval
- ☐ PDD attached* (mandatory)
- ☐ Sustainable Development Compliance Checklist attached (mandatory)
- ☐ Any other relevant documents attached (EIA report, stakeholder consultation report, environmental management plan, investment project approval, etc.)
- ☐ Khmer Translation of Sections A2 (mandatory)

Date of Submission: .....
Signature of Representative:

Please submit this application to the DNA Secretariat:
c/o Cambodian Climate Change Office, Ministry of Environment
#48 Preah Sihanouk Blvd, Phnom Penh
Phone/Fax: (855-23)218-370

For DNA Secretariat/Climate Change Office use only:

Registration Number: .....
Received by: ..... Position: .....

Date: .....
Signature of Recipient:

CAMBODIAN DESIGNATED NATIONAL AUTHORITY

SUSTAINABLE DEVELOPMENT (SD) COMPLIANCE CHECKLIST

FOR PROPOSED CLEAN DEVELOPMENT MECHANISM (CDM) PROJECTS

In filling in the following SD Compliance Checklist, refer to the *Sustainable Development Criteria and Assessment Matrix* available from the Cambodian DNA Secretariat, and explain how your project meets each of the sustainable development criteria listed.

Please attach all supporting documents where relevant (EIA report, stakeholder consultation report, environmental management plan, investment project approval, etc.).

Please fill out relevant information for each criteria below.

ELIGIBILITY CRITERIA	EXPLANATION OF HOW YOUR PROJECT MEETS EACH CRITERION
1. Environmental Protection and Improvement	
1.1 Contribution to mitigation of global climate change	
1.2 Reduction in air pollution compared with the baseline scenario identified in the PDD	
1.3 Reduction in water pollution compared with the baseline scenario identified in the PDD	
1.4 Reduction in soil pollution compared with the baseline scenario identified in the PDD	
1.5 Reduction in noise pollution compared with the baseline scenario identified in the PDD	
1.6 Biodiversity conservation	
1.7 Sustainable use of land resources	
1.8 Rational use of mineral resources	
1.9 Sustainable use of forest resources	

ELIGIBILITY CRITERIA	EXPLANATION OF HOW YOUR PROJECT MEETS EACH CRITERION
1.10 Sustainable use of water resources	
1.11 Archaeological, cultural, historical and spiritual heritage	
2. Social - Enhancement of Income and Quality of Life	
2.1 Poverty alleviation	
2.2 Provision of community infrastructures	
2.3 Stakeholder consultation	
2.4 Access to community assets	
2.5 Equity in accessing the community benefits of the project for the target communities	
2.6 Creation of employment in country	
2.7 Impact on public health	
2.8 Gender equity	
3. Technology Transfer	
3.1 Transfer of appropriate and best available technology	

ELIGIBILITY CRITERIA	EXPLANATION OF HOW YOUR PROJECT MEETS EACH CRITERION
3.2 Capacity building	
4. Economic Benefits	
4.1 Use of local businesses and industries	
4.2 Share of project budget spent in-country	
4.3 Reduced dependence on fossil fuels (energy projects only)	
4.4 Reduced dependence on imported energy (energy projects only)	

CAMBODIAN DESIGNATED NATIONAL AUTHORITY

SUSTAINABLE DEVELOPMENT CRITERIA FOR PROPOSED CDM PROJECTS

LEGISLATION AND POLICY REFERENCE TABLE

Legislation and Policy References for Sustainable Development

The following legislation and policy reference table is a companion table to the Cambodian Sustainable Development Criteria and Assessment matrix for proposed Clean Development Mechanism projects. The sustainable development matrix is the tool that Cambodia has developed to assess proposed CDM projects to ensure that they meet Cambodia's sustainable development objectives. The matrix focuses on the economic, social, environmental and technology transfer aspects of development, which are articulated in Cambodia's existing laws, regulations, policies, statements and commitments to international conventions.

This table is a guide only and current as of the establishment of the Cambodian DNA. It is the responsibility of the project proponent to ensure they are aware of any new legislation and policy references.

LEGISLATION AND POLICY REFERENCE TABLE

Eligibility Criteria	Supporting Legislation and Policy Documents
1. Environmental Protection and Improvement	
1.1 Contribution to mitigation of global climate change	• Ministry of Environment's Strategic Plan 2004-2008 • Cambodian Millennium Development Goals Report • Cambodia's Initial National Communication under the UNFCCC • United Nations Framework Convention on Climate Change (UNFCCC)
1.2 Reduction in air pollution	• Constitution • Law on Environmental Protection and Natural Resource Management • Sub-decree on Air Pollution Control and Noise Disturbance • Sub-decree on Environmental Impact Assessment • Political Programme of the RGC for the 3rd Legislature of the National Assembly • Ministry of Environment's Strategic Plan 2004-2008 • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003 • Convention on Persistent Organic Pollutants • United Nations Framework Convention on Climate Change (UNFCCC) • Cambodia's Initial National Communication under the UNFCCC
1.3 Reduction in water pollution	• Constitution • Law on Environmental Protection and Natural Resource Management • Royal Decree on the Creation and Designation of Protected Areas • Sub-decree on Water Pollution Control • Sub-decree on Environmental Impact Assessment • Sub-decree on Solid Waste Management • National Water Resources Policy for the Kingdom of Cambodia 2004 • Political Programme of the RGC for the 3rd Legislature of the National Asse • Strategic Plan on Water Resources Management and Development 2004-2008 • Ministry of Environment's Strategic Plan 2004-2008 • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003 • Convention on Persistent Organic Pollutants
1.4 Reduction in soil pollution	• Constitution • Law on Environmental Protection and Natural Resource Management • Royal Decree on the Creation and Designation of Protected Areas • Sub-decree on Environmental Impact Assessment • Sub-decree on Solid Waste Management • Political Programme of the RGC for the 3rd Legislature of the National Assembly • National Environmental Action Plan 1998-2002 • Ministry of Environment's Strategic Plan 2004-2008 • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003 • Convention on Persistent Organic Pollutants
1.5 Reduction in noise pollution	• Constitution • Sub-decree on Air Pollution Control and Noise Disturbance • Sub-decree on Environmental Impact Assessment • Political Programme of the RGC for the 3rd Legislature of the National Assembly • Ministry of Environment's Strategic Plan 2004-2008 • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003
1.6 Biodiversity conservation	• Constitution • Law on Environmental Protection and Natural Resource Management • Draft Protected Areas Law

Eligibility Criteria	Supporting Legislation and Policy Documents
	• Royal Decree on the Creation and Designation of Protected Areas • Sub-decree on Environmental Impact Assessment • Political Programme of the RGC for the 3rd Legislature of the National Assembly • National Environmental Action Plan 1998-2002 • National Biodiversity Strategy and Action Plan • Ministry of Environment's Strategic Plan 2004-2008 • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003 • National Park Management Plans • Convention on Biological Diversity • Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar) • Convention on the Conservation of Migratory Species • United Nations Convention to Combat Desertification
1.7 Sustainable use of land resources	• Constitution • Law on Environmental Protection and Natural Resource Management • Draft Protected Areas Law • Land Law • Royal Decree on the Creation and Designation of Protected Areas • Sub-decree on Environmental Impact Assessment • Policy Paper on Social Land Concessions in Kingdom of Cambodia 2003 • Political Programme of the RGC for the 3rd Legislature of the National Assembly • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003 • National Environmental Action Plan 1998-2002 • Second Five-Year Socioeconomic Development Plan • United Nations Convention to Combat Desertification
1.8 Sustainable use of mineral resources	• Constitution • Law on Mineral Management and Exploration • Law on Environmental Protection and Natural Resource Management • Draft Protected Areas Law • Land Law • Royal Decree on the Creation and Designation of Protected Areas • Sub-decree on Environmental Impact Assessment • Policy Paper on Social Land Concessions in Kingdom of Cambodia 2003 • Political Programme of the RGC for the 3rd Legislature of the National Assembly • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003 • National Environmental Action Plan 1998-2002 • Second Five-Year Socioeconomic Development Plan
1.9 Sustainable use of forest resources	• Constitution • Forestry Law • Land Law • Law on Environmental Protection and Natural Resource Management • Draft Protected Areas Law • Royal Decree on the Creation and Designation of Protected Areas • Community Forestry Sub-decree • Sub-decree on Environmental Impact Assessment • Political Programme of the RGC for the 3rd Legislature of the National Assembly • National Biodiversity Strategy and Action Plan • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003 • National Environmental Action Plan 1998-2002

Eligibility Criteria	Supporting Legislation and Policy Documents
	• Second Five-Year Socioeconomic Development Plan
1.10 Sustainable use of water resources	• Constitution • Law on Environmental Protection and Natural Resource Management • Draft Protected Areas Law • Royal Decree on the Creation and Designation of Protected Areas • Sub-decree on Environmental Impact Assessment • Sub-decree on Solid Waste Management • Sub-decree on Water Pollution Control • National Water Resources Policy for the Kingdom of Cambodia 2004 • Political Programme of the RGC for the 3rd Legislature of the National Assembly • Strategic Plan on Water Resources Management and Development 2004-2008 • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003 • National Environmental Action Plan 1998-2002
1.11 Archaeological, cultural, historical or spiritual heritage	• Constitution • Draft Protected Areas Law • Law on Environmental Protection and Natural Resource Management • Sub-decree on Environmental Impact Assessment • Political Programme of the RGC for the 3rd Legislature of the National Assembly • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003 • Second Five-Year Socioeconomic Development Plan • Convention for the Protection of the World Cultural and Natural Heritage
2. Social - Enhancement of Income and Quality of Life	
2.1 Poverty alleviation	• Constitution • Land Law • Community Forestry Law • Forestry Law • Policy Paper on Social Land Concessions in Kingdom of Cambodia 2003 • Political Programme of the RGC for the 3rd Legislature of the National Assembly • National Poverty Reduction Strategy 2003-2005 • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003 • Second Five-Year Socioeconomic Development Plan
2.2 Provision of community infrastructures	• Constitution • Political Programme of the RGC for the 3rd Legislature of the National Assembly • National Poverty Reduction Strategy 2003-2005 • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003 • Second Five-Year Socioeconomic Development Plan
2.3 Stakeholder consultation	• Constitution • Sub-decree on Environmental Impact Assessment • Political Programme of the RGC for the 3rd Legislature of the National Assembly • National Poverty Reduction Strategy 2003-2005 • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003
2.4 Access to community assets	• Constitution • Land Law • Forestry Law • Draft Protected Areas Law • Law on Environmental Protection and Natural Resource Management • Royal Decree on the Creation and Designation of Protected Areas

Eligibility Criteria	Supporting Legislation and Policy Documents
	• Sub-decree on Community Fisheries • Sub-decree on Social Land Concessions • Community Forestry Sub-decree • Sub-decree on Environmental Impact Assessment • Policy Paper on Social Land Concessions in Kingdom of Cambodia 2003 • Political Programme of the RGC for the 3rd Legislature of the National Assembly • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003 • National Environmental Action Plan 1998-2002 • National Biodiversity Strategy and Action Plan • Second Five-Year Socioeconomic Development Plan
2.5 Equity in accessing the community benefits of the project for the target communities	• Constitution • Land Law • Forestry Law • Draft Protected Areas Law • Law on Environmental Protection and Natural Resource Management • Royal Decree on the Creation and Designation of Protected Areas • Sub-decree on Community Fisheries • Sub-decree on Environmental Impact Assessment • Sub-decree on Social Land Concessions • Community Forestry Sub-decree • Policy Paper on Social Land Concessions in Kingdom of Cambodia 2003 • Political Programme of the RGC for the 3rd Legislature of the National Ass • National Biodiversity Strategy and Action Plan • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003National Environmental Action Plan 1998-2002 • Second Five-Year Socioeconomic Development Plan
2.6 Creation of employment in country	• Constitution • Labor Law • Political Programme of the RGC for the 3rd Legislature of the National Assembly • National Poverty Reduction Strategy 2003-2005 • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003 • Second Five-Year Socioeconomic Development Plan

Eligibility Criteria	Supporting Legislation and Policy Documents
2.7 Impact on public health	• Constitution • Labor Law • Sub-decree on Environmental Impact Assessment • Political Programme of the RGC for the 3rd Legislature of the National Assembly • National Poverty Reduction Strategy 2003-2005 • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003
2.8 Gender equity	• Constitution • Labor Law • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003
3. Technology Transfer	
3.1 Transfer of appropriate and best available technology	• Political Programme of the RGC for the 3rd Legislature of the National Assembly • National Poverty Reduction Strategy 2003-2005 • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003 • Second Five-Year Socioeconomic Development Plan • Cambodia's Initial National Communication under the UNFCCC
3.2 Capacity building	• Political Programme of the RGC for the 3rd Legislature of the National Assembly • National Poverty Reduction Strategy 2003-2005 • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003 • Second Five-Year Socioeconomic Development Plan • Cambodia's Initial National Communication under the UNFCCC
4. Economic Benefits	
4.1 Use of local businesses and industries	• Political Programme of the RGC for the 3rd Legislature of the National Assembly • National Poverty Reduction Strategy 2003-2005 • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003 • Second Five-Year Socioeconomic Development Plan
4.2 Share of project budget spent in-country	• Investment Law • Political Programme of the RGC for the 3rd Legislature of the National Assembly • National Poverty Reduction Strategy 2003-2005 • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003 • Second Five-Year Socioeconomic Development Plan
4.3 Reduced dependence on fossil fuels (energy projects only)	• Political Programme of the RGC for the 3rd Legislature of the National Assembly • National Poverty Reduction Strategy 2003-2005 • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003 • Renewable Energy Action Plan • Second Five-Year Socioeconomic Development Plan • Cambodia's Initial National Communication under the UNFCCC
4.4 Reduced dependence on imported energy (energy projects only)	• Political Programme of the RGC for the 3rd Legislature of the National Assembly • National Poverty Reduction Strategy 2003-2005 • Rectangular Strategy for Growth, Employment, Equity and Efficiency • Cambodian Millennium Development Goals Report 2003 • Renewable Energy Action Plan • Second Five-Year Socioeconomic Development Plan • Cambodia's Initial National Communication under the UNFCCC

Appendix 2: Cambodia's Readiness Project Idea Note

The purpose of this document is to: a) request an overview of your country's interest in the FCPF program, and b) provide an overview of land use patterns, causes of deforestation, stakeholder consultation process, and potential institutional arrangements in addressing REDD (Reducing Emissions from Deforestation and Forest degradation).

This R-PIN will be used as a basis for the selection of countries into the FCPF by the Participants Committee. Information about the FCPF is available at: www.carbonfinance.org/fcpf

The Forest Carbon Partnership Facility (FCPF)
Readiness Plan Idea Note (R-PIN) Template

Guidelines:

1. The purpose of this document is to: a) request an overview of your country's interest in the FCPF program, and b) provide an overview of land use patterns, causes of deforestation, stakeholder consultation process, and potential institutional arrangements in addressing REDD (Reducing Emissions from Deforestation and Forest degradation). This R-PIN will be used as a basis for the selection of countries into the FCPF by the Participants Committee. Information about the FCPF is available at: www.carbonfinance.org/fcpf
2. Please keep the length of your response under 20 pages. You may consider using the optional Annex 1 Questionnaire (at the end of this template) to help organize some answers or provide other information.
3. You may also attach at most 15 additional pages of technical material (e.g., maps, data tables, etc.), but this is optional. If additional information is required, the FCPF will request it.
4. The text can be prepared in Word or other software and then pasted into this format.
5. For the purpose of this template, "Deforestation" is defined as the change in land cover status from forest to non-forest (i.e., when harvest or the gradual degrading of forest land reduces tree cover per hectare below your country's definition of "forest." "Forest degradation" is the reduction of tree cover and forest biomass per hectare, via selective harvest, fuel wood cutting or other practices, but where the land still meets your country's definition of "forest" land.
6. When complete, please forward the R-PIN to: 1) the Director of World Bank programs in your country; and 2) Werner Kornexl (wkornexl@worldbank.org) and Kenneth Andrasko (kandrasko@worldbank.org) of the FCPF team.

Country submitting the R-PIN: *Cambodia*
Date submitted:

1. General description:

a) Name of submitting person or institution:

H.E. Ty Sokhun
Delegate of the Royal Government of Cambodia
Chief of Forestry Administration
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Affiliation and contact information of Government focal point for the FCPF (if known):

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Focal point on REDD
Forestry Administration
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b) List authors of and contributors to the R-PIN, and their organizations:

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Khun Vathana, Assistant Chief of Forestry Administration
Keo Omaliss, Deputy Director of Wildlife Protection Office
Samreth Vanna, Deputy Director of Forest and Wildlife Science Research Institute
Chea Nareth, Forest Management Office staff
Andrew Wardell, Clinton Climate Initiative-Forestry
Jean-Baptiste Routier, Expert, ONF international
Stéphane Brun, Technical Assistant, FA
Tom Clements, Research and Policy Advisor to WCS

c) Who was consulted in the process of R-PIN preparation, and their affiliation?

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Andrew Wardell, Regional Director, Clinton Climate Initiative (CCI)

Non-governmental organizations
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Seng Teak, Country Director, WWF Greater Mekong – Cambodia Country Programme
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Amanda Bradley, Country Director, Community Forestry International (CFI)
Emily Woodfield, Country director, FFI Cambodia
David Emmett, Deputy Regional director, Conservation International (CI Cambodia)
Arnaud Guidal, CERES
James Bampton, Regional Community Forestry Training Center (RECOFTC)
Long Sona, Carbon forestry program manager, CFI

Local communities
Local community will be consulted before any REDD project start. The extensive experiences on establishment of Protected Forests in Cambodia are completely involved by local communities at early stage, including decision on boundary of the areas and their involvement.

2. Which institutions are responsible in your country for:

a) forest monitoring and forest inventories:

Forest Management Office, Forestry Administration (FA), MAFF
Forestry and Wildlife Science Research Institute (FWSRI), Forestry Administration (FA), MAFF
Forest Land and Watershed Management Office, Forestry Administration (FA), MAFF
Wildlife Protection Office, Forestry Administration (FA), MAFF
General Department of Administration for Nature Conservation and Protection (GDNCP), **MoE**

b) forest law enforcement:

Legislation and Litigation Office, Forest Crime Monitoring and Reporting Unit, Forestry Administration (FA)
Wildlife Protection Office, Forestry Administration (FA)
Local Authority Forestry Administration
General Department of Administration for for Nature Conservation and Protection (GDNCP), MoE

c) forestry and forest conservation:

Wildlife Protection Office (WPO), Forestry Administration (FA), MAFF
Forestry and Wildlife Science Research Institute (FWSRI), Forestry Administration (FA), MAFF
Local Forestry Administration
General Department for Nature Conservation and Protection (GDNCP), Ministry of Environment (**MoE**)

d) coordination across forest and agriculture sectors, and rural development:

The Technical Working Group on Forestry & Environment (TWG F & E) is the **formal coordination mechanism and high level coordination** for multi-stakeholders dialogue on forestry and environmental issues among the Royal Government of Cambodia represented by different ministries/agencies and development partners, civil society and the private sector. It consists of **Forestry Administration, Ministry of Agriculture Forestry and Fisheries, Ministry of Environment, Ministry of Economic and Finance, Ministry of Land Management Urbanization, Planning and Construction, Ministry of Industry, Mines and Energy, Ministry of Commerce, Ministry of Interior and Ministry of National Defend), and development partners (AFD, Danida, DFID, NZAid, JICA, FAO, UNDP, USAID and World Bank) and private sectors (civil society and NGOs).** The TWG F & E convenes periodic meetings, and reports back to four-monthly Government Donor Coordination Committee (GDCC) and annual Cambodia Development Cooperation Forum (CDCF) meetings. Each year Joint Monitoring Indicators (JMIs) are agreed for each TWG against which performance in the sector is measured. Other TWGs exist with regard to Land and Agriculture & Water. The JMIs for the TWG F & E for 2009 are presented in Annex 1. **The TWG F&E will develop and facilitate REDD strategy in Cambodia, including financial flow from individual REDD project.**

3. Current country situation (consider the use of Annex 1 to help answer these questions):

a) Where do forest deforestation and forest degradation occur in your country, and how extensive are they? (i.e., location, type of forest ecosystem and number of hectares deforested per year, differences across land tenure (e.g., national forest land, private land, community forest, etc.)):

In 2006 the forest cover in Cambodia was estimated to **10.730.781 hectares**, or **59.09 %** of the total territory (FA, 2007; FA, 2008). Forest is predominantly distributed ***(a)*** in the north-eastern part of the country, bordering Laos and Vietnam, covered by a mix of lowland tropical moist forest and deciduous dipterocarp forests; ***(b)*** in the hilly country around the Gulf of Thailand and west of the Mekong River, covered by a medium-altitude closed forest; ***(c)*** in the north and north-western part of the country, we found a mix of closed deciduous forests and open forests . Four main forest types were recognized in Cambodia for the two last national land cover study produced in 2002 and 2006 [1]: evergreen forest (3.668.902 hectares, 20.2%), semi evergreen forest (1.362.638 hectares, 7.5%), deciduous forest (4.692.098 hectares, 25.9%), and other forest class (1.007.143 hectares, 5.6%) which combine regeneration, stunted forests, mangroves, flooded forests, forest plantations and bamboo.

A total of 5 national land cover maps were produced in Cambodia since 1965, with support of the Food and Agriculture Organization (FAO), Mekong Secretariat (MRC), German Technical Cooperation (GTZ), Danida, DFID, NZAid and French Development Agency (AFD). The first forest cover assessment of 1965 shows that approximately 73% of the country was covered by forest at this time. The last forest assessment in 2006 shows that the forest cover was reduced to 59%. Therefore, the total lost of forest cover between 1965 and 2006 is about 2.496.319 hectares (23%) that represent an annual rate of deforestation of 0.56%/year. The forest cover change between 2002 and 2006 showed a decline of 2.06% in forest

[1] Maps produced by the GIS and RS Unit of the Forestry Administration with external quality assessment carried out by GRAS A/S, GeoCentre University of Copenhagen.

cover that represented an estimated loss of 373.510 hectares. During this period 60% of all forest loss occurred in four north-western provinces, viz., Oddar Meanchhey, Banteay Meanchhey, Siem Reap and Pailin (FA, June 2008).

Deforestation [2] during the period 1997-2006 also resulted in the loss of

- Deciduous, semi-evergreen and evergreen forest areas in the **northeast region**;
- Evergreen forests along road No. 4 and the recently rehabilitated roads in the coastal regions
- Deciduous forests across the N**orthern Plains**;
- **Flooded forests** associated with the **Tonle Sap Lake**.

A map of deforestation will be available in April 2009, at 1/250.000 scale, for the whole country. It will show the evolution of forest cover in Cambodia from 1989 to 2006.

No information is available in terms of a national assessment of forest degradation[3], as this parameter was not taken into account during the preparation of the national land cover maps. Large-scale logging during the 1990s in many areas almost certainly has caused considerable forest degradation. Present day deforestation and forest degradation are mainly concentrated on the boundary between agricultural and the major forests cover and in the flooded forest. The development of new access roads through isolated forest is enabling deforestation and the degradation of primary forest.

Under the 2002 Forestry Law, the Permanent Forest Estate is divided into the Permanent Forest Reserve, private forests, and protected areas. The Permanent Forest Reserve is State Public Property and falls under the jurisdiction of the Forestry Administration (FA). It is divided into 1.434.032 hectares of **Protected Forests** (8% of the total land area), and 3.374.328 hectares of former or suspended **Forest Concessions** (19%), 330.732 hectares of **Community Forestry** (2%). Other remaining forests are not classified yet, but the Forestry Administration is committed to increasing the area under community forestry to a total of 2 million hectares (11%). Under the Community Forestry Sub Decree (2003), community forest land is owned by the state but may be allocated for local management according to Community Forest Agreements for up to 15 years. All Forest Concessions in Cambodia have been under a logging moratorium since 2002. Protected Areas are also State Public Property and fall under the jurisdiction of the Ministry of Environment and cover 3.098.000 hectares (approximately 17%). Map of Protected Area and Protected Forests are presented in Annex 2.

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b) Are there any estimates of greenhouse or carbon dioxide emissions from deforestation and forest degradation in your country? If so, please summarize:

Cambodia ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1995 and acceded to its Kyoto Protocol in 2002. The country's *Initial National Communication* submitted to COP-8 in 2002 followed a *National Greenhouse Gas Inventory for 1994* completed in 2001. [4] In 1994, Cambodia was a net carbon sink country with a net total carbon removal of 5,142 Gg of CO_2 equivalent. Calculations were based on 1994 national statistical data from FA and were completed by factors originating from the IPCC's guidelines for national GHG inventories[5]. The Cambodia Climate Change Office is currently preparing the *National Greenhouse Gas Inventory for 2000* as part of the country's *Second National Communication*. Rapid economic growth in the garment and tourism industries, electricity consumption and vehicle ownership will all have contributed to a significant change in the relative contributions of GHG emissions in Cambodia

[2] Following the decision of the 11/COP.7, of the UNFCCC, **deforestation** or forest clearance was defined as a direct anthropogenic conversion of a forested area to a non-forested area.

[3] Forest **degradation** is understood here as the definition given by the IPCC, i.e. a long term reduction of carbon stocks of anthropogenic origin without a change in land use (within those forest zones which remain forests)

[4] http://unfccc.int/resource/docs/natc/khmnc1.pdf

[5] Cambodia's Initial National Communication under the United Nations Framework Convention on Climate Change. UNFCCC. <http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php>

[6] GRAS A/S, 2007a. Accuracy Assessment Report. March 2007. University of Copenhagen, Copenhagen.

[7] NIS, 2005. Statistical Yearbook 2005. National Institute of Statistics, Ministry of Planning, Phnom Penh, Cambodia

[8] IFSR, 2004. Independent Forest Sector Review. Royal Danish Embassy Development Cooperation Section and Forest Administration, Phnom Penh, Cambodia. www.cambodia-forest-sector.net/docs-part2.htm

[9] The address by the Prime Minister at the First Cabinet Meeting of the Fourth Legislature of the National Assembly on 26 September 2008 regarding the RGC's 'Rectangular Strategy for Growth, Employment, Equity and Efficiency, Phase II' included reference to Forestry Reform with a clear commitment to, and focus on community forestry.

[10] CDRI, 2006. Forest Management Options in Cambodia. Cambodia Development Resource Institute Policy Brief, March 2006 – Issue 4

during the past decade consistent with global and regional drivers of accelerating CO_2 emissions.

In 2006 a preliminary estimate of carbon emissions due to land-use change and logging was conducted in Cambodia (N. Sasaki, 2006). Land-use and forest inventory data were used to develop simple models capable of estimating the change of carbon stocks and carbon emissions from dryland and edaphic forests. Between 1993 and 2003, annual carbon emissions amounted to about 13.7 TgC, owing to deforestation and logging.

The Oddar Meanchhey REDD pilot project (see below) has included the development of a PDD and REDD Methodology in 2008 (currently subject to VCS and CCBA validation) which include estimates of CO_2 emissions from deforestation and degradation in that area.

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c) Please describe what data are available for estimating deforestation and/or forest degradation. Are data published? Describe the major types of data, including by deforestation and forest degradation causes and regions if possible (e.g., area covered, resolution of maps or remote sensing data, date, etc.).

The 10th TWG-F&E meeting held on 26 September 2006 agreed to support a national forest cover change assessment for 2005/06 with financial assistance provided by the Royal Danish Embassy-Danida. The Remote Sensing and Geographic Information System (RS-GIS) Unit within the FA's Watershed Management and Forest Land Office conducted the forest cover change assessment using Landsat ETM+ data. Independent quality assurance and data verification was carried out by GRAS A/S, University of Copenhagen. The GRAS report concluded: (The) "RS and GIS unit is doing a very good job based on relatively simple mapping methods. However, several improvements can be made using the full multi-spectral capabilities of the satellite data that is difficult to do base alone on a manual classification. Shifting to more automated methods will ensure more systematic and consistent results". [6] A three-stage capacity building plan to address these capacity constraints has already been put into effect.
The key findings of the forest cover change assessment published in June 2008 were:

- Forest cover declined during the period 2002-2006 from 61% to 59% of the total land area. Thus, Cambodia's forest cover fell slightly below the CMDG (Cambodian Millennium Development Goal) target of 60%.
- The 2% decline in forest cover represents an estimated loss of 373.510 hectares of forest. The most significant loss of forests occurred in the north-west of the country (notably Bantey Meanchey, Battambong, Siem Reap, Odar Meanchey and Pailin Provinces).
- The net annual rate of deforestation is estimated as 0.5% representing less than half current FAO estimates (1.3%) for Cambodia.

Cambodia received assistance from the United Nations Development Programme (UNDP) and the Food and Agriculture Organization of the United Nations (FAO) in carrying out two major forest inventories and one pilot scale inventory:

- 1958-1962, inventory of East of Mekong region (5.5 million hectares);
- 1968-1970, inventory of Cardamom range (300.000 hectares);
- 1996-1998, inventory of Sandan district, Kompong Thom, (275.000 hectares).

In **1989**, the Mekong Committee produced an atlas of land cover of Cambodia based on LANDSAT TM/MSS imagery. In **1993**, the Japan Forest Technical Association (JAFTA) assisted the Department of Forestry and Wildlife (DFW) in analysing satellite imagery of LANDSAT TM data **1992/1993** to assess the country's forest resources. In 1997, the Forest Cover Monitoring Project carried out an estimate of forest cover, with support of GTZ/MRC, based on **1996/1997** LANDSAT TM.

The scale of interpretation and smallest interpretable units differ between the land cover databases developed in 1989, 1997, 2002 and 2006 (Annex 4). The smallest interpretable unit of **1 km²** was conserved in all databases.

The maps of the forest cover in 1989, 1996/97 and 2002 are presented in Annex 3.

AFD is providing TA to the FA to facilitate cartographic harmonization of the land cover databases for 1989 / 1997 / 2002 and 2006. This project should produce a geodatabase of national land cover, providing an 18 years baseline of forest cover

change over the whole country, at a scale of 1/250.000 and 1 km² minimum mapping units. An initial work of quality assessment was carried out by the University of Copenhagen on land cover maps 2002 and 2006 (GRAS A/S, 2007). The same work will be carried out on land cover maps 1989 and 1997.

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d) What are the main causes of deforestation and/or forest degradation?

The principle causes of deforestation and forest degradation are (in no particular order and without distinguishing between direct and indirect causes):

(i) ***Limited capacity and funds to implement sustainable forest management:*** Under the 2002 Forestry Law, forest lands may be managed for conservation, community forestry or production. However, limited institutional capacity and financial resources means that reforms of forest management and demarcation of management units have progressed slowly. This includes measures to decentralise management control of forest resources to local communities. This has been compounded by limited capacities to manage, monitor and enforce laws and regulations in the forestry sector;

(ii) ***Illegal timber harvesting*** takes place inside and outside the concession system area. The debate around illegal logging has focused on detection, monitoring and prosecution. The high value of the wood, the remote areas and unclear boundaries make it difficult to prevent illegal logging;

(iii) ***Forest land clearance:*** the forests in Cambodia are facing multiple threats of conversion to other land uses. Some clearance is driven by land speculation, smallholder expansion of agriculture and rural in-migration. Other clearance may be due to conversion of land to agricultural purpose.

(iv) ***Rural powerty:*** Cambodia is one of the poorest countries in the region and local communities are heavily reliant on forests for their livelihoods, even if such exploitation is unsustainable. For example, fuel wood is the major source of energy in Cambodia. Based on the last Cambodia census population, it was estimated that 84% of the population rely on fuel wood and 5.5% on charcoal, for cooking[7]. This represent roughly a volume of 6,968,000m^3 of fuel wood collected annually[8]. Unsustainable fuel wood collection is therefore a key contributing factor to forest degradation. The charcoal is much more damaging as it requires green wood collection. In some provinces like Kampong Speu, producers claim that charcoal is more profitable than agriculture and constitute their main incomes.

(v) ***Population growth*** and rural migration As the majority of the population is living in rural area (85%), we can expect that agricultural encroachment will accelerate. This phenomenon could lead to:

- Migrations towards less populated area in the forested regions of noth-west, north-east and south-west of Cambodia. In Oddar Meanchey Province for example, rural population growth was 9.23% between 1998 and 2008 placing intense pressure on forest lands.
- And expansion of land dedicated to agriculture due to the poor agricultural productivity of the land. There is clearly a danger of ongoing deforestation and forest degradation as the rural population will increase (19 million in 2020, with a growing rate of 1.7%).

(vi) ***Lack of financial incentives for forest conservation:*** There are few functioning markets for environmental services so financial incentives for maintenance of intact forest are limited;

(vii) ***Regional dynamics:*** Countries in the region have also played a part in the deforestation process. Having suffered historically high rates of deforestation themselves, and/or introduced moratoria on logging some countries have turned to Cambodia to help satisfy their demand for timber and Non Timber Forest Products.

(viii) ***Forest Fires:*** While forest fires are predominantly lower intensity "ground fires" they are widespread in the dry season, especially in dry deciduous forests, and restrain natural regeneration.

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e) What are the key issues in the area of forest law enforcement and forest sector governance (e.g., concession policies and enforcement, land tenure, forest policies, capacity to enforce laws, etc.?

The Royal Government of Cambodia's (RGC) National Strategic Development Plan (2006-2010) and Rectangular Strategy for Growth, Employment, Equity and Efficiency, Phase II clearly recognise the importance of forests for Cambodia's development, particularly given the large number of forest-dependent rural poor. Improving forest management and governance will address poverty, increase forest conservation, and open up new incentives for sustainable forest management for tourism, watershed protection and climate change mitigation.[9]

Before 2002, the predominant form of forest management in Cambodia was commercial forestry concessions. This led to anarchic logging practices. Consequently in 2001, the RGC issued a Declaration on the Suspension of Forest Concession Logging Activities, which suspended all logging activities in concessions starting from January 2002 until new forest concession management plans could be prepared and approved. The licenses of 17 companies covering 3.50 million hectares in 24 concessions were cancelled and twelve concessions covering a total area of 3.37 million hectares were suspended. In addition the FA closed, and sometimes destroyed, 1,552 illegal sawmills and 737 small wood-processing plants. Through the 2002 Forestry Law the RGC undertook a comprehensive reform of the forestry sector. The Forestry Administration was established with responsibility for the Permanent Forest Reserve. Concession management was reformed by introducing mandatory compliance requirements such as Strategic Forest Management Plans (SFMPs) and Environmental and Social Impact Assessments (ESIAs), consistent with international standards. Three types of forest concession management are recognised: ***(i)*** Concessions (long term, 25-30 years); ***(ii)*** Compartment level forest exploration (medium term, 5 years); and ***(iii)*** Annual bidding coupes (Annual term, 1 year). Since 2002 only the third type, annual bidding coupes, have been approved by the government.

New alternative approaches to forest management have been introduced in Cambodia, moving beyond forest concessions. Ten Protected Forests covering 1.434.032 hectares have been declared for forest conservation, watershed protection and sustainable use by local communities. Community Forestry was introduced in 2003[10] as a way of encouraging sustainable forest management by decentralising management responsibility to local communities that are heavily dependent on forest resources. A coherent national framework has been developed comprising a clear policy, Sub Decree, guidelines, functional mapping/GIS unit, training materials and a National Community Forestry Coordinaton Committee. Although, the proportion of forest under the under community forestry activities is currently low (<5%), the FA is planning to set a target of 2 million hectares or 19% of the forest estate. To date, prakas have been issued by MAFF for 124 community forestry sites covering 145,039 hectares in five provinces (Siem Reap, Kampong Thom, Oddar Meanchhey, Koh Kong , Bantaey Meanchhey and Kampong Leng-Kampong Chhnang). It is not clear that either of these conditions (secure and adequate returns) have yet been put in place on a widespread basis throughout the whole country. This is partly due to the fact that, at present, Community Forestry offers limited opportunities for local people to generate income from sustainable production of timber and non-timber forest products. Further forest management approaches that are being trialled include Community Commercial Forestry (focused on harvesting timber and NTFPs) and registration of communal lands of indigenous communities (which decentralises management of shifting cultivation).

4) What data are available on forest dwellers in lands potentially targeted for REDD activities (including indigenous peoples and other forest dwellers)? (e.g., number, land tenure or land classification, role in forest management, etc.):

The key sources of data on forest dwellers in lands potentially targeted for REDD activities are:

1. Forestry Administration including Forestry Statistics, forest management plans for annual bidding coupes, and all GIS databases of forest cover, community forestry sites etc. A national community forestry database is managed by FA's Community Forestry Office.
2. Ministry of Agriculture, Forestry and Fisheries for data regarding Economic Land Concessions
3. Ministry of Environment for data on protected areas and CDM-related climate change activities
4. Ministry of Interior for data pertaining to Commune Councils, Districts and Provinces and the registration of indigenous peoples
5. Ministry of Land Management, Urban Planning and Construction for land titling data (individual property rights) in selected provinces
6. Ministry of Planning/National Institute of Statistics which produces the Cambodia Statistical Yearbook

A distinguishing feature in Cambodia is the existence of a web-based portal – Atlas of Cambodia – developed by Save Cambodia's Wildife with support from the Royal Danish Embassy-Danida in 2006-07 which includes multiple layers of

socio-economic and environmental data for the country.

According to the last census of population, Cambodia's total population in 2004 was 13.4 million. **85%**[11] of the population is living in **rural areas** sometimes very isolated. Around 7% to 9% is living in Phnom Penh. Population density is higher in the central region of Phnom Penh (4,969pp/km²) and Tonle Sap (67pp/km²), traditionally dedicated to agriculture and fisheries. The remaining provinces are averagely or weekly populated as in the north-east region of the Plateau and Mountain region (23pp/km², 11% of the total population) and the south-west region of the Coast (65pp/km², 7% of the total population). These regions are mainly forested and have poor infrastructure, roads and few economical activities.

Cambodia's national statistics do not allow for the precise estimation of the indigenous population, as they do not make a distinction for ethnic groups. Statistics for indigenous populations are therefore not often very accurate being obtained from different sources. Taking these uncertainties into consideration Cambodia has a fairly homogeneous population mainly represented by Khmer people (around 87% to 90%). At least 18 indigenous ethnic minority groups (collectively known as Khmer Loeu) are heavily represented in the mountainous areas and probably make up the majority of the population in provinces (especially Mondul Kiri and Ratanak Kiri); distinct minority groups in the lowland area are knows as Vietnamese (4%), Chinese (3%) and Cham (2%).

There are a range of tenure options for people in and around the forest estate:
1) **farm/residential land** can be privately titled (few cases of this near forests as yet), communally titled (none as yet, but potentially large areas), or simply possessed, with recognition under traditional, local systems (the main type at present, and one that gives little security and can often bring conflict with the law or with land developers)
2) **forested land** is almost all presumed to be state property, sometimes in defined management units (e.g. logging concessions), otherwise unclassified. Existing forest users have general rights recognised under law, and there are mechanisms to specify and map these rights in some classes of forest (e.g. Protected Forests, Logging Concessions), but this has only been implemented on a limited scale to date. Appropriate mechanisms include Community Forestry Agreements (in the Permanent Forest Reserve) and a range of options in MoE Protected Areas, such as Community Protected Areas, Sustainable use zones and Community zones. As noted below, Community Forests are increasingly being declared, with increased harvesting rights and responsibilities for resource protection, based on management plans.

Community Forestry:
The first Community Forestry (CF) project was developed in 1992 in Takeo province. By 2002, areas under CF management represented 0.7% of the total area suitable for CF management[12]. According to data from the Forestry Administration (FA), there are currently **365 CF** initiatives in Cambodia, covering a total area of **330.732 hectares** or approximately **2%** of the total land in Cambodia. Of these, over **145.000 hectares** are under management by local community forestry agreements following the 2003 law; the remaining areas are awaiting approval. Due to the importance of Community Forestry for rural development in 2004, the RGC took the decision to establish a **Community Forestry Office (CFO)** within the Forestry Administration (FA). This office is in charge of supporting the establishment of Community Forests in and developing the National Community Forestry Programme.

Indigenous Peoples
Under the Council for Land Policy three pilot projects have been established to develop enabling legislation consistent with the 2001 Land Law for registration of communal lands of indigenous peoples. One of these pilots is in a heavily forested region and is a model for integration of indigenous communal land rights with the 2002 Forestry Law.

REDD Pilot Project:
FA is experimenting with a first REDD pilot project involving twelve community forest sites in Oddar Meanchey province, with the support of Community Forestry International. The province's forests have been under intense pressure from illegal loggers due to their close proximity to the border with north-eastern Thailand for the past two decades. A growing number of communities in the province are organizing to protect the remaining natural forests under threat. This project should demonstrate that carbon financing can establish incentives for allocating and approving community forestry groups, as well as generating a long-term support to both community forest population and local forest administrators. The project was officially endorsed by H.E. SAMDECH AKKA MOHA SENA PADEI TECHO HUN SEN, Prime-Minister of the King-

[11] NIS statistical Yearbook, 2005
[12] Fichtenau et al. 2002, www.mekonginfo.org

dom of Cambodia through Decision n° 699 dated 26 May 2008 (Annex 5). The guiding principles ensure that carbon revenues are used to: 1) improve the forest quality; 2) provide maximum benefits to local communities which participate in the project activities; 3) study the potential area for new REDD projects in Cambodia. The Decision no 699 confirm the high-level commitment of the Royal Government of Cambodia to make the REDD project a success and its revenues effectively.

5. Summarize key elements of the *current* strategy or programs that your government or other groups have put in place to address deforestation and forest degradation, if any:

a) What government, stakeholder or other process was used to arrive at the current strategy or programs?

Technical Working Group on Forestry and Environment (TWG-F&E): Following the Plan of Action for Harmonization and Alignment, the RGC and development partners established the TWG-F&E under the Cambodia Development Cooperation Forum (CDCF). The overall objective of the TWG-F&E is to support and strengthen the RGC in its role of forest development. The TWG-F&E is presently co-chaired by the Director General of Forest Administration and the counselor of Danida, with members from relevant ministries (**Ministry of Environment, Ministry of Agriculture Forestry and Fisheries, Ministry of Economic and Finance, Ministry of Land Management Urbanization, Planning and Construction, Ministry of Industry, Mines and Energy, Ministry of Commerce, Ministry of Interior and Ministry of National Defend), and development partners (AFD, Danida, DFID, NZAid, JICA, FAO, UNDP, USAID and World Bank) and private sectors (civil society and NGOs).** The Co-chairs are responsible for the delivery of the TWG-F&E work plan, which reflects Forestry and Environment Action Plan 2006-2010. The TWG-F&E is supported in its work by the TWG-F&E Secretariat. The overall objective and purpose of the Secretariat is to assist TWG-F&E to support and strengthen forest sector development including strategic development, national sector planning and monitoring, networking, promoting of transparency and good governance, and managerial and logistic advice. The secretariat is fully owned and managed by government with donor assistance.

National Forest Programme (NFP): **NFP is working under TWG F&E and it is supported and consulted by members of the TWG F&E.** The FA and partners are currently developing a National Forest Programme (NFP) as a significant step towards sustainable forest management. The NFP was mandated by a Joint Monitoring Indicator (JMI) set by the Cambodia Development Cooperation Forum (CDCF) and a range of development partners including Danida, DFID, NZAid, FAO, UNDP, JICA and the World Bank. The NFP aims to meet local, national and global needs by providing a strategic coherent transparent framework to plan, manage, use, protect and regenerate forest resources for the benefit of present and future generations. The forest programme will be directly aligned with the national development strategies and the Millennium Goals. A Task Force and a number of working groups with representatives from many sectors, civil society, non government organisations and knowledge institutions have been established to develop the NFP. The NFP will be structured as a framework document with six specific programmes: Forest Demarcation, National Forest Management and Conservation, Forest Law Enforcement and Governance, Community Forestry, Capacity Building and Research, and Forest, Climate Change and Innovative Financing. It is set to be completed by September 2009. A NFP National Coordinator and NFP Task Force oversee the work of six working groups established to develop each of these programmes.

Under Council of Ministers decision 699 the FA was specifically put in charge of national development of REDD. This is included in the NFP through the programme on Forest, Climate Change and Innovative Financing. In addition, the FA has received support from the Clinton Climate Initiative (CCI) to develop a National Forest Carbon Accounting System (Annex 5). The FA has already established a climate change team with seven dedicated staff. The re-structuring of the FA pursuant to prakas of 14 November 2008 is under finalization and is expected to create a new office responsible for climate change (including REDD).

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b) What major programs or policies are in place at the national, and the state or other subnational level?

On 26 July 2002, the ***Statement of the Royal Government on National Forest Sector Policy*** was adopted with the following objectives: ***(i)*** to conserve and sustainably manage the country's forest resources; ***(ii)*** to establish the remaining forest reserves as Permanent Forest Estate; ***(iii)*** to promote the maximum involvement of the private sector and the participation of local people; ***(iv)*** to establish a coordinated multi-stakeholder process for forestry development; and ***(v)*** to promote programs of forestation on arable lands and farms. Implementation of the National Forest Policy is based on the **Forestry Law promulgated on 30 July 2002**. The Forestry Law defines the framework for management, harvesting, use, development,

conservation and protection of the forest. The major objective is to ensure sustainable forest management and customary user rights of forest products for local communities. A coherent national community forestry framework has since been developed comprising a clear policy, Sub Decree, guidelines, functional mapping/GIS unit, training materials and a National Community Forestry Coordinaton Committee.

The National Forest Programme (NFP): The NFP is an internationally agreed protocol covering different approaches to the process of planning, programming and implementation of forest activities in a country. The protocols can be applied at national and sub-national levels, based on a common set of guiding principles. The NFP will include six programmes:

- National forest demarcation, classification and registration;
- Forest resource management and conservation;
- Forest law enforcement and governance;
- Community Forestry;
- Capacity building and research development;
- Forest, climate change and innovative financing.

Subnational programmes: With international and national NGOs as partners, the Royal Government of Cambodia is implementing sub-national forest conservation programs in each of the three major forested regions identified:

(a) North-east: The Eastern Plains conservation program with World Wide Fund for Nature (WWF), Wildlife Conservation Society (WCS), and others. The Eastern Plains connects with Virachey National Park on the border with Laos, which was the focus on the World Bank Biodiversity and Protected Areas Management Project (BPAMP).
(b) South-west: the Cardamoms program with Conservation International (CI) and Fauna and Flora International (FFI) and the lowland elephant corridor with the Wildlife Alliance
(c) North: The Northern Plains conservation program with Wildlife Conservation Society (WCS) and the REDD pilot project in Odder Meanchhey Province with Community Forestry International (CFI), and Terra Global Capital

6. What is the current thinking on what would be needed to reduce deforestation and forest degradation in your country? (e.g., potential programs, policies, capacity building, etc., at national or subnational level):

The RGC's policy on reducing deforestation and forest degradation is through implementation of the National Forest Programme (NFP), under the six thematic areas highlighted above. Development of a REDD programme will also need to include a National Carbon Accounting System (NCAS), and provision of maximum incentives to local communities and Government agencies to implement forest conservation policies. Under decision 699 of the Council of Ministers the FA is specifically designated as the national REDD agency. A letter outlining the scope of the proposed National Carbon Accounting System with support from the Clinton Climate Initiative is presented in Annex 6.

a) How would those programs address the main causes of deforestation?

1. Forest Demarcation - The RGC is committed to demarcating the forest estate across the country using the provisions of the Sub-Decree 53 on Procedures for Establishment, Classification and Registration of the Permanent Forest Estate, and the Forestry Law 2002. The boundaries of Cambodia's forest estate have never been clearly demarcated or registered. Demarcation and land registration will make uncontrolled clearance and the issuance of informal and illegal land concessions more difficult. This is an important tool to slow the rate of forest loss, reduce associated livelihood and environmental impacts and improve governance. During 2007-08 the FA is piloting forest demarcation processes in four provinces with the aim of developing national guidelines defining the criteria, procedures and technical means to identify and demarcate forested lands to be declared as part of the **Permanent Forest Estate** (PFE). This will enable the FA to scale-up the process and to then classify the PFE according to function. It is not clear whether the demarcated PFE can be added to the Cadastral Land Register. Classification of forest lands into management units will improve forest conservation, whilst demarcation of these units will reduce opportunities for illegal forest clearance. Additionally, classification and demarcation will recognize and respect private lands and areas under communal management. All Community Forestry, Commercial Community Forestry and Partnership Forestry sites will also be permanently demarcated, and the land registered as State Public Land, and part of the Permanent Forest Estate.

2. Sustainable Forest Management - Forests are important for resource harvesting, particularly for rural populations, many of whom rely on non-timber forest products (NTFPs). Many forest areas are also important for globally threatened wildlife species and other biodiversity values. Development of sustainable resource management strategies and protected forest units will ensure conservation of these values. Accurate information about the PFE including boundaries, area and forest composition is indispensable for sustainable forest management in general, and more particularly for management activities such as concession allocation, determination of annual allowable cuts and growth modelling. At least seven forest management models are currently being explored in Cambodia. These include the vestiges of the forestry concession model; annual bidding coupes; protection forests and protected areas for biodiversity conservation, wildlife management and ecotourism; community forestry; commercial community forestry; partnership forestry; and contracted forest managers for new plantations established using the provisions of the Economic Land Concessions Sub Decree. These models will be tested, developed and lessons learned before expansion to cover larger areas of the country. The longer-term priority of the RGC is to continue to meet domestic demand for wood and Non Timber Forest Products, to promote greater private sector investment in forest plantations, and to reduce the loss of government revenues due to non-compliance with forest management plans and/or illegal cross-border trade.

3. *Community Forestry* - The FA has developed a coherent community forestry programme in Cambodia during the past five years comprising a clear policy, Sub Decree, Guidelines, functional mapping/GIS Unit, training materials and a National Community Forestry Coordination Committee. The FA is currently the only government institution in Cambodia to have legalized community-based natural resource management agreements. Much more remains to be done to scale-up this process to ca. 300 other proposed Community Forestry sites across the country. The development of Community Forestry training services and the de-concentration of GIS skills and mapping services to 15 FA Cantonments during the period 2008-2010 will enable the FA to meet this growing demand. The FA is committed to achieving 20% of the PFE under Community Forestry Agreements and attendant Management Plans by 2020.

4. Forest Law Enforcement and Governance - The RGC is committed to improving forest law enforcement and governance by substituting externally driven verification systems based on a legalistic approach with the development of stronger domestic and regional coalitions with adequate degrees of government commitment to the process. Nationally, FA closely has worked with Development Partners and NGOs (CI, WildAid, WWF, etc.) enforcing Forestry Law and related Regulations in core forest areas such as the Cardamom Mountains and north-eastern part of the country. Cambodia has been actively working with ASEAN country members to counter further forest degradation and the loss of biodiversity. Ministerial and Prime Ministerial agreements on curbing illegal activities in cross-border trade in timber and endangered wildlife species have been signed with Lao, PDR, Thailand, and Vietnam. The FA continues its own internal forest crime monitoring, and pending the approval of a new Forest Law Enforcement and Governance (FLEG) project submitted to the International Tropical Timber Organisation, is actively trying to strengthen the monitoring and control of illicit cross-border trade in timber in Cambodia's eastern provinces. Improving enforcement will require significant investments in capacity-building for FA and MoE staff and other law enforcement agencies, and provision of appropriate infrastructure.

5. Forestry, Climate Change and Innovative Financing - The RGC strongly supports the inclusion of GHG emission reduction from forest conservation and avoided deforestation in post-Kyoto regimes. **Reduced Emissions from Deforestation and Degradation** (REDD) are not eligible to the Clean Development Mechanism during the first commitment period (2008-2012). The FA is supporting a pilot REDD initiative in Oddar Meanchey Province where the net annual rate of deforestation was estimated as 1.6% per year during the period 2002-2005/06. This includes developing risk mitigation strategies to reduce 'leakage' and further conversion of community forestlands to Economic Land Concessions in accordance with draft REDD methodological guidelines. The community-based forest management model in Oddar Meanchhey Province being developped by Community Forestry International and Terra Global Capital constitutes one of up to six different carbon-financing models to be explored in the future; others potentially include conservation forestry; commercial plantation forestry; ecotourism; Corporate Social Responsibility of the garment industry and; the use of pension funds to invest in forestry in Cambodia. Both the COP 15 in 2009 in Copenhagen, and the strong interest of the RGC to support this initiative represent a unique 'win-win' opportunity to demonstrate that the new REDD framework can contribute to alleviating poverty, improved governance, and sustainable forest management in Cambodia as well as mitigating global climate change. In future, additional initiatives to support potentially both CDM-Afforestation and Reforestation pilots and payments for other ecosystem services will be explored in collaboration with the Ministry of Environment and the Cambodian Climate Change Office.

6. Capacity Development and Research - Current capacity to implement forest legislation and other relevant laws is weak. This program will therefore build awareness within FA staff, other Government agencies, and with local communities and authorities. Capacity-building will include research development to further expand and refine models of forest management. The FA is committed to institutional reforms including *inter alia* the introduction of a Performance Incentives Management Programme to strengthen the delivery of national and sub-national forestry services; the decentralisation and deconcentration of core functions; strengthening forestry extension services for all Cambodian citizens; broadening on-the-job and specialised training for FA personnel and; a study in 2008 as input to the NFP to develop the sustainable financing of the forestry sector. The FA will continue its collaboration with several research institutions including the Forest & Wildlife Research Centre and Cambodian Development Resource Institute in producing policy-relevant studies and policy briefs.

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b) Would any cross-sectoral programs or policies also play a role in your REDD strategy (e.g., rural development policies, transportation or land use planning programs, etc.)?

Cross-sectoral policy is driven by the National Strategic Development Plan (2006-2010) and the Rectangular Strategy for Growth, Employment, Equity and Efficiency, Phase 2. Within the Government, cross-sectoral decisions are made within the Council of Ministers. The Council of Ministers has already endorsed REDD through decision number 699. Relevant cross-sectoral programs include the RGC's decentralization reforms overseen by the National Committee for Decentralization and Deconcentration (NCDD), and the land reforms coordinated by the Council for Land Policy. Nevertheless, the development of cross-sectoral programs is not very common in Cambodia and the FA recognizes that it will be important within the framework of a REDD strategy to have synergy between sectors or at least an exchange of information. The implementation of such an exchange platform at the interministerial level will be one of the priorities of the REDD strategy. At the subnational scale (provinces, districts, communes), coordination and collaboration between different line agencies is much more effective, and this is likely to become more important as the reforms mandated by the Organic Law (2008) are enacted.

Existing programs at the provincial or landscape level will play a key role in achieving cross-sectoral consensus on REDD implementation. For example, many conservation areas now have community development activities integrated with protection activities, in an effort to promote alternatives to unsustainable resource use.

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c) Have you considered the potential relationship between your potential REDD strategies and your country's broader development agenda in the forest and other relevant sectors? (e.g., agriculture, water, energy, transportation). If you have not considered this yet, you may want to identify it as an objective for your REDD planning process.

The NFP is being developed based on the following three broad development agendas:

- **Sustainable management** of forest resources to respond in priority to domestic demand;
- **Conservation** of the environment, including protection of watersheds;
- Helping the rural and urban poor move out of poverty

All of these objectives will be targeted in Cambodia's future REDD strategy. During the development of this strategy further consultation with policies in other sectors will be undertaken in order to identify appropriate synergies.

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d) Has any technical assistance already been received, or is planned on REDD? (e.g., technical consulting, analysis of deforestation or forest degradation in country, etc., and by whom):

<u>REDD-specific activities or programmes already done or in execution</u>:

1. Council of Ministers Decision number 699, which authorises the FA to develop REDD projects for forest conservation and local livelihoods;
2. ***Participation to Regional REDD workshop for the lower Mekong (Cambodia, Vietnam and Laos):*** Organised by RECOFTC, Queensland University and ITC Netherlands, Oct 2008.
3. *Participation to* ***COP 14*** in Poznan: funded by AFD. Component of the project "Support for the definition of agricultural sector policies in Cambodia – sub component forest";

4. Participation to UNFCCC meeting in Tokyo. Funded by Danida, DFID, NZAid;
5. Participation to UNFCCC meeting in Accra. Funded the by Woods Hole Research Center.
6. Participation to Policy Workshop on Greenhouse Gas Inventory: experience from Annex 1 countries, Germany.
7. Participation to COP 14 in Poznan. Funded by AFD.
8. Development of a ***REDD project in Oddar Meanchey*** Province. Forestry Administration, Community Forestry International (CFI) and Terra Global Capital; in execution;
9. ***Development of a REDD*** project in Mondul Kiri Province. Forestry Administration and Wildlife Conservation Society (WCS); feasibility study complete, execution begun.
10. ***Financial support to the Forestry, Climate Change and Innovative Financing Working Group***: funded by Danida, DFID, NZAid, in execution. Component of the Natural Resource Management and Livelihoods Program, Cambodia 2006-2010;
11. ***Capacity building*** and development of the GIS and RS Unit within the FA: funded by Danida, DFID, NZAid including quality assessment of the 2002-2005/06 forest cover change assessment. This was undertaken by GRAS A/S, University of Copenhagen, w/e March 2007, and on-going. Component of the Natural Resource Management and Livelihoods Program, Cambodia 2006-2010;
12. Development of an ***18 years deforestation baseline*** over the whole country (1989-2006) at scale 1/250.000: funded by AFD and realized by ONF international, in execution. Component of the project "Support for the definition of agricultural sector policies in Cambodia – sub component forest";
13. Development of a **National Carbon Accounting System** to be supported by Clinton Climate initiative as part of their global Carbon Measurement Collaborative with the Australian Government.

Selected other relevant activities:

14. ***Japanese Social Development Fund*** grant through the World Bank and executed by RECOFTC and the FA for the Capacity Building for Sustainable Forest and Land Management Project, which focuses on community forestry.
15. ***Forest estate demarcation***, funded by the World Bank and Danida.
16. Capacity building for the forestry sector phase I: funded by JICA from 2002 to 2005. Component of the training program for local forestry staff;

Activities to be done:

1. ***Pilot REDD capacity building for grassroots forest sector stakeholders;*** carried out by Forestry Administration in cooperation with RECOFTC (funded by SDC and AusAID), planned for March 2009.
2. ***Set up a National Forest Carbon Accounting System in March 2009, supported by Clinton Climate Initiative (CCI).***
3. ***Participation to UNFCCC in AWG-***LCA in March-April, and SBSTA, AWG-LCA in June 2009.
4. ***Participation to COP15 of UNFCCC*** on December 2009, Copenhagen.
5. ***Participation to Workshop on Asia-Parcific REDD expert,*** late Feb 2009: organised by RECOFTC.
6. ***Capacity building*** for the forestry sector phase II: funded by JICA from 2005 to 2010. Component of the training for the local forestry staff and Community Forestry in the field;
7. Capacity building within Forestry Administration on spatial modeling for deforestation in Cambodia: funded by AFD, to be planned in 2009. Component of the project "Support for the definition of agricultural sector policies in Cambodia – sub component forest";
8. ***Regional workshop*** for the lower Mekong to prepare negotiations for COP 15 in Copenhagen: Funded by AFD, planned in May 2009 in Phnom Penh, FA. Component of the project "Support for the definition of agricultural sector policies in Cambodia – sub component forest".
9. Participation to **Capacity Building workshop on Forest Inventory and GIS**, Feb 2009 in Brazil organised by Coalition for Rainforest Nation
10. Participation to South-South Collaboration workshop on **Implementation of pilot REDD projects**, March 2009 in Brazil, funded and organised by Woods Hole Research Center.
11. Carry out **Training Workshop** on Capacity Building on Climate Change and REDD during 2009 to Central and

Regional FA to Central and Regional FA throughout the country.

12. Receiving **capacity building** on forest inventory and GIS modelling by WinRock in March 2009.

7. What are your thoughts on the type of stakeholder consultation process you would use to: a) create a dialogue with stakeholders about their viewpoints, and b) evaluate the role various stakeholders can play in developing and implementing strategies or programs under FCPF support?

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a) How are stakeholders normally consulted and involved in the forest sector about new programs or policies?

National and specific forest sector policies and strategy formulation is the responsibility of the RGC. The ***Government Donor Coordination Committee (GDCC)*** & the ***Technical Working Group on Forestry and Environment (TWG-F&E)*** have an important advisory function in the process and can play a supporting role in identifying options and approaches..Under the Council of Minsiters decision 699, the FA was authorised to develop REDD, with the TWG-F&E as an oversight body. The TWG-F&E members are listed in the Annex 7 but include donors, representatives from international agencies and NGOs. Quarterly meetings of the working group provide a regular opportunity for stakeholder consultation on the progress of policy in the entire forest sector.

As new programs and policies are developed additional consultation is undertaken. For example, the development of the National Forest Programme (NFP) is led by a task force and a number of working groups with representatives from civil society, non government organisations and research institutions. Regular meetings are held. There has been a linked program of broader public consultation on selected elements of the NFP, and plans are being developed for a full public consultation process in 2009.

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b) Have any stakeholder consultations on REDD or reducing deforestation been held in the past several years? If so, what groups were involved, when and where, and what were the major findings?

Extensive consultations were undertaken within the Council of Ministers leading up to decision 699 on REDD (May 2008), and Sub-decree 188 (November 2008). The sub-decree specifically authorized the FA to "study, assess and determine the amount of national forest carbon stock and to regulate and execute the trade of forest carbon and forest environmental services for the objective of effective forest management". The new FA structure is listed in Annex 7.

The various consultations of the Technical Working Group on Forestry and Environment and the NFP did not focus on REDD *per se*, but on methods to reduce deforestation and support efforts to strengthen the sector's capacity to contribute to economic growth. For the NFP open consultation meetings were held, with invitations to international organizations, NGOs, civil society and research institutes. These discussions are leading to the drafting of the NFP.

Within the TWG-F&E, a new group was created in September 2008 to be dedicated to CDM and REDD topics. This group, called **Forestry, Climate Change and Innovative Financing Working Group,** is dedicated to develop consultations about REDD mechanism in Cambodia and can be called when necessary, especially about implementation of REDD pilot projects financed by FCPF and other involved partners. To prepare this document, the working group was called two times and to improved the discussion, various actors from others entities were invited. The first meeting was dedicated to the preparation of the Cambodia R-PIN submission and on the methodological aspects on cartographic and historical baseline preparation. A second meeting was organized to discuss and validate the draft of the Cambodia R-PIN submission. These two meetings took place in Forestry Administration, various office of FA and NGOs members were invited. This participative consultation on REDD aimed to build a good synthesis of all activities related to avoided deforestation, actual RGC, donors and NGOs projects, and future initiatives and improvement that need to be conducted in the future to fight climate change, poverty and forest resources reduction.

For the REDD pilot project in Oddar Meanchey **extensive community and local civil society consultations were undertaken by the FA with CFI.** These meetings enthusiastically endorsed the development of the REDD pilot project by the local community forestry organizations.

Similarly, past experiences on establishment of many Protected Forests have ensured that **consultations are undertaken at grassroot level, i.e bottom-up approach. Consultations with local community are conducted at a very early stage. Any REDD project will use this similar process.**

A number of international and national organizations have expressed support for REDD. These include the Clinton Climate Initiative, WWF, WCS, CI, FFI, CFI, Wildlife Alliance and CFI.

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c) What stakeholder consultation and implementation role discussion process might be used for discussions across federal government agencies, institutes, etc.?

The ***Government Donor Coordination Committee (GDCC)*** is a higher level RGC Development Partner Forum mechanism for review of overall all policies, reform programmes and specific activities covering cross-cutting issues. Meeting not more than three times a year, it is a forum to review and agree upon the Joint Monitoring Indicators (JMI) prepared by TWGs, and will also decide upon arrangements for specific JMIs not covered by TWGs or covering areas in the mandate of more than one TWG. It involved bilateral countries, multilateral institutions and various NGOs. GDCC's role and functions are:

- Establish a ***common understanding on major thematic*** and policy matters, particularly those related to the broader reform agenda and those that are generic, cross-cutting and of an overarching nature;
- Discuss progress on issues identified for further discussion during the Cambodia Development Cooperation Forum, and to ***discuss matters specifically brought up by TWGs*** for resolution and/or advice;
- Serve as a forum to identify and select a set of core JMIs that are informed by those JMIs used at TWG level, as well as to review progress all JMIs before submission for endorsement by the annual Cambodia Development Cooperation Forum;
- Serve as a forum for "advocacy" matters, including the representation of invited NGO and civil society representatives.

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d) Across state or other subnational governments or institutions?

The ***Cambodia Development Cooperation Forum (CDCF)*** meetings are designed to be an important and overarching forum for a higher level (than GDCC) government-donor discussions regarding Cambodia's socio-economic development. Main features and essential functions are:

- Undertake impartial stock-taking and evaluation of Cambodia's overall progress and challenges in a broader context, informed by the National Strategic Development Plan (NSDP), and with a long-term perspective;
- Analytically discuss policy and reform based on background documents prepared by RGC and analytical and thematic papers prepared by development partners to arrive at a common understanding of the overall situation, future needs and challenges;
- Review the progress made in regard to implementation of the Paris Declaration on the basis of a special RGC paper on aid coordination containing a report on the functioning of TWGs, GDCC and JMIs;
- A high-level forum where policy statements of significance are made by development partner representatives. These bring to bear clear “outside” and neutral perspectives on Cambodia's socio-economic development from development partners, and provide an opportunity to discuss matters considered of overarching importance relating to Cambodia.

At the subnational level consultations are undertaken within particular landscapes and provinces using regional committees and working groups.

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e) For other stakeholders on forest and agriculture lands and sectors, (e.g., NGOs, private sector, etc.)?

Ref to 7a) and 7c)

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f) For forest-dwelling indigenous peoples and other forest dwellers?

It is clear that the involvement of civil society in a REDD process is crucial to ensure the transfer of carbon benefits to rural populations, to guarantee economic development of these populations, and to encourage communities to manage their

forest resources on a sustainable way. Forest communities and indigenous peoples are represented by various local groups and local organizations with support from international non-governmental organizations. A process to engage indigenous peoples and forest communities will be initiated as part of a national REDD strategy.

In 2003, the government endorsement of the **Sub-Decree on Community Forestry Management** was a milestone in the establishment of CF in Cambodia and dialogue with rural communities. For the first time, communities were legally allowed to request a community forest agreement in order to manage an area of forest. The promulgation of the Guideline on Community Forestry and Its Relevant Policies (Prakas) in 2006 marked a further milestone. The Prakas clearly define and outline the operational steps communities must take in order to secure a forest management agreement and gain approval of their CF management plan. The Government is also currently formulating a policy on indigenous peoples, including communal land rights.

8. Implementing REDD strategies:

a) What are the potential challenges to introducing effective REDD strategies or programs, and how might they be overcome? (e.g., lack of financing, lack of technical capacity, governance issues like weak law enforcement, lack of consistency between REDD plans and other development plans or programs, etc.):

The actual main challenges that will face the development of a REDD strategy in Cambodia are:

1. The limited human capacity and financial resources to carry out rigorous carbon accounting at the project and national levels, forest protection activities, such as demarcation, monitoring and law enforcement, awareness-raising for local people and private sector, and control and verify the sustainable management plan in Economic Land Concessions;
2. The limitations of capacity in forest monitoring and inventory and GIS skills, especially at district and provincial levels;
3. The fight against illegal exploitation. Despite the strong decision of the RGC in 2001, with the Declaration on the Suspension of Forest Concession Logging Activities, the government is still facing numerous difficulties to control the old concessions and control remote forested area. Important efforts are inevitable in order to ***(i)*** reinforce control and administration structures; **(*ii*)** develop studies in order to determine the level of biomass removals in these areas; ***(iii)*** reinforce community forestry in remote area; ***(iv)*** and reduce pressure linked with fuelwood (for example more efficient ovens, alternative energy, cogeneration…).
4. The development of the agricultural sector is linked to demographic growth and represents a major challenge which clashes with the principle of development of countries and the fight against poverty. Solutions adapted to local conditions such as the transformation of more intensive cultural practices and the channeling of REDD payments into incentives to forest-edge communities for avoiding deforestation;
5. The coordination problems between inter-sectoral and inter-provincial planning.
6. Developing and testing benefit sharing arrangements with all stakeholders as and when carbon sales have been made.
7. REDD will be under coordination of TWG F&E, which is a high level coordination between ministries, donors, private sectors and local NGOs. However, expected challenge may exist between all stakeholders.

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b) Would performance-based payments though REDD be a major incentive for implementing a more coherent strategy to tackle deforestation? Please, explain why. (i.e., performance-based payments would occur *after* REDD activities reduce deforestation, and monitoring has occurred):

Performance-based payments will be an important part of the implementation of a REDD strategy. The Royal Government of Cambodia (RGC) has already recognised this, and the importance of open and transparent allocation of funds. Accoridng to the RGC decision (Council of Ministers decision number 699), the transfer of revenues associated with REDD from the State, or project, towards populations and local stakeholders should lean partly on the existing community forestry system. A better analysis must be developed in order to determine how to adapt the actual system and how improve it. An initial work is currently underway on juridical and fiscal questions associated with carbon. From May 2008, RGC choose the FA as the seller of forest carbon in Cambodia. Revenues from future REDD project will be channeled through the Technical Working Group on Forestry and Environment (TWG-F&E) during the first five years of the project (Council of Ministers No. 699). The implementation of a more exhaustive legislation on carbon will be a fundamentally strategic step for-

ward for the development of REDD projects and a Cambodia's REDD policy.

Preliminary ideas on future benefit-sharing arrangements have been discussed informally within the FA and encompass at least five different models based on national and international experiences (e.g. trust fund, small grants programme, and categorical NRM grants). It is anticipated that performance-based payments will be more effective at incentivizing forest conservation activities both by Government agencies and local communities. Part of the REDD strategy will need to include using performance-based payments to develop alternative livelihoods for communities currently engaging in forest clearance.

9. REDD strategy monitoring and implementation:

a) How is forest cover and land use change monitored today, and by whom? (e.g., forest inventory, mapping, remote sensing analysis, etc.):

The **GIS and Remote Sensing Unit** (RS/GIS) at the Forest Administration is producing national forest cover maps and local maps supporting forest demarcation, evaluation of the function of the forest and forests management plans. The present GIS and remote sensing settings and capabilities were established in 1993 up to 1998 with the support from GTZ. Other donors have supported the unit for short periods or for specific purposes (Danida, DFID, NZAid, AFD). Consequently, the unit has received substantial support in the past both in terms of equipment and training. Today the unit is well functioning, well organized and is capable of producing forest maps by **visual interpretation** and is currently receiving training on automatic remote sensing analysis.

Furthermore, the staff should receive regularly remote sensing and GIS training on specific national case, to allow them to fulfill all their statuary commitments, produce maps of a high standard and to undertake new assignments, it's necessary to ensure **quality and product verification**, and thus, credibility of the forest cover assessment in Cambodia. Additional capacity building will be targeted at sub-national levels to develop GIS/RS and carbon stock measurement capacities at the FA Cantonment level. The Forestry Administration (FA) will also require **independent and external verification** by an institution/consultant. Also a support capacity development of the GIS and Remote Sensing Unit will enable the Forestry Administration, other RGC partners to solicit their services on support to the national REDD strategy.

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b) What are the constraints of the current monitoring system? What constraints for its application to reducing deforestation and forest degradation? (e.g., system cannot detect forest degradation of forest stands, too costly, data only available for 2 years, etc.):

For an effective monitoring that include not only forest areas and land use changes between two periods, but also biomass and carbon quantities in forest, the main constraints of the actual monitoring system are the following :

(i) ***Forest degradation detection:*** the actual methodology developed to perform forest land cover classification by visual interpretation, is not taking into account the detection of forest degradation[13]. A specific study should be implemented to test the feasibility of measuring and monitoring forest degradation in Cambodia, expanding on existing work that is currently being done.

(ii) ***Scale of data:*** Land cover database for 2002 and 2006 are at 1/100.000 and 1/250.000 for year 1989 and 1996. The processes of harmonization over 18 year will produce maps at 1/250.000.

(iii) ***Low estimation of deciduous forest*** areas as they are generally mixed with bare soil or burnt areas, if no cloud free Landsat TM imageries are available during the humid season;

(iv) ***High estimation error of "wood & shrubland"*** units, as they are really difficult to separate form forested area units;

(v) The ***non detection of forest mosaic***, due to low Landsat TM resolution and shading;

(vi) ***Satellite images:*** Institutional and private actors are confronted with difficult access to recent satellite images of the country and difficulty in obtaining good definition data at a reasonable cost. This difficulty explains in part the lack of initiatives in the area of forest cartography in Cambodia. The presence of a direct reception station in the sub-region seems to be the only solution to this problem.

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[13] In reference to the definition proposed by IPCC

c) How would you envision REDD activities and program performance would be monitored? (e.g., changes in forest cover or deforestation or forest degradation rates resulting from programs, using what approaches, etc.)

(i) ***Forest cover monitoring:*** the FA is in charge of the forest cover monitoring. After several years of capacity building and donor's support, the team is well prepared for the commitment of FA on forest monitoring. The last national forest land cover was produced by the GIS and RS Unit from FA with support of Danida, DFID, NZAid. Danida, DFID, NZAid was providing funding for capacity building on GIS and remote sensing analysis, equipments and satellite imagery. In the context of a future REDD mechanism, it will be necessary for Cambodia to develop a sustainable way to finance FA in updating regularly the national forest land cover database and ensure a continuous work on forest mapping and training of the GIS and RS Unit team. Work will need to include updating carbon density estimates for different forest types.

(ii) ***Deforestation and forest degradation baseline:*** taking into consideration the historical deforestation rates in Cambodia, the REDD strategy within the country will especially be based on an **historical baseline** from deforestation and on the **modeling of futures changes** in forest cover, based on spatial models.

- Regarding the historical baseline, the Forestry Administration, with support of AFD, is driving a cartographic work aiming the harmonization of all land cover databases from 1989, providing Cambodia an 18 year baseline of deforestation. This project, started in July 2008, is working on nomenclatures, scales, minimum mapping unit harmonization and quality assessment. Quality assessment and harmonization are already done on the land cover 2002 and 2006; some more efforts are needed for land cover 1989 and 1997 and should be finished by the end of 2009. Estimates of forest degradation was included as part of the development of a new REDD Methodology in Oddar Meanchhey Province. The funding of the FCPF should be an opportunities to develop research and pilot works about a methodology to detect forest degradation and establish a baseline.
- Taking into account the threats that are facing Cambodia's forests, the Forestry Administration planned to initiate a pilot work on modeling deforestation base on spatial models. This training will be implemented in 2009 within the FA, with support of AFD.

(iii) ***Clarification of biomass and forest carbon data*****:** define specific expansion and conversion factors for Cambodia that are necessary for the calculation of biomass and forest carbon. Crossing these biomass and carbon data with pertinent geographic information, it will be possible to support a REDD strategy in Cambodia. This system could efficiently identify priority conservation or management zones in the framework of REDD. These activities could be implemented by collaboration between Forestry Administration, producing forest land cover data, and the Ministry of Environment.

(iv) ***Capitalize the existing consultations network:*** by using the existing task forces and specialist technical working groups within FA, and set-up as part of the NFP process.

(v) Harness the existing platforms of ***discussion alongside community forestry***: Community Forestry Office and RECOFTC on the improvement of the revenue from forest management and the transparency of the revenue from forest management redistribution process alongside communities and communes. Identify mechanisms for the redistribution and control of the revenue from forest management which are adapted to necessities of communes (infrastructures, employment, credits, reinforcing of controls, etc.)

(vi) ***Biodiversity monitoring:*** regular monitoring in the forest estate to ensure that biodiversity is also being protected (i.e. preventing 'empty forests')

(vii) ***Socio-economic monitoring:*** monitoring of livelihoods in areas where REDD performance-based payments are made.

10. Additional benefits of potential REDD strategy:

a) Are there other non-carbon benefits that you expect to realize through implementation of the REDD strategy (e.g., social, environmental, economic, biodiversity)? What are they, where, how much?

The adoption of a REDD strategy will have direct consequences on:

- the **understanding of ecosystems** and **biodiversity protection** through the pursuing of conservation projects ;
- the **alleviation of rural poverty for local people** depending on forest (through better protection of the forest resources

they use and incentive payments for carbon preservation);
- the **improving of the forestry sector in Cambodia** with the promotion of the Community Forestry projects;
- the **development of tourism** in protected areas and community zones through the improvement of long term forest management vision capacity building of local population;
- Watershed management in mountain ranges so as to reduce erosion and provide clean water.

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b) Is biodiversity conservation being monitored at present? If so, what kind, where, and how?

Currently, Cambodia does not have a national monitoring program on biodiversity. At the local level, biodiversity is monitored in Protected Areas or regions of interest through studies and programs implemented by international NGOs (WCS, CI, WWF, FFI…). This data represents an abundant source of information and it would be important to consider harmonizing and synthesizing all existing data to prepare a status of biodiversity in Cambodia that could be held by the Wildlife Protection Office within Forestry Administration.

A first step to a **national biodiversity monitoring** could be attributed to the Critical Ecosystem Partnership Fund (CEPF), a joint initiative of Conservation International (CI), the Global Environment Facility (GEF), the Government of Japan, the MacArthur Foundation and the World Bank. The fundamental goal is the identification of biodiversity hotspots in Cambodia (and other south-east Asian countries) based on regions that harbor especially high number of **endemic species** and, at the same time, have been significantly impacted by human activities. This inventory is updated on a regular year basis.

Landscape-level biodiversity monitoring programs are already underway in the Cardamoms (CI, FFI), Eastern Plains (WCS and WWF) and Northern Plains (WCS).

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c) Under your early ideas on introducing REDD, would biodiversity conservation also be monitored? How?

A national REDD program in Cambodia and the recent development of various voluntary REDD initiatives, will imply strengthening the knowledge about biodiversity in every area designated a potential REDD area. All finalized activities and studies should be capitalized to build a national inventory on biodiversity. This work will contribute to the dissemination of information and therefore to the development of sound conservation strategies.

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d) Are rural livelihood benefits currently monitored? If so, what benefits, where, and how?

The National Committee for Decentralization and Deconcentration (NCDD) currently has four databases, including socio-economic and livelihoods related data for all 1,621 communes in Cambodia. These databases are updated annually and therefore provide a standardized dataset for monitoring trends.

Rural population, mainly implicated in community forestry programs are already monitored by NGOs in charge of CF programs and by the Community Forestry Office (CFO) within the Forestry Administration (FA). The CFO key function is to develop and improve the national database on CF activities. Therefore this database will be an important information resource for rural population depending on forest, and as the RGC and FA is promoting this form of forest management, it is expected that more information will be collected in the next few years. Livelihoods are also monitored in some conservation areas, although methods vary widely from site to site.

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e) Under your early ideas on introducing REDD, would rural livelihood benefits also be monitored? How?

The first REDD pilot project in Cambodia is focusing on CF management and is involving 12 community groups, comprised in 55 villages. The CFO office is closely working with Community Forestry International (CFI) in the development of the project, assuring that the benefits for these communities will be transparently monitored by the Forestry Administration in Phnom Penh through the support of FA local offices in Oddar Meanchey province, where the project takes place.

The REDD pilot project in Mondulkiri is proposed to administer funds through a transparent arrangement such as a Trust

Fund, which will allow clear monitoring of direct benefits delivered to communities. Mechanisms are being put in place to monitor overall rural livelihoods at the target site through statistically rigorous surveys together with participatory approaches, to inform development of REDD methods at this and other sites.

11. What type of assistance are you likely to request from the FCPF Readiness Mechanism?

- **Identify your early ideas on the technical or financial support you would request from FCPF to build capacity for addressing REDD, if you are ready to do so. (Preliminary; this also could be discussed later.)**
- **Include an initial estimate of the amount of support for each category, if you know.**
- **Please refer to the Information Memorandum and other on-line information about the FCPF for more details on each category:**

a) Setting up a transparent stakeholder consultation on REDD (e.g., outreach, workshops, publications, etc.):

The FCPF support in Cambodia should respond to the following goals:

- Diffusion UNFCCC progress in Cambodia's pertinent governmental institutions;
- Optimized funding in Cambodia toward Cambodia's REDD strategy;
- Support the multi-partners discussion on REDD in Cambodia;

Action to be fulfilled:

1. Strengthen existing Community Forestry Coordination Committee by conducting regular consultation with representatives of Community Forestry and representatives from relevant communities and indigenous group where REDD will be implemented.
2. Initiate dialogue with regional countries in order to strengthen REDD implementation, especially sharing information on FLEG, consistent capacity building etc.
3. Support the participation of members of the Working Group on REDD to various ***UNFCCC and CBD meetings*** (COP, SBSTA…), international, regional or methodological meetings on REDD.
4. Make ***a list of actual financial partners*** in Cambodia according to their objectives about REDD. This list should help the RGC to evaluate the potential resources available in the country to build a national strategy on REDD in agreement with Cambodia's needs and partners objectives in Cambodia;
5. ***Translation in Khmer*** of key conclusions on REDD from UNFCCC meetings. This should improve the diffusion of knowledge on REDD within governmental institution. The FA has already taken the initiative to translate into Khmer selected policy briefs which have been included in the FA's internal periodic staff magazine.

Estimated budget : $1.000.000

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b) Developing a reference case of deforestation trends: Assessment of historical emissions from deforestation and/or forest degradation, or projections into the future.

Action to be fulfilled:

1. ***Prospective study*** of deforestation and forest degradation ***trends*** in Cambodia. Starting from the historical forest cover database, an analysis of the evolution of international markets in the forestry and agriculture sectors and the demographic evolution, it will be important to develop modeling of deforestation and forest degradation per province in Cambodia;
2. For all major types of forest ecosystem in Cambodia, develop ***equations*** for deriving carbon stocks from standing volume based on forest types. Research including field and laboratory measurements correlated with neighbouring countries.
3. ***Calculate trends in forest carbon stocks***, and thus emissions, using historical inventory data and spatial modelling;
4. Training programs for local FA staff, NGOs and private sector;
5. Analysis of the potential improvement of the Community Forestry sustainability with the development of REDD mechanism in Cambodia;

6. Realize a synthesis of recent survey work produced on timber and woodfuel production and consumption in Cambodia. This work should improve any spatial modelling on deforestation and degradation in Cambodia. And the estimation of the future fuel wood demand in Cambodia might be an important tool to evaluate new REDD targets area in the country.

Estimated budget : $500.000

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c) Developing a national REDD Strategy: Identification of programs to reduce deforestation and design of a system for providing targeted financial incentives for REDD to land users and organizations (e.g., delivery of payments, governance issues, etc.):

Action to be fulfilled:

1. ***Study on political and economical consequences*** of proposed mechanisms in the REDD framework ; what are the challenges and risks for Cambodia of the implementation of such mechanisms in terms of governance and developments and at the local level on populations dependant on the forest for their livelihoods;
2. Study the needs for *transparent revenue distribution mechanisms* (how to bring a fair share of carbon credits from foreign buyers to local communities on the ground in Cambodia) and how revenue streams are to be governed all the way down to local government and communities;
3. ***Determine REDD targets*** in Cambodia through analysis of RGC national development priorities, deforestation and forest degradation trends scenario, UNFCCC progress on REDD mechanism and incentives.
4. ***Development of the REDD strategy*** through a consultative process between governmental institutions, private sector, province and NGOs.
5. Establishment of a livelihood development strategy in order to improve livelihood of or compensate local community based on regional circumstances

Estimated budget : $500.000

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d) Design of a system to monitor emissions and emission reductions from deforestation and/or forest degradation:

The FCPF support in Cambodia should respond to the following goals:

- Improve national capacities on forest monitoring and $C0_2$ emission;
- Develop new programs following UNFCCC recommendations.

Action to be fulfilled:

1. ***Statement of forest inventories*** that haye been conducted by governmental institutions, private sectors and NGOs, in Cambodia. This work should help the Forestry Administration to build a national forest inventory protocol;
2. Develop, test and validate a National Forest Carbon Accounting System
3. Realized a ***national forest inventory*** adapted to the data requirement for REDD. The design of the national forest inventory must take into account IPCC requirements for the LULUCF sector;
4. ***Capacity building*** on remote sensing analysis within the Forestry Administration;
5. ***Update the national forest land cover mapping in 2009***. This work should integrate the last recommendations from UNFCCC and the panel of experts from "Global Terrestrial Observing System" (GTOS);
6. ***Transparent auditing*** for forest inventory, biomass assessment and carbon stocks assessment through national or international expertise in agreement to standards approved by UNFCCC;
7. Set up a **national repository** where all organizations could deposit forest cover maps, land use and land use change maps, carbon stock data, biomass assessment etc. Such a collective repository should than slowly build up the data required for a national carbon baseline, or at least make it possible to identify where in the country there are data gaps;
8. Training program for national and provincial FA staff, NGOs and private sector;

Estimated budget : $1.500.000

12. Please state donors and other international partners that are already cooperating with you on the preparation of relevant analytical work on REDD. Do you anticipate these or other donors will cooperate with you on REDD strategies and FCPF, and if so, then how?

A certain number of donors have already expressed their interest in supporting Cambodia in its reflection on REDD and in the development of tools to better understand what could be possible to develop on REDD. Among those partners wishing to cooperate on this theme, we can mention :

- Danida, DFID, NZAid, through the financial support to the sub-group Forestry, Climate Change and Innovative Financing Working Group ;
- Japanese Forestry Agency, received 2 Cambodian FA staff who are in charge of REDD in the REDD seminar in Japan and providing REDD information to FA;
- ITTO, by providing support for Cambodia in the participation to UNFCCC meetings;
- DFID;
- AFD, providing support on training on CDM and REDD, as the treatment of cartographic data in the Forestry Administration;
- Clinton Climate Initiative of The William J. Clinton Foundation;
- Woods Hole Research Institute, by providing support for Cambodia to participate in international meeting.
- Coalition for Rainforest Nations

Subnational programs are already underway in many forested areas, and the various international organisations supporting these (WWF, WCS, CI, FFI, Wildlife Alliance) are broadly supportive of REDD.

13. Potential Next Steps and Schedule:

Have you identified your priority first steps to move toward Readiness for REDD activities? Do you have an estimated timeframe for them yet, or not?

The readiness priorities for REDD are identified as following:

- set up a regional dialogue on forest issues, including FLEG, deforestation and forest degradation monitoring and better visibility in climate negotiation.
- outline national REDD strategy
- coordination and consultation between relevant government agencies, local communities and stakeholders through meeting, seminar and workshop
- perform gap analysis in order to identify need for capacity building for REDD implementation

14. List any Attachments included

(Optional: 15 pages maximum.)

Abbreviations

AFD: Agence Française de Développement, French Development Agency
CARC: Center of applied Research and Conservation
CCI: Clinton Climate Initiative
CDCF : Cambodia Development Cooperation Forum
CEPF : Critical Ecosystem Partnership Fund
CF: Community Forestry
CFI: Community Forest International (NGO)
CFO: Community Forestry Office

CI: Conservation International
DANIDA: Danish International Development Agency
DFID: Department for International Development
DPs: Development Partners Forum
FA: Forestry Administration
FFI: Fauna and Flora International
FLEG: Forest Law Enforcement and Governance
FMO: Forest Management Office
FRP: Forestry Reform Program
FWSRI: Forestry and Wildlife Science Research Institute
GDCC : Government Donor Coordination Committee
GDNCP: General Department for Nature Conservation and Protection
GEF: Global Environment Facility
GTOS: Global Terrestrial Observing System
JICA: Japan International Cooperation Agency
JMIs: Joint Monitoring Indicator(s)
LULUCF: Land Use Land Use Change and Forestry
MAFF: Ministry of Agriculture, Forest and Fishery
MAR: Monitoring Assessment and Reporting
MEF: Ministry of Economy and Finance
MIME: Ministry of Industry, Mining and Energy
MOE: Ministry Of Environment
NSDP: National Strategic Development Plan (2006-2010)
NZAid: New Zealand International Aid Agency
MRC: Mekong River Commission
NGO: Non-Governmental Organisation
PFE: Permanent Forest Estate
RECOFTC: Regional Community Forestry Training Center for Asia and the Pacific
RGC: Royal Government of Cambodia
SFM: Sustainable Forest Management
TWG: Technical Working Groups
TWG-F&E: Technical Working Group on Forestry and Environment
WCS: Wildlife Conservation Society
WWF: World Wide Fund for Nature

References:

Forestry Administration, 2007. Cambodia: Forestry Statistics 2006. Planning and Accounting Finance Office.

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GRAS A/S, 2007. Accuracy assessment report. Internal report Forestry Administration.

GRAS A/S, 2007. Capacity building report. Internal report Forestry Administration.

Nophea Sasaki, 2006. Carbon emissions due to land-use change and logging in Cambodia: a modeling approach. J For Res (2006) 11:397–403.

SCW, 2006. Atlas of Cambodia: National Poverty and Environment Maps. Save Cambodia's Wildlife, Phnom Penh, Cambodia.

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MoE, 2002. Cambodia's initial national communication under the United Nations Framework Convention on Climate Change. Available on http://unfccc.int/resource/docs/natc/khmnc1.pdf

Annex 1 : Joint Monitoring and Indicator for 2009

Annex 2 : Protected Areas and Protected Forests map Forest cover map

Annex 3 : Forest cover maps 1989, 1997, 2002

Annex 4 : Comparisons of land cover methodologies used for Cambodia

Annex 5 : Council of Minister No 699 Sar Chor Nor, 26 May 2008

Annex 6 :.Letter of National Forest Carbon Accounting System

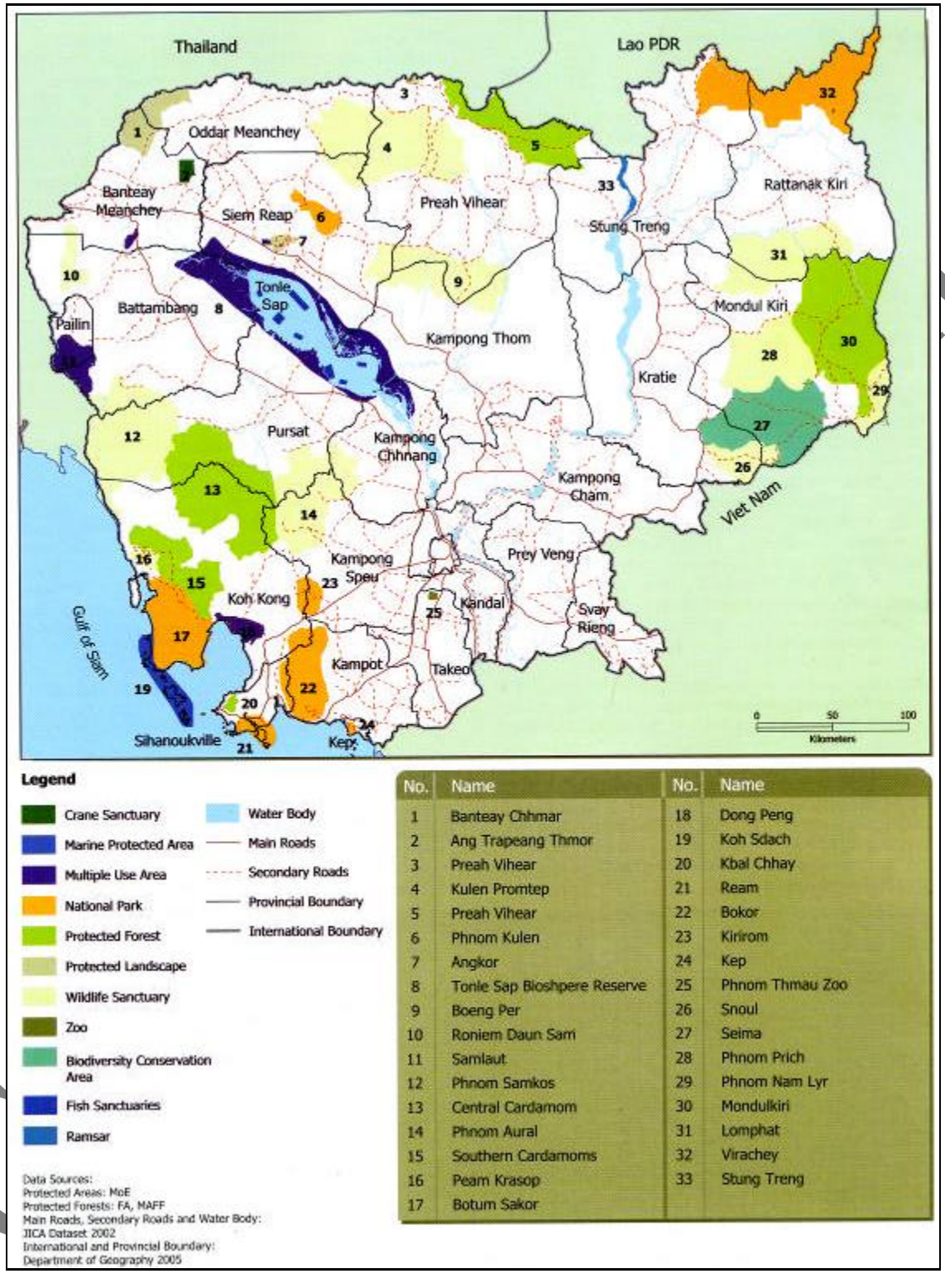
Annex 7 : The new structure of Forestry Administration No 188 Sub-decree, Nov 2008.

Annex 1. Joint Monitoring Indicators for 2nd CDCF Meeting (04-05 December 2008)

To be implemented and monitored in the period between the second and third meeting of the CDCF

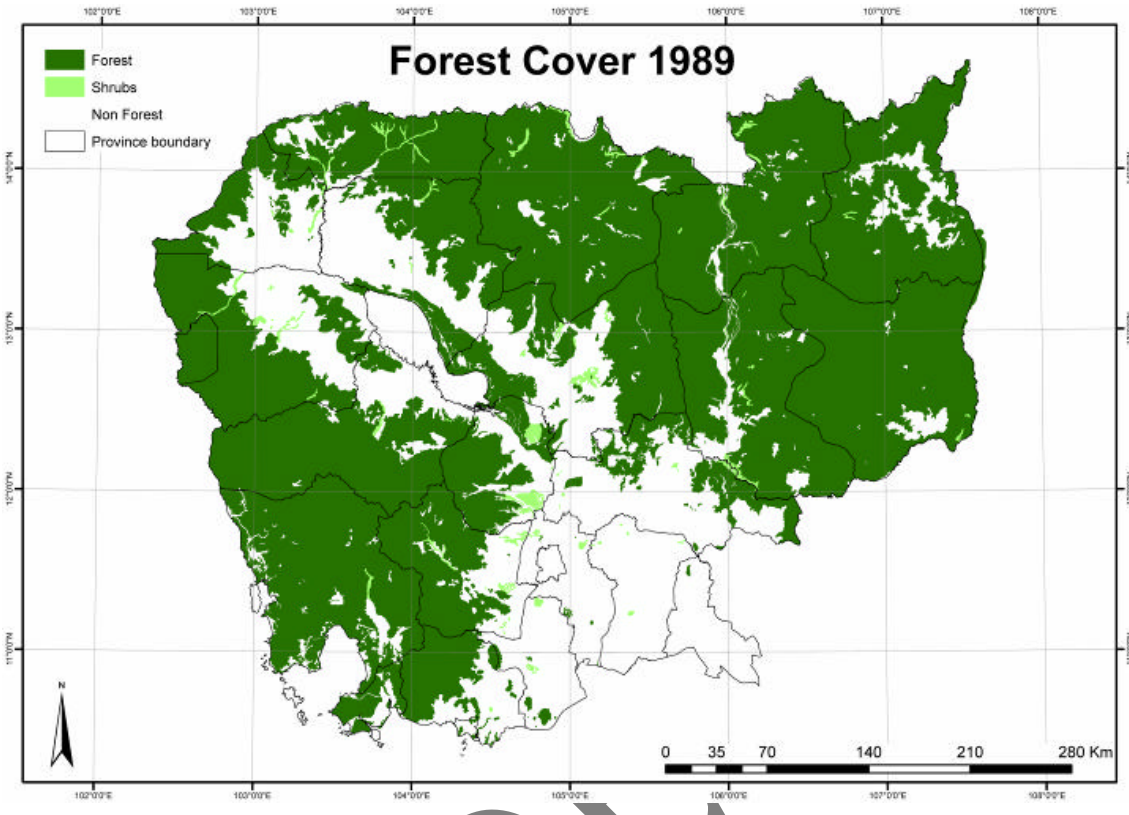
Target	Action Needed	Responsible Government Institution	Concerned TWG	Resource Required to Achieve Target	
				Amount	Source
9. With the aim of stopping the loss of Cambodia's forest resources responding to CMDG and Rectangular Strategy to support Sustainable Forest Management for rural poverty reduction and climate change mitigation. The legal frameworks established by the Forestry Law, Protected Area Law, Land Law, Mining Law, and in particular the Sub-Decree on Economic Land Concessions must be fully implemented at all levels of Government agencies, whilst prioritizing the finalization of National Forest Program and Community Forestry development.	1. Implement all provisions of the applicable laws and regulations, including establishing and making public the log book of Economic Land Concessions, Mining Concessions and other concession forms under the jurisdiction of MAFF, MoE, MIME. 2. At least 1,000 Km of forestland boundary and two more protected areas demarcated both on the map and ground. 3. At least 100 Community Forestry Sites and 10 Community Protected Areas officially approved. 4. Finalize and approve the National Forest Program in September 2009; and start its implementation by the end of 2009.	MAFF, MOE, MIME FA, MAFF, MOE FA, MAFF, MOE FA, MAFF	TWG-F&E	$720,000 $1,100,000 $200,000	MDLF, Others MDLF, Others MDLF, Others
10. Take appropriate action to reflect the priorities of the Fisheries sector to improve the livelihoods of rural communities in commune, district and provincial development plans as well as donor funding levels.	1. At least 80% of the FiA Annual Plan funded by development partners through Sector Wide Programmatic support by end of 2009. 2. CamCode agreed, approved and operational by end of 2009.	MAFF	TWG - Fisheries		

Annex 2 : Protected Areas and Protected Forests Map (Atlas of Cambodia - Save Cambodia's Wildlife)

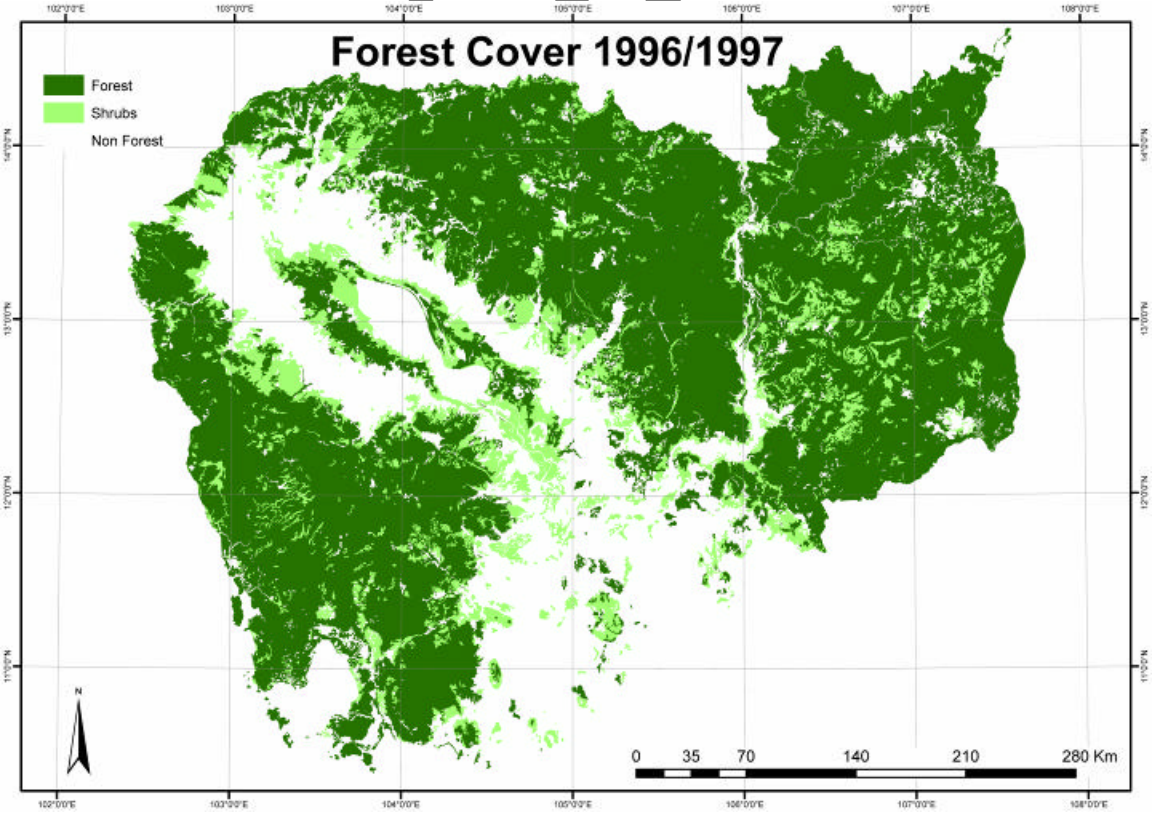


No.	Name	No.	Name
1	Banteay Chhmar	18	Dong Peng
2	Ang Trapeang Thmor	19	Koh Sdach
3	Preah Vihear	20	Kbal Chhay
4	Kulen Promtep	21	Ream
5	Preah Vihear	22	Bokor
6	Phnom Kulen	23	Kirirom
7	Angkor	24	Kep
8	Tonle Sap Bioshpere Reserve	25	Phnom Thmau Zoo
9	Boeng Per	26	Snoul
10	Roniem Daun Sam	27	Seima
11	Samlaut	28	Phnom Prich
12	Phnom Samkos	29	Phnom Nam Lyr
13	Central Cardamom	30	Mondulkiri
14	Phnom Aural	31	Lomphat
15	Southern Cardamoms	32	Virachey
16	Peam Krasop	33	Stung Treng
17	Botum Sakor		

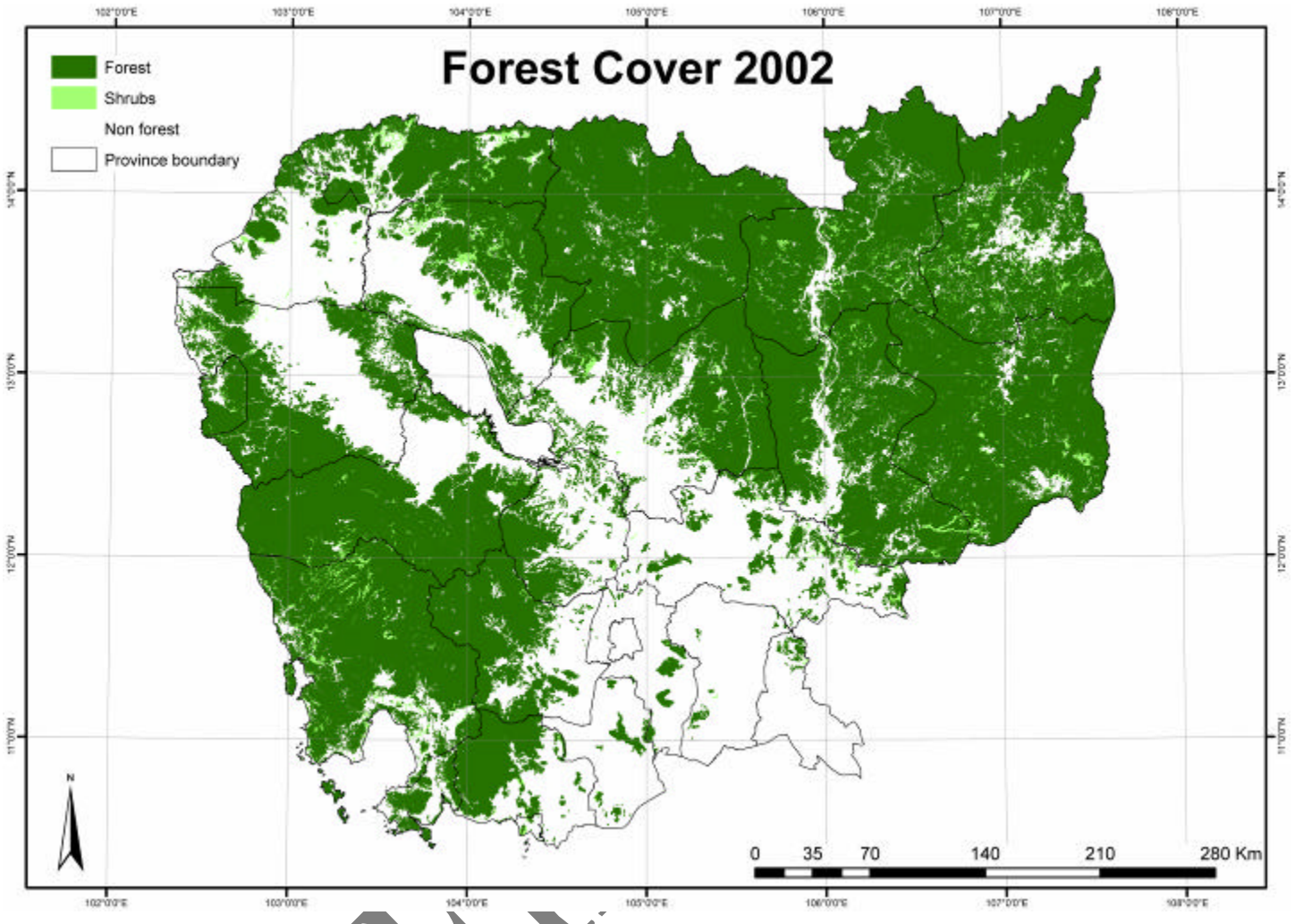
Annex 3a : Forest cover map 1989 (Mekong Secretariat)



Annex 3b : Forest cover map 1997 (MRC)



Annex 3c : Forest cover map 2002 (GIS/RS Unit-FA)



nnex 4 : Comparisons of land cover methodologies used for Cambodia.

	1989	1996/1997	2002	2005/2006
Institution:	Mekong Secretariat	Mekong River Commission	Forestry Administration	Forestry Administration
Cartography:	Land cover	Land cover	Land cover	Land cover
Nomenclature:	20 classes	30 classes	8 classes	8 classes (5 classes after merging)
Forest definition:	Crown cover >10% Tree height >5m	Crown cover >10% Tree height >5m	Crown cover >20% Tree height >5m	Crown cover >20% Tree height >5m
Interpretation:	Visual on hardcopies	Visual on hardcopies	Visual on screen	Visual on screen, and first use of digital classification techniques in Cambodia
Minimum Mapping Unit:	1 km²	1 km²	0.2 km²	0.2 km²
Scale:	1/250.000	1/250.000	1/50.000	1/50.000
Source imagery:	Landsat TM	Landsat TM	Landsat ETM+	Landsat ETM+ gap-filled
Imagery provider:	Remote Sensing and Mapping Unit	Department of Forestry and Wildlife GIS Unit	FA's GIS/RS Unit	FA's GIS/RS Unit
Additional imagery:	-	SPOT and Aerial photo	Landsat TM 2000	Landsat TM, Quickbird
Ground truthing:	-	-	88 samples	100 samples
Limitations:	Forest definition, Scale, MMU, Accuracy	Scale, MMU, Accuracy	Superposition with 1988/89 and 1996/97	Superposition with 1988/89 and 1996/97
Benefits:	Reference Year for CDM eligibility	Reference Year for REDD 10 years baseline	Compatible with 2005/06	Compatible with 2002

ANNEX 5

KINGDOM OF CAMBODIA
Nation - Religion - King

COUNCIL OF MINISTERS
No. 699 Sar.CHor.Nor

Phnom Penh, 26 May 2008

DEPUTY PRIME MINISTER, MINISTER IN CHARGE OF COUNCIL OF MINISTERS
INFORM TO

- H.E Senior Minister, Minister of Ministry of Environment
- H.E Minister of Ministry of Agriculture, Forestry and Fisheries
- H.E TY SOKHUN, Adviser to Samdech Akka Moha Sena Padei Techo HUN SEN, Prime Minister of the Kingdom of Cambodia, and the Chief of Forestry Administration.

Subject: Request the support from Samdech Akka Moha Sena Padei Techo HUN SEN, Prime Minister of the Kingdom of Cambodia on Forestry Carbon Credit Project in the Kingdom of Cambodia.

Reference:
- Letter dated on 28 April 2008 of Dr. Mark Poffenberger, Executive Director of Community Forestry International (CFI).
- Letter dated on 5 May 2008 of H.E Ty Sokhun, Adviser of Samdech Akka Moha Sena Padei Techo HUN SEN, Prime Minister of the Kingdom of Cambodia.
- Decision dated 8 May 2008 of Samdech Akka Moha Sena Padei Techo HUN SEN, Prime Minister of the Kingdom of Cambodia.

As stated in the above subject and references, the Council of Ministers would like to inform Your Excellencies that the Royal Government of Cambodia (RGC) decides to support the forest carbon credit project in Cambodia as follow:

1. Designates the Forestry Administration (FA) as the seller of the forest carbon in Cambodia with the CFI.
2. The RGC, as seller of the forest carbon, is responsible for helping to fulfill the terms and conditions in the contract "selling carbon" with the buyer.
3. Have a Memorandum of Understanding (MOU) between CFI and the RGC, represented by FA that would allow CFI to identify buyers, and explore terms and carbon prices subject to the review and approval of the RGC. The Royal Government of Cambodia decides in the MOU that revenue from selling Carbon in the Carbon Credit for community forestry Project will be used to:
   a. Improve the quality of the forest;
   b. Maximize the benefits flows to local community who is participating in the project;
   c. Study potential sites for the new forest carbon credit REDD project
4. Revenue from forest carbon REDD project will be channeled through the Technical Working Group on Forestry and Environment (TWG-F&E) during the first five years of the project.
5. Delegates the Forestry Administration as the representative of RGC to execute the sale of Cambodia forest carbon with consultation within the Technical Working Group on Forestry & Environment (TWG-F&E), as necessary.

As stated above, may Your Excellencies understand and follow the instructions.
Please accept, Your Excellencies, the assurance of my sincere consideration.

Minister of Council Ministers
Secretary of State
Signature and stamp: Prak Sokhon

Copy to:
- Cabinet of Prime Minister
- Council for Development of Cambodia
- Forestry Administration
- Community Forestry International
- TWG-F&E
- Documentation.

Annex 6: **Letter of National Forest Carbon Accounting System**

CLINTON FOUNDATION

H.E. Ty Sokhun
Advisor to Samdech Prime Minister HUN SEN
Delegate of the Royal Government of Cambodia
Chief of Forestry Administration
40, Preah Norodom Blvd
Phnom Penh
Cambodia

19 January 2009

Excellency

Re: **Clinton Climate Initiative – National Carbon Accounting System, Cambodia**

Further to your letter of 12 December 2008 (Ref. 3101 FA), I am pleased to confirm that the Clinton Climate Initiative will assist the Forestry Administration to develop a National Carbon Accounting System as part of our agreed Annual Work Plan and Budget for 2009.

The William J. Clinton Foundation and the Department of Climate Change of the Government of Australia, with support from the Environmental Systems Research Institute have agreed to pilot the Carbon Measurement Collaborative to develop and test a prototype for a globally available emissions accounting system for forestry and agricultural land uses in four countries, viz., Guyana, Kenya, Tanzania and Cambodia. The initial prototype version will demonstrate a publicly available, web-based application that combines emissions estimation models, geographic information systems and visualizations. These constitute the three key elements of the measurement, monitoring and reporting system.

The globally applicable platform will be created from the combination of ESRI GIS software and Australia's National Carbon Accounting System, and will eventually serve both national and project scale accounting. The first scoping team will initiate work to develop the National Carbon Accounting System with the Forestry Administration's GIS/RS Unit with effect from 23 March 2009.

I look forward to further strengthening our support to the Forestry Administration's climate change team.

Best regards,

Dr. D. Andrew Wardell
Clinton Climate Initiative-Forestry
Regional Director
Indonesia, Papua New Guinea and Cambodia

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Annex 7: The new structure of Forestry Administration