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Drivers of Forest Change in the Greater Mekong Subregion

Cambodia Country Report

USAID Lowering Emissions in Asia's Forests (USAID LEAF)

Drivers of Deforestation in the Greater Mekong Subregion Cambodia Country Report

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The USAID Lowering Emissions in Asia's Forests (USAID LEAF) Program is a five-year regional project (2011-2016) focused on achieving meaningful and sustainable reductions in greenhouse gas (GHG) emissions from the forest-land use sector across six target countries: Thailand, Laos, Vietnam, Cambodia, Malaysia and Papua New Guinea.

Contents

1	OVERVIEW OF TRENDS IN FOREST AND LAND USE SECTOR.....	1
1.1	HISTORICAL DRIVERS OF DEFORESTATION AND FOREST DEGRADATION IN CAMBODIA	1
1.2	CAMBODIA LAND USE AND FORESTRY	1
1.3	FORESTLAND MANAGEMENT, AND INSTITUTION	2
2	DRIVERS OF DEFORESTATION AND DEGRADATION	3
2.1	CONVERSION FOREST TO LARGE SCALE AGRO-CROPPING AND MINING.....	3
2.1.1	<i>Large scale economic land concession (ELC under 10,000 ha)</i>	3
2.1.2	<i>Economic land concession (ELC under 1,000 ha)</i>	4
2.1.3	<i>Mining concession</i>	4
2.2	CONVERSION FOREST TO SETTLEMENT AND FARMLAND	5
2.2.1	<i>Social Land Concession (SLC)</i>	5
2.2.2	<i>Conversion forest to settlement and farmland through Government Directive 001 policy</i>	6
2.2.3	<i>Illegal forestland conversion/illegal forestland speculation at household scale</i>	7
2.3	CONVERSION OF FOREST TO LARGE SCALE INFRASTRUCTURE DEVELOPMENT.....	7
2.3.1	<i>Hydropower dam construction and electricity consumption</i>	7
2.3.2	<i>Road construction</i>	8
2.4	DRIVERS OF FOREST DEGRADATION	8
2.4.1	<i>Forest Concession and local coup/annul coup</i>	8
2.4.2	<i>Illegal Logging</i>	9
2.4.3	<i>Fuel wood harvesting</i>	9
2.4.4	<i>Forest fire</i>	10
3	DRIVERS OF SUSTAINABLE FOREST MANAGEMENT, FOREST CONSERVATION, AFFORESTATION AND REFORESTATION.....	10
3.1	REFORESTATION AND AFFORESTATION	10
3.1.1	<i>Promote participatory forest management</i>	11
3.1.2	<i>Certificate forestry and trade</i>	12
3.1.3	<i>Increase forest values through REDD+ implementation</i>	12
3.2	UNDERLYING CAUSES OF DEFORESTATION, FOREST DEGRADATION, SUSTAINABLE FOREST MANAGEMENT, FOREST CONSERVATION, AFFORESTATION AND REFORESTATION	13
3.2.1	<i>Limited governance in forest sector and land use sector</i>	13
3.2.2	<i>Rural Poverty</i>	13
3.2.3	<i>Regional and Global demand for Timber</i>	13
3.2.4	<i>Improper farming and migration</i>	14
3.2.5	<i>Lack of long term finance to support forest sector</i>	15
3.2.6	<i>Lack of human resource in forestry sector</i>	15
3.3	ACTORS INFLUENCING DRIVERS OF DEFORESTATION, FOREST DEGRADATION, SUSTAINABLE FOREST MANAGEMENT AND FOREST CONSERVATION, AFFORESTATION, AND REFORESTATION	16
3.3.1	<i>Ministry of Agriculture Forestry and Fishery (MAFF)</i>	16
3.3.2	<i>Ministry of Environment (MoE)</i>	16
3.3.3	<i>Ministry of Commerce (MoC)</i>	16
3.3.4	<i>Ministry of Land Management Urban Planning and Construction (MLMUPC)</i>	17
3.3.5	<i>Ministry of Mining and Energy (MME)</i>	17
3.3.6	<i>Anti-corruption unit</i>	17
4	POLICIES AND MEASURES TO ADDRESS DEFORESTATION AND FOREST DEGRADATION AND EXIST SFM AND REHABILITATION.....	17
4.1	NATIONAL FOREST PROGRAM/FORESTRY LAW (2002).....	18

4.1.1	<i>Protection Forest</i>	18
4.1.2	<i>Community Forestry Program</i>	18
4.1.3	<i>National PA strategic management plan</i>	19
4.1.4	<i>Land Law (2000)</i>	19
4.1.5	<i>Fishery strategic management plan</i>	19
4.1.6	<i>Cambodia REDD+ Roadmap</i>	19
4.1.7	<i>Other government policy</i>	19
5	ANALYSIS	20
5.1	TRENDS DRIVING DEFORESTATION AND FOREST DEGRADATION	20
5.2	TREND DRIVING SUSTAINABLE FOREST MANAGEMENT, REFORESTATION, AND AFFORESTATION	21
5.3	GAP ANALYSIS OF EXISTING DATA ON DRIVERS OF DEFORESTATION, FOREST DEGRADATION, SUSTAINABLE FOREST MANAGEMENT, REFORESTATION, AND AFFORESTATION	21
5.4	PROPOSED NEW PAMS TO ADDRESS DEFORESTATION AND FOREST DEGRADATION	22
	REFERENCES	24
	ANNEX 1: PROTECTED FORESTS, CONSERVATION SITES AND FOREST RESEARCH STATIONS	25
	ANNEX 2: ELCS GRANTED INSIDE PROTECTED AREA (PA)	27

1 Overview of trends in forest and land use sector

1.1 Historical Drivers of Deforestation and Forest Degradation in Cambodia

Cambodian has many high value forest areas and contains the largest remaining forest habitat, with 80% of the most of the most valuable and endangered indigenous tree species in the region. However the country also has experience significant forest and biodiversity loss in recent years.¹ Before the 1970s, Cambodia's forest area remained relatively constant. Since the 1970s, forest area began to decline due to effects of the Vietnam War, as Cambodia suffered from the unstable political situations and unstable logging in the area (Tetsuya *et al*, 2013).

Starting in the 1990s, as a result of rapid economic growth and fragile environmental regulations, 60% of the country was leased to private timber industry, which led to widespread deforestation and forest degradation.² Land speculation driven by high prices has also contributed to accelerated forest clearing in recent years.³ In particular, economic land concessions for production of rubber, sugar cane, cassava and more recently biofuel crops have led to substantial deforestation and displacement of forest-dependent populations.⁴

Forest degradation is also caused by unsustainable fuel wood collection and charcoal production. The latter is more damaging as it requires green wood and in some regions is more profitable than agriculture.⁵ Due to lack of alternative energy sources, wood is the primary energy source for most rural and some urban households. Uncontrolled logging has also resulted in forest degradation. In recent years, industrial roundwood production in Cambodia, which itself has very limited wood processing capacity, has increasingly supplied the region's wood product manufacturing centres in Viet Nam and China (Katsigris *et al*. 2004; EIA/Telapak 2008).

1.2 Cambodia Land Use and Forestry

Cambodia covers an area of 181,035 m². The Ministry of Agriculture, Forestry and Fisheries (MAFF) in 2011 and the Forest Authority (FA) in 2010 estimated forested land at 59% and 57%, of all land respectively, despite rapid expansion of urban areas for residential and industrial land use. According to the 2013 agriculture land census, Cambodia consisted of 3.1 million hectares of agriculture land. This is composed of 3.7 million agriculture land plots, in which 95.1% were used for short-term perennial crops, and the remainder for permanent crops.⁶

Cambodia has 10.36 million hectares (FA, 2010), of which 57.07% is classified as forest areas under several different land-use categories and regulated by two separate Ministries (MAFF and MoE). In the National Forest Program (2010-2029) the Government divided forestland use into five main categories including evergreen forest, semi-evergreen forest, deciduous forest, other forest and non-forest (FA, 2010).

¹ CTSPA/FA 2003, Forest Gene Conservation Strategy. Cambodia Tree Seed Project, Forestry Administration, Phnom Penh, Cambodia

² Poffenberger, M. (2009). Cambodia's Forest and Climate Change: Mitigating Drivers of Deforestation. Natural Resources Forum, 33: 285-296.

³ Poffenberger M, Smith-Hanssen K. Forest communities and REDD climate initiatives. Asia Pacific issues; 2009.

⁴ Poffenberger, M. (2009). Cambodia's Forest and Climate Change: Mitigating Drivers of Deforestation. Natural Resources Forum, 33: 285-296.

⁵ World Bank 2011. Readiness Plan Idea Note (R-PIN) Washington USA

http://www.forestcarbonpartnership.org/sites/forestcarbonpartnership.org/files/Cambodia_R-PIN_Revised_Feb_2009.pdf

⁶ RGC, Ministry of Planning (2013)

Comparison of 2002 and 2010 forest cover assessment indicates that forest cover declined from 61.15% to 57.07%, representing a decrease of 4.08% in eight years (0.51% annual rate). Deciduous forests (0.25% per year) and Evergreen forests (0.15% per year) are the most affected by deforestation.⁷ This makes Cambodia a country with *high forest cover and also high deforestation*.⁸

Table 1: Forest types and area in Cambodia (Source: FA 2010)

Forest Type	Area	Percentage of total land area
Evergreen forest	3,499,185 ha	19.3%
Semi-evergreen forests	1,274,789 ha	7%
Deciduous forests	4,481,214 ha	24.7%
Other forests	1,108,600 ha	6%

1.3 Forestland management, and Institution

All forest resources, watercourses, natural lakes, seashores and banks of navigable waters are considered state property (Article 15, 2001 Land Law). Forests in Cambodia are under the management and governance of three separate government agencies (2002 Forestry Law, 2005 Fisheries Law, 2008 Protected Areas Law).⁹ The RGC therefore is striving to maintain the forest cover at 60 percent of the total land area, which is also the target of the Cambodia Millennium Development Goal 2015.¹⁰ Forests in Cambodia fall under the general jurisdiction of the Ministry of Agriculture, Forestry and Fisheries (MAFF), with the Forestry Administration (FA) of MAFF charged as the responsible Government Authority.¹¹ The General Department of Administration for Nature Conservation and Protection (GDANCP) of the Ministry of Environment (MoE) is responsible for protected areas including core areas of the Tonle Sap Biosphere Reserve,¹² while the Fisheries Administration (FiA) of MAFF is responsible for flooded forest and mangrove areas.¹³ Table 2 illustrates the expected reclassification of Cambodian forests based on the decision of 60 percent forest cover.¹⁴

⁷ Brun, S. (2013) Land cover and forest classification systems of Cambodia. UN-REDD Programme, Phnom Penh, Cambodia.

⁸ <http://www.un-redd.org/AboutUNREDDProgramme/NationalProgrammes/Cambodia/tabid/6896/Default.aspx>, retrieved 28 December 2014

⁹ Oberndorf and Nhean (2010), Cambodia REDD+ Legal Review

¹⁰ RGC 2014. Acheiving Cambodia Millennium Development Goals

¹¹ Forestry Law 2002, Article 3

¹² Protected Areas Law 2008, Article 4

¹³ Fisheries Law 2006, Article 3

¹⁴ National Forest Programme, 2010

Table 2: Projected reclassification of forests in Cambodia

Institution	Ministry of Environment	Ministry of Agriculture Forestry and Fisheries/Forestry Administration			
		Protected Areas	Protection Forests	Community Forests	Forests under (private) concessions
Forest Management Modalities	Protected Areas	Protection Forests	Community Forests	Forests under (private) concessions	Production Forests
Target under NFP (2010-2029)	3 million hectares	3 million hectares	2 million hectares	3.2 million hectares	1.2 million hectares
Current Status	3,128,207 hectares	1,629,419 mil (15 Protection Forests)	364 CFs approved by MAFF, covered 329,587 ha	1.2 mill (118 ELCs)	N/A
Sources of data	MoE (2014)	FA (2015)	FA (March 2015)	MAFF (June 2012)	

2 Drivers of deforestation and degradation

The definition of drivers of deforestation and forest degradation are often not clear and are the subject of national debate. In scientific literature, there is a common separation of proximate/direct or underlying/indirect causes. It is often more difficult to establish clear links between underlying (or predisposing) factors and deforestation than between direct causes and deforestation. This report describes deforestation and forest degradation drivers in the form of the relationship between drivers from inside and outside the forest sector. This relationship is complex, and experts interviewed recommended that drivers strongly related with deforestation and forest degradation be revealed and addressed in Cambodia.

2.1 Conversion forest to large scale agro-cropping and mining

2.1.1 Large scale economic land concession (ELC under 10,000 ha)

Land concessions have been granted in Cambodia since the 1990s. The 2001 Land Law formalized the legal framework for granting concessions for economic purposes. An economic land concession, or ELC, is a long-term lease that allows the beneficiary to clear land in order to develop industrial agriculture.¹⁵ According to the Land Law (2001), ELCs are granted for a period of 99 years though can only exist in areas of State private land. However, since “*any property that has a natural origin*” is defined as public property of the State, forests should be classified as public state land and ELCs should not be allocated within the permanent forest estate. The ELCs have been granted for activities that include large-scale plantations, animal husbandry and building factories to process agricultural products.¹⁶ MAFF grants ELCs in accordance with the Sub-decree 146 ANK/BK and, under article 37, ELCs should be limited to 10,000 hectares. The MoE grants ELCs licenses to private companies (both local and foreign) within sustainable use zones based on the enactment of the Protected Area Law (2008). ELC areas granted by the MoE prior to the 2008 Protected Area Law were transferred to the MAFF jurisdiction.¹⁷

¹⁵ ELCs are “a mechanism to grant private state land through a specific ELC contract to a concessionaire to use for agricultural and industrial-agricultural exploitation, Article 2, Sub-Decree no. 146 on Economic Land Concessions

¹⁶ <http://www.opendevdevelopmentcambodia.net/briefing/economic-land-concessions-elcs/>, retrieved 22 December 2014

¹⁷ Sub-decree on Economic Land Concessions, No. 146 ANK/BK, Dated 27 December 2005

Data published by UNEP & WCMC (2010) indicated that Cambodia has over 160 ELCs, located mostly in the Northeast and Southwest regions, covering an area of 17,77,000 ha, or 10% of total land area. Carbon overlay results show that 0.32 Gt of carbon is stored within ELCs, representing 10.7% of Cambodia's total carbon. However, only 4% of ELCs is of high carbon density (i.e., good forest conditions such as for evergreen forests).

Moreover, unofficial data for identification and mapping of ELC areas within land use categories in each province indicated a rapid increase in agricultural expansion and other large-scale development activities.¹⁸ According to the ODC database (2013) this led to widespread forest clearance in some areas. In 2015, 301 ELCs were granted covering 2,116,067 ha of forestland, these ELCs were considered as planned deforestation.¹⁹ Publicly available information of MAFF shows that from 1996 to 2013 the MAFF granted 121 ELCs covering 1,230,364 hectares of forest in 17 provinces, in which 39 local companies covered 609,377 ha, and 82 international companies covered 620,987 ha. Of these, rubber, palm oil, cashew nut, cassava, were planted and cattle raised on 135,322 ha. In the same report it was indicated that among 82 international companies, 34 are Vietnamese-owned, 25 Chinese-owned, 7 Korean-owned, 4 Thai-owned, and the remainder are Indian, Singapore, US, Australia, and Russian-owned.²⁰ These figures represent only ELCs in MAFF jurisdictional areas.

According to information published by the MoE on the total land surface exploited in natural protected areas in 2011, the total protected land surface was 3,143,763 hectares. Of this, 322,113 hectares were used for rubber plantations, 172,731 hectares for other agro-industrial crops, 38,831 hectares for mining exploration, 89,359 hectares for eco-tourism and 4,593 hectares for hydro-power. In other words, 20 percent of all Cambodian protected areas (627,627 hectares) were exploited in 2012 (OHCHR, 2012). Official data from MoE indicates that MoE has granted forestland inside Protected Area (PA) to 87 ELCs, which covers a total area of 482,543 hectares (MoE-GIS office, 2014).

2.1.2 Economic land concession (ELC under 1,000 ha)

Provincial-level authorities previously had the power to grant concessions for less than 1,000 hectares. A 2005 Sub-Decree requires details of all ELCs to be listed in the ELC Logbook.²¹ After enforcement of the 2005 Sub-Decree on economic land concession on 27 December, 2005, the 47 companies individually less than 1,000 ha have been granted by provincial authorities in 9 provinces.²² However, this authority was cancelled in 2008.²³ Information on ELCs under 1,000 ha is mainly stored at the provincial level, and up to now all ELCs under 1,000 ha remaining active must receive approval according to the ELC master plan.

2.1.3 Mining concession

According to Open Development Cambodia's 2013 data, there are a number of mining areas in Cambodia that total more than 401,882 hectares in concession size. The FA does not have data on mining areas as the activity is not under their jurisdiction, but the FA does regulate logging activities where the company must develop a log list for trees harvested through mining operations. The FA is responsible for measuring logs extracted, hammer marking logs and issuing a License Permit and PC

¹⁸ See, Open Development Cambodia (ODC 2013). URL: www.opendevdevelopmentcambodia.net. See also, Global Forestry Services (GFS), March (2014), Understanding timber flows and control in Cambodia in the context of FLEGT.

¹⁹ Id.

²⁰ MAFF's annual report, (2012-13)

²¹ Sub-Decree No.146 on Economic Land Concessions 2005, Article 36.

²² ELC Logbook, URL: <http://www.elc.maff.gov.kh/index.php/news/8-overall-status-of-economic-land-concession-in-cambodia> visited 28, December 2014

²³ Sub-decree No.131 on Modification on the Sub-decree on Economic Land Concessions 2008

according to procedures. Actual mining operations within the concession areas may be based on exploration and only impact a very small area.

2.2 Conversion forest to settlement and farmland

2.2.1 Social Land Concession (SLC)

SLCs are a mechanism to grant state private land to poor landless families for social land concessions for residential use and/or family farming, and is regulated by the Sub-Decree on SLCs.²⁴ The SLC mechanism consists of two programs: (1) *Local SLC Programs*, in which a commune council initiates a social land concession plan in accordance with the requirements for social land concession plans; and (2) *National Social Land Concession Programs*, in which a National SLC Program may be initiated by one or more concerned ministries or institutions in situations unsuitable for a local social land concession program.²⁵ SLC are also granted through the MAFF, whereby land is granted specifically for rural community development that is mainly used for small-scale agricultural production and village expansion. Trees cleared under social land concessions are meant for use within the community and not for commercial use.²⁶ However, the number of forest clearings from SLC grants remain unrecorded. According to experts interviewed, the comprehensive land use planning for SLCs in connection with family planning did not induce negative impacts on forest resources or lead to massive forestland clearing in adjacent area of the SLC.²⁷ However, most SLC were granted to military relatives, immigrants or unregistered households, all of which are strongly associated with deforestation and other forest-related activities.

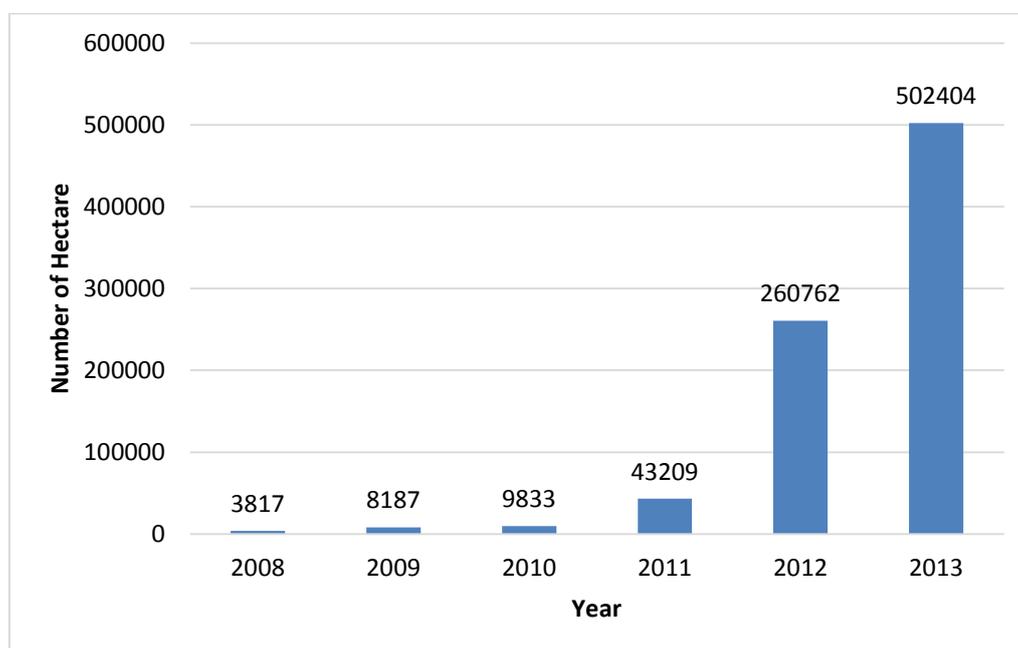


Figure 1: Number of Hectare of SLC granted to landless households²⁸

²⁴ Sub-decree on Social Land Concession, the Royal Government of Cambodia No. 19 ANK/BK/ March 19, 2003

²⁵ Id., Article 4, and 7.

²⁶ Global Forestry Services (GFS), March (2014), Understanding timber flows and control in Cambodia in the context of FLEGT

²⁷ The amount of land allocated to the householder is according the number of household members; if the population of the poor increases, more forestland is converted to SLC for the poor households.

²⁸ Sources:http://www.sithi.org/temp.php?url=law_infrastructur.php&tab_id=55&page_id=5&q=3&&sP=53 [accessed 08 December 2014]

2.2.2 Conversion forest to settlement and farmland through Government Directive 001 policy

In May 2012 Prime Minister issued Directive 001 (*also known as Order 01BB*) on “Measures to strengthen and enhance the effectiveness of management of economic land concessions (ELCs),” which announced a new land registration campaign to be implemented by youth volunteers, recruited from among university students. The aim was to speed up the land title registration process and secure transferable titles over areas overlapping with ELCs for individual community members. Directive 001 also announced a moratorium on the granting of new ELCs, the review of existing ELCs and the implementation of the so-called “leopard-skin” (or “tiger-skin”) policy, aiming to allow communities to live side by side in patchwork with the concessions.

Since Directive 001 entered into force in January 2014, 969,445 hectares of forest have been officially granted to landless families for forest public infrastructure development, including agricultural and residential development, as profiled in Figure 2 (MLUPC, 2014). Data from MLUPC (2014) indicated that the land granted under Directive 001 encroached upon into existing forest management areas. Some of these were considered degraded and were already occupied by landless families. In all, 891,942 out of 969,444 hectares were titled and granted to 303,814 landless families, and the remaining 77,5012 hectares were managed by the government as reserve land to be allocated for future infrastructure development projects and/or in case of population increase. Land grants under Directive 001 peaked a year prior to government elections before falling and undermining communities after many years of fighting to register under a Collective Land Title.²⁹ Land grants under SLCs continued to increase after the 2014 election.

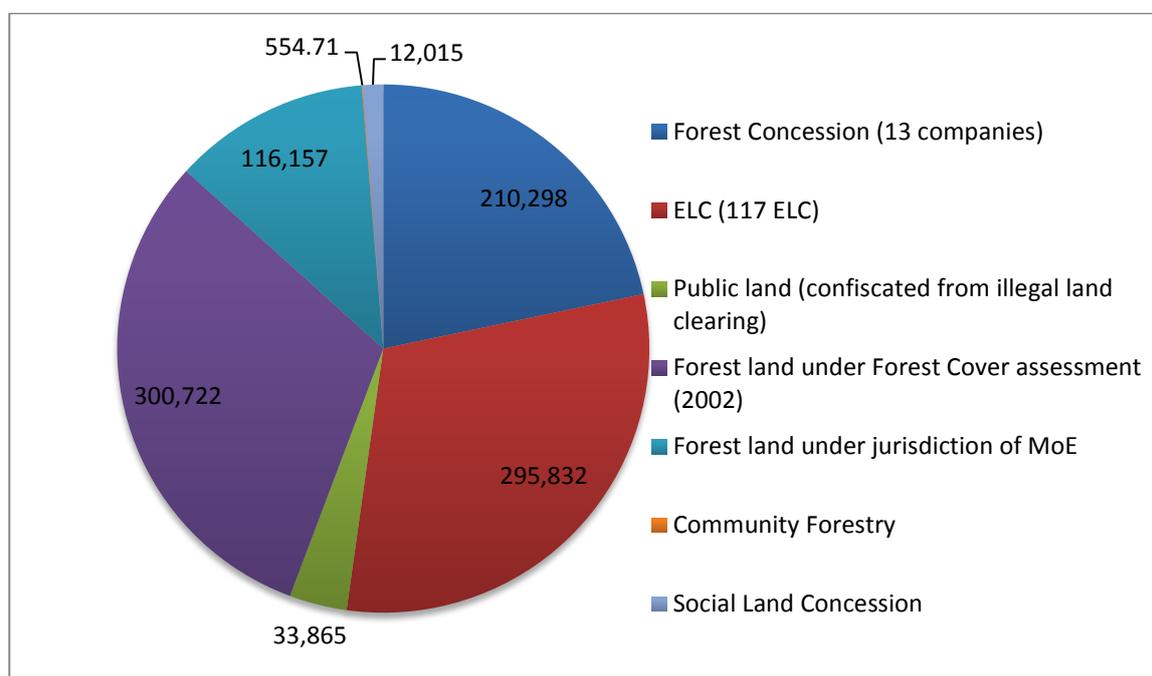


Figure 2: Forestland allocated under Directive 001 (hectares)³⁰

²⁹ Ratana Pen and Phalla Chea (2015), Large-scale land grabbing in Cambodia: Failure of the international and national policies to secure the indigenous people’s rights to access land and resources, Heinrich Böll Foundation, Phnom Penh, Cambodia, p16. The Paper prepared for presentation at the “2015 WORLD BANK CONFERENCE ON LAND AND POVERTY” The World Bank - Washington DC, March 23-27, 2015

³⁰ Source: MLUPC (2014)

2.2.3 *Illegal forestland conversion/illegal forestland speculation at household scale*

Illegal forest clearing is a direct driver of deforestation, and different agents have induced clearing at different levels. Driven by high land prices, speculators have contributed to accelerated forest clearing.³¹ Illegal small-scale forestland clearing has decreased from 11,179 ha in 2010 to 251 ha in 2014 according to FA data, while illegal forestland clearing inside PA remains unrecorded under the GDANCP system. The decrease in illegal small-scale clearing results from titling of areas cleared in anticipation of implementation of Government Directive 001. However, legal small-scale/household land clearing remains unclear and lacks transparency as recorded by two institutions, FA and MoE.

Table 3: Forestland confiscated by Forestry Administration, 2010-2014 (ha)

Type of forestland	2010	2011	2012	2013	2014
Small-scale Illegal forestland clearing <i>(in Forestry Administration recording system)</i>	11,179	NA	111,837	1,721	251
Small-scale illegal forestland clearing <i>(confiscated and convert to state owned property)</i>	19,382	NA	15,827	1,864	811

Sources: MAFF Annual Report (2010, 2012, 2013, and 2014)

2.3 Conversion of forest to large scale infrastructure development

2.3.1 *Hydropower dam construction and electricity consumption*

Cambodia has several hydropower projects under development that induce forest loss in the reservoir. Recent government records on log production indicate that only a small portion of the total timber supply volume originates from hydropower projects. FA and ODC both show roughly 8,000 m³ of timber harvested from three dams constructed in 2012, and FA 2012 data show that 11 dams constructed in that period covered 305,250 hectares of forestland. The status of forestland clearing activities in each of the dam projects is unavailable however. Therefore, there is a need to identify forest area cleared by dam construction.

³¹ Poffenberger M, Smith-Hanssen K. Forest communities and REDD climate initiatives. Asia Pacific issues; 2009.

Table 4: Harvest volumes from hydropower dam projects, 2011 and 2012

Dam	Province	Area (hectares)*	Volume (m3) 2011**	Volume (m3) 2012**
Stung Ahtai	Pursat	4,179	5,679	8,179
Stung Tah Tai	Koh Kong	N/A	0	217
Russei Chrum Krom	Koh Kong	1,481	1,189	0
Kirirom 3	Koh Kong	N/A	913	0
Kamchay Dam Reservoir	Kampot	1,990	0	0
Sambor	Kratie	62,000	0	0
Stung Treng	Stung Treng	21,100	0	0
Stung Sen Upper	Kampong Thom	6,900	0	0
Stung Sen Upper Command	Kampong Thom	86,000	0	0
Stung Sen Lower Command	Kampong Thom	33,800	0	0
Upper Sesan 2	Ratankiri	40,300	0	0
Lower Sesan 2	Ratankiri	35,500	0	0
Srepok 2	Ratankiri	12,000	0	0
Kamping Puoy Water Reservoir	Battambang	0	0	0
Totals		305,250	7,781	8,396

Source: Forestry Administration annual reports for 2011 and 2012

2.3.2 Road construction

Improved accessibility to remote forested areas was encouraged initially by a rapid increase in commercial logging activity in the 1990s but ceased when the Government declared logging moratorium in 2002, and more recently by road-building projects. Road networks are bisecting more and more of the country. Major road building programs are stimulating economic development but have been criticized for the inadequacy of their social and environmental safeguards.³² The new road construction itself strongly correlates with deforestation and induced illegal small-scale forestland or encroachment settlements that emerge alongside the road. Evidence shows the main roads were constructed from Snoul district to Mundulkiri; this re-construction caused massive small-scale deforestation and increasing illegal logging in Snoul wildlife sanctuary. Other evidence has been shown in construction of the main road from Kraite to Stung Treng, and Kompong Thom provincial town to Preah Vihear.

2.4 Drivers of Forest Degradation

2.4.1 Forest Concession and local coup/annul coup

Cambodia established a logging concession system from 1994 to 1997, whereby the Government granted 36 Forest Concessions covering nearly 7 million hectares, or close to 70% of the forest area (FA, 2009). Poor management and regulatory control of the concessions resulted in the Cambodian Government decision to issue a logging moratorium in January 2002 for all natural Forest Concessions. Subsequently, the Government established a legal classification of the Permanent Forest Estate (PFEs) based on the Forestry Law (RGC 2002a). Some concession areas have been taken back by the Government, so currently there are approximately 3.3 million hectares of forest still under valid

³² Euronet Consortium, April, 2012, Cambodia Country Environmental Profile, Royal Kingdom of Cambodia, page

concession licenses, though these are not harvesting timber (FA, 2010). The future of forest concessions is not clear for companies holding valid (not expired) concession licenses as the Ministry of Agriculture Forestry and Fisheries (MAFF) has indicated that areas of concessions may be reallocated to Protection Forests and Community Forests. Existing forest companies are able to operate concessions upon renewed contract agreement with the Forestry Administration (FA) based on sustainable management of the concession.

The FA and the MAFF manage the allocation of forest areas for annual forest coupe for bidding that is open to private companies. The Government only had one coupe permit for 2012 within Production Forests in Cambodia, thus forming an insignificant portion of the current timber supply, and the timber will be used domestically. The most timber is derived through land-clearing activities in ELCs regulated by the Ministry of Environment and the MAFF. Production Forest areas can have annual coupe licenses and also be used to establish Community Forests, for which the Government has targeted the development of 2 million hectares in Cambodia by 2029 (Cambodia National Community Forestry program, 2010). The Forestry Administration has annual data on log production through data collected through Log Book A and License Permits issued by the Forestry Administration in Phnom Penh that resulted in a total recorded volume of 140,952 m³ produced from all sources in 2012. There is no material recorded from Community Forests, plantations and mining areas. Production from natural forest areas needs to be processed domestically prior to export (GSF, 2014).

2.4.2 Illegal Logging

Timbers or logs harvesting is considered a direct driver of forest degradation in the Draft Cambodia National REDD+ Strategy that needs to be addressed. The RGC recorded illegal logging annually through law enforcement activities of field officers, as shown in Figure 3 below.

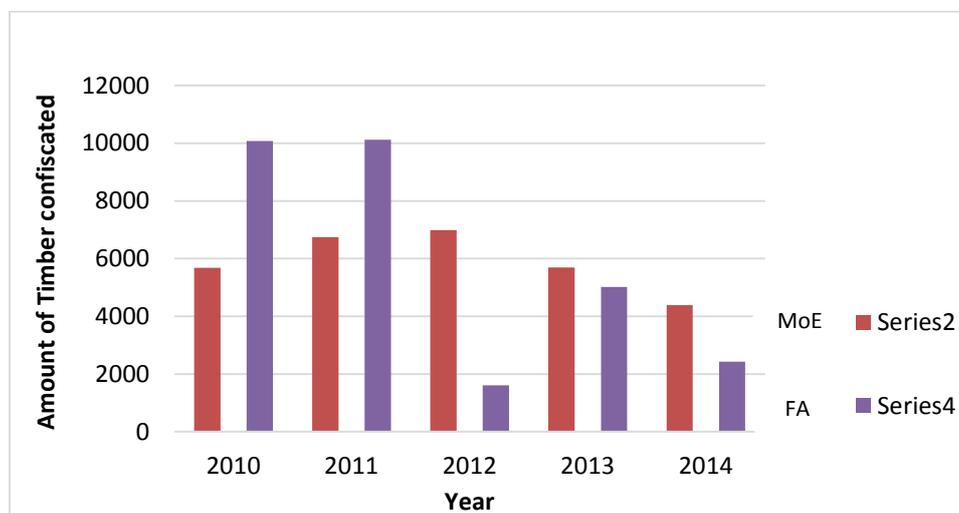


Figure 3: Amount of timber illegally harvested confiscated by FA & MoE

2.4.3 Fuel wood harvesting

The main energy source in Cambodia is wood, accounting for 80% of national energy consumption (UNEP, 2010). Most households, even in urban areas, rely on traditional energy sources since fossil fuels are either not available or too expensive. 94% of the population living in rural areas relies on wood, charcoal, car batteries and kerosene (UNCDF, 2010). Most primitive fuels are sourced from forests; in rural areas in the form of fuel wood and in towns and cities as charcoal. The UNDP forecasts that wood-derived fuels will remain the main source of cooking energy in rural areas until

2030 (UNDP, 2008). In 2008, 85% of the country's population was dependent on fuelwood.³³ According to the draft Cambodia energy sector strategy (2013), despite deposits of energy resources such as fossil fuels, natural gas and coal, over 84% of the primary energy consumption come from fuel wood. Less than 9% of rural households have access to grid-quality electricity services.

2.4.4 Forest fire

Currently, no scientific study exists on the impact of forest fire to forest degradation or deforestation in Cambodia, however experts interviewed recognized that forest fire provide negative impacts to forest and people use fire as a tool for forest clearing, fuel wood collection, and wildlife collection. No experts confirmed that forest fire occurred naturally; all agreed that forest fires in Cambodia are manmade.

3 Drivers of sustainable forest management, forest conservation, afforestation and reforestation

3.1 Reforestation and Afforestation

The reforestation was increasingly implemented and the RGC has also released a Sub-Decree on the use of state land for reforestation that encouraged communities and the private sector to take part in reforestation activities. The Forestry Administration has 96,000 hectares of plantation areas under the MAFF, of which an area of 14,000 hectares has been planted (FA, 2013), while reforestation and afforestation program under the jurisdiction of MoE remains unrecorded. The National Forestry Program (2009-2029) targeted the establishment of forest plantations annually to increase forest cover. Following this, the FA issue a sub-decree on "*Granting user rights to cultivate tree plantations within state forestlands*" to promote stakeholder involvement in tree planting programs in Cambodia. From 2006-2013, total reforestation was about 9,3671 hectares, moreover, plantation forestry stations were reported to achieve around 8 million trees every year for distributing saplings to household plantations and public gardens. Increased company plantation area is strongly correlated to forestland clearing in ELCs. According to ELC management guidelines, ELCs are allowed to expand new forest clearing unless the company planted trees or other cropping on the cleared land. As seen in Figure 4 below, while private households and company plantations have grown, FA has decreased tree planting due to a shortage of government investment.

³³ CBD National Focal Point Cambodia 2009. Draft Fourth National Report to the Convention on Biological Diversity. <http://cdn.www.cbd.int/doc/world/kh/kh-nr-04-en.pdf> [Accessed 26.2.2015]. Information on the amount of fuel wood collected from the forest was unavailable and type of fuel wood remaining not identified.

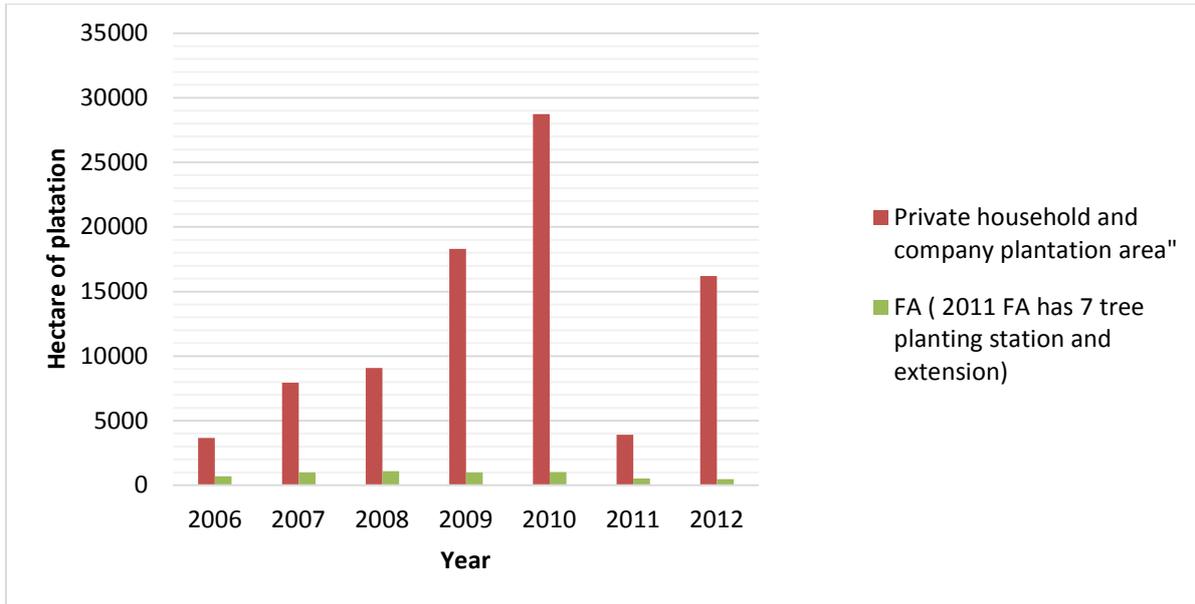


Figure 4: Private and FA plantation area, 2006-2012

Sources: FA annual report (2011, and 2012)

3.1.1 Promote participatory forest management

Community forestry (CF) is one approach to encourage poor and vulnerable communities to participate in sustainable forest management and share in the benefits. The National Forest Programme NFP (2010-2029) set a target to allocate two million hectares of production forest for establishing community forestry, and the FA developed a community forestry sub-decree and guideline for forest-dependent communities in establishing CF. Under this framework, the community has legal rights to manage their forest for 15 years through an agreement on community forestry between the Community Forest Management Committee (CFMC) and the FA. Moreover, several NGOs strongly support the establishment of community forestry in Cambodia. However, the detailed requirements in compiling the CF management plan including a community forest resources inventory, data analysis, and other procedures can slow the process of achieving approval from the FA cantonment and MAFF. As shown in the table below, although many CFs have been established, approved, and agreed, very few CFs have had their management plans approved and implemented.

Table 5: Community Forestry Establishment Status

CF Establishment	CF approved by MAFF	CF received agreement	CF approved management plan
485 CFs covered 410,025 hectare	365 CFs covered 329,587 hectare	309 CFs covered 275, 633 hectares	2 CFs covered 1,361 hectares

Sources: Community Forestry Office/FA (March 2015)

Communities living inside PAs have statutory rights to establish community protected areas (CPAs) regulated by the CPA sub-decree of the MoE. The primary purpose of establishing CPAs is to increase involvement of local communities in planning, managing, monitoring and evaluating protected areas to encourage shared responsibilities with the government in efforts to strengthen biodiversity conservation, enhance local livelihoods and maintain cultural and spiritual values. There are currently 119 CPAs covering 167,728 ha that have been established in national parks, wildlife sanctuaries, protected landscapes, multiple use areas and core area wetlands across the protected areas system.³⁴ However, the CPA sub-decree is still being formulated and CPAs are therefore not yet

³⁴ Draft- National Protected Areas Strategic Management Plan, p34

legally recognized. Given that CPAs are effective in protecting forests, endorsement of the CAP sub-decree should be made a priority.

The Land Law in 2001 recognized the rights of indigenous people, collective property of community of indigenous people, and their traditional land through the Indigenous Collective Titling (ICT) program. To implement the program, the MLUMPC developed a sub-decree and guidelines to promote the process of land registration. This process although effective in reducing conflict is, however, slowed by the need for involvement of ministries. Simplification and acceleration is therefore necessary.

3.1.2 Certificate forestry and trade

The RGC have been involved with EU-FLEGT process as one of the ASEAN member states, since 2012, under the support of EU program in Cambodia the FA and TWG-FR conduct a study on timber flow in Cambodia, the report highlighted mainly on the sources, and legal permission process. The national workshop was conducted to validate and facilitated inputs from national stakeholder. The RGC through the NTP (2010-2029) mentioned on the important role timbers trade certification scheme. Cambodia is piloting a certificated forestry scheme project with foreign commercial reforestation company Grandis Timber Co. Ltd. The experienced will from the implementation will be scale to the other projects sites and assist government to designed national forestry certificated system.

3.1.3 Increase forest values through REDD+ implementation

At the international level Cambodia has not been particularly active in negotiations under the UNFCCC. As a member of the Association of Southeast Asian Nations (ASEAN), Cambodia participated in the bloc's joint submissions on REDD+ in 2008,³⁵ which supported: the use of both market and fund-based finance for REDD.

Cambodia has engaged with REDD+ since 2007, the country developed a REDD+ roadmap in 2010, the roadmap is implemented by the coordination of national Cambodia REDD+ Taskforce and with technical support from four technical teams and engagement with difference stakeholder through consultation groups.³⁶ At the National level there are a number of supporting frameworks to facilitate the implementation of the Cambodia REDD+ Roadmap. These are the UN-REDD Programme, the World Bank Forest Carbon Partnership Facility (FCPF), the FAO Technical Cooperation Programme and National Forest Inventory Project (FAO/TCP-NFI), and the CAM-REDD Programme.³⁷ The Cambodia REDD+ secretariat was formed by the MAFF and has obligate to plays an important roles in supporting and implementing Cambodia REDD+ roadmap, and other climate change mitigation and REDD+ relevance policies, the office hosted in Forestry Administration building.³⁸

In the readiness phase, Cambodia not decide what REDD+ scale to be implemented, however REDD+ demonstrations projects have been actively implemented since 2008, up to date at least ten projects based REDD+ are operating in Cambodia in differences geographical areas, and various REDD+ feasibility study have been conducted and proposed to the RGC for more potential project based-REDD+ implementation. Cambodia set a milestone to have a National REDD+ Strategy to present at the COP-21 in Paris, the strategy will show additional comment of the RGC in reducing emission from deforestation and forest degradation in the country.

³⁵ <http://theredddesk.org/countries/cambodia> , retrieved 22 July 2014

³⁶ The REDD+ Consultation group (CG) was established to provide a forum to represent the views of different stakeholder groups. It is intended to be responsible for providing a link between the Cambodia REDD+ Programme and existing networks of stakeholder groups. The CG consists of 18 members, made up of 2 members representing each of nine stakeholder groups.

³⁷ <http://theredddesk.org/countries/cambodia/initiatives>, retrieved 22 July 2014

³⁸ <http://www.cambodia-redd.org/category/introduction> retrieved 22 July 2014

3.2 Underlying causes of deforestation, forest degradation, sustainable forest management, forest conservation, afforestation and reforestation

3.2.1 Limited governance in forest sector and land use sector

Lack of government capacity in remote areas to adequately manage forests, which are state public property under the Forestry (2002), Protected Area (2008) and Land Law (2001) is a major underlying condition leading to deforestation and forest degradation. This is specifically due to the following reasons:

- Low levels of stakeholder participation and involvement;
- Lack of transparency and accountability;
- Inadequate assessment of social and environmental impacts

3.2.2 Rural Poverty

Cambodia has achieved impressive economic growth since the mid-1990s and has made significant progress in reducing national poverty. Cambodia is ranked 138 out of 185 countries on the UNDP 2013 Human Development Index. According to the World Bank, the poverty rate decreased from 53.2 percent in 2004 to 20.5 percent in 2011. However, a significant portion of the population remains 'near poor' as they are still at high risk of falling back into poverty at the slightest income shock. Thus, the impact of losing US\$ 0.30 a day in income would double the poverty rate to 40 percent.³⁹

The majority of the rural poor are dependent on forest resources for a portion of their livelihoods. The economy is growing at an annual rate of 7 per cent,⁴⁰ and the country is no longer at war.⁴¹ Ever increasing numbers of children are accessing primary education, and remarkable progress has been made in the reduction of child mortality. The prevalence of HIV, malaria and tuberculosis has fallen, and life expectancy has increased by over a tenth in the past decade.⁴² The proportion of the population living below the poverty line dropped by 30 per cent between 2007 and 2012.⁴³

3.2.3 Regional and Global demand for Timber

Increasing regional and global demand for raw materials is leading to greater pressures on the extraction of national timber, and conversion of forestland to agriculture or other land use.

³⁹ <https://www.wfp.org/countries/cambodia/overview> [accessed 03 March 2015]

⁴⁰ The World Bank, Cambodia Overview (last updated 23 December 2013)
<http://www.worldbank.org/en/country/cambodia/overview> [accessed 03 March 2015]

⁴¹ Royal Government of Cambodia (RGC), Achieving Cambodia's Millennium Development Goals: Update 2010, Ministry of Planning (Phnom Penh: RGC, 2010) p. 16

⁴² The World Bank, Data by country: Cambodia – Life expectancy at birth, total (years)
<http://data.worldbank.org/indicator/SP.DYN.LE00.IN/countries/KH-4E-XM?display=graph>
[accessed 03 March 2015]

⁴³ The World Bank, Data by country: Cambodia - Poverty headcount ratio at national poverty line (% of population) <http://data.worldbank.org/indicator/SI.POV.NAHC/countries/KH?display=graph> [accessed 03 March 2015]; and, United Nations Development Programme (UNDP) About Cambodia:
<http://www.kh.undp.org/content/cambodia/en/home/countryinfo/> [accessed 03 March 2015]

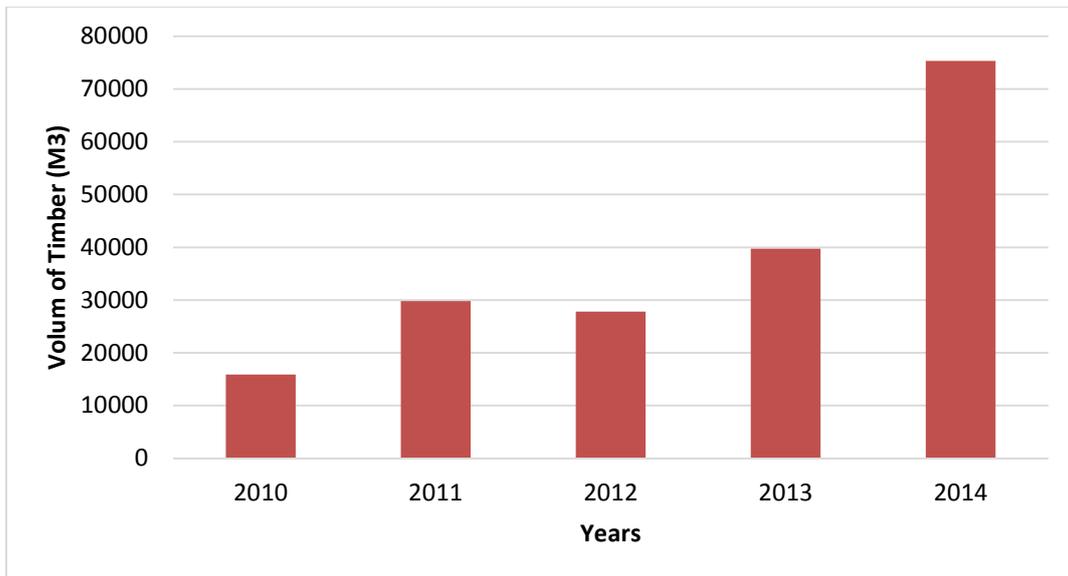


Figure 5: Volume of timber exported annually (2010–2014)

Sources: (FA, 2010 & Department of Forest Industrial and International Cooperation/FA 2014)

Due to different data collection methodologies, forest data published by the Government in *Forestry Statistics Cambodia in 2012* differs significantly from FAO reported data on total volumes of timber exported annually from 2003–2011.⁴⁴ According to Cambodian forest statistics, 85% of all timber exported in 2011 went to China and only 13% to Vietnam. However, FAO statistics for 2011 reported that 71% of the all timber products were exported to Vietnam and only 11% to China (FA, 2013). According to both Cambodia and FAO statistics, all wood chips produced from Cambodia were exported to China. The data on export volumes of timber products in 2011 had contradictory results whereby the Government reported the greatest volume shipped to China and FAO reported the greatest volume to Vietnam. The volumes of timber products reported by each source also differed, as FAO reports log exports of 1,077 m³ while Cambodia did not record any log volume exports in 2011. The difference in data between Cambodia Forestry Statistics and FAO reporting reflects an important problem with statistical reporting. The discrepancies in reported export data between the Forestry Administration and FAO questions the methodology and responsibility for collection of statistical data between the reporting country and the international organization.

3.2.4 Improper farming and migration

Improper farming systems, lack of access to irrigation and an inability to tap into financial opportunities for lasting production has led to a decrease in rice production to a rate of four to five times less than neighboring countries. These circumstances also lead to forest conversion as farmers seek out additional land for new rice paddies in order to meet high market demand and rural population growth.⁴⁵

The farming systems of the rural poor mainly rely on the market price of agricultural commodities set by middlemen and neighboring countries such as Thailand and Vietnam. For instance, Cassava and rubber plantations were introduced widely on new forest cleared by communities and the middle classes without considering the likely future damage to land quality. Most rural farming systems for cropping land and rice fields rely on rain and lack responsive irrigation systems during droughts. This

⁴⁴ Export data from 2003–2012 was obtained through the Forestry Statistics Cambodia (RGC 2012) as well as through FAO statistics FAOSTAT (2013).

⁴⁵ Poffenberger M, Smith-Hanssen K. Forest communities and REDD climate initiatives. Asia Pacific issues; 2009.

induces poor immigrants to seek more cleared forestland at the frontier for fertilized land. Poor households' extending or clearing more frontier forestland is enabled by animal forces such as cows and water buffalo.

3.2.5 Lack of long term finance to support forest sector

Lacking supporting long-term finance for policy implementation and ground implementation, the RGC targeted sustainable forest finance as sub-program Number 6 of the NFP (2010-2029). The TWG-FR sub-group on forest finance is formed to provide policy recommendations to the government in designing long-term sustainable forest financing strategy and policy in Cambodia.⁴⁶ As shown in Figure 6 below, the RGC collected 15.83 million USD (4,000 riels = 1 USD) from the forestry sector but only a small amount of budget returned to support the forestry sector. The data from TWG-FR presented in 2014 indicated that 21.58 million was invested in the implementation of NFP. Of this however, 98.64% was invested by donors and NGO partners, and only 1.36% by the government (TWG-FR, 2014). Thus it is observed that a lack of domestic financial reinvestment in the forestry sector lead to ineffective field implementation activities addressing negative drivers of deforestation and forest degradation.

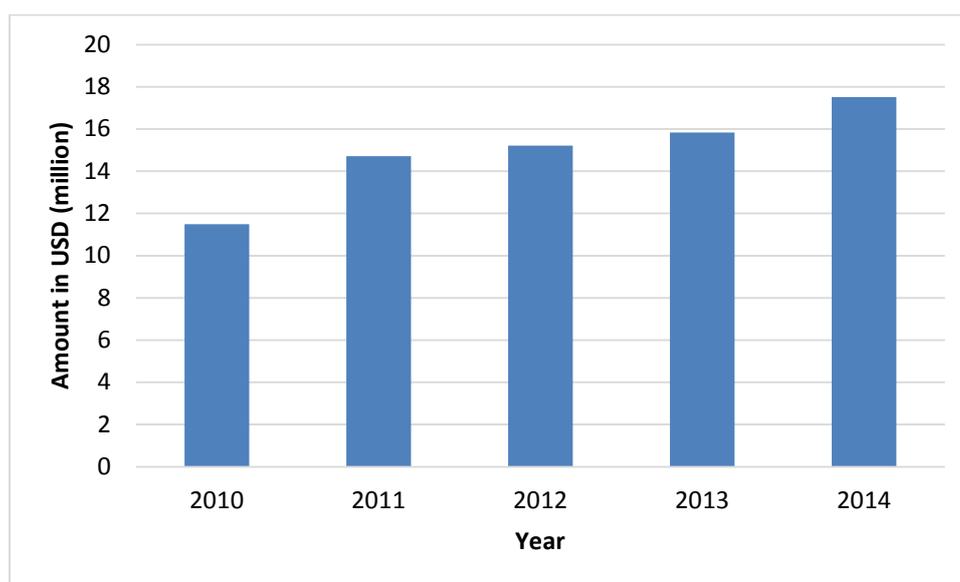


Figure 6: Government budget generated from forestry sector (2010-201)

Sources: MAFF Report (2010, 2011, 2012, 2013)

3.2.6 Lack of human resource in forestry sector

The current staff of MoE and MAFF are limited in capacity, which strongly affects forest management in Cambodia. According to FA data from 2015, the government employs only 1,361 FA officers in managing permanent forest estate and production forest of an estimated 9 million hectares (FA 2014). Moreover, only 915 field rangers manage about 3 million hectares of 23 PA (MoE 2014). As experienced local communities took a critical part in forest management on the ground, members of community forests and community-protected areas have contributed to forest protection and forest law enforcement.

⁴⁶ <http://www.twgfr.org>

3.3 Actors influencing drivers of deforestation, forest degradation, sustainable forest management and forest conservation, afforestation, and reforestation

3.3.1 Ministry of Agriculture Forestry and Fishery (MAFF)

The MAFF has the mandate to lead and manage the agricultural sector (forestry, fisheries, agricultural crops and livestock) in Cambodia. The main functions of the Ministry include the following:⁴⁷

- Implement agricultural policy;
- Develop and implement legal instruments for sustaining natural resources, livelihood improvement and economic growth;
- Participate in developing land reform policy;
- Coordinate and cooperate with internal and external organizations and non-governmental organizations to develop the agriculture sector;
- Monitor and manage natural resources of the agriculture sector and facilitate the exploitation of these resources to meet domestic demands with respect to the stability of the ecosystem;
- Guide the development and improvement of agricultural land, agricultural land uses, plants, animal, use of chemical fertilizers and pesticides in accordance with Cambodia geography and climate for high yield while balancing environment issues.

The Forestry Administration is the key agency under the Ministry that regulates forestry operations within Production Forests, Protected Forests, and Forests under Private Concessions and Community Forests.⁴⁸

3.3.2 Ministry of Environment (MoE)

The MoE has a mandate to supervise and manage the environmental sector in Cambodia. The following functions fall under the purview of the Ministry:

- Implement environmental policies to ensure sustainable development of the country, and to prepare proposals for National and Regional Environmental Action Plans in collaboration with concerned ministries;
- Develop and implement environmental legal instruments to promote and ensure the sustainable development of the country.⁴⁹

The GDANCP, Ministry regulates 2.8 million hectares of Protected Areas. The Ministry also has the authority to issue permits for ELCs that can be used for agriculture, plantation or infrastructure development within sustainable use and Community Zones within Protected Areas.

3.3.3 Ministry of Commerce (MoC)

The Ministry of Commerce is responsible for regulating and promoting the commerce and trade of Cambodia. The Ministry issues business licenses to companies in Cambodia as well as import-export licenses and certificates of origin.⁵⁰ A company can request an import-export license from the Department of Export-Import under the MoC.⁵¹

⁴⁷ <http://www.maff.gov.kh/about/5-mission.html> [accessed 04 November 2014]

⁴⁸ http://www.forestry.gov.kh/AboutFA/VisionMision_Eng.html [accessed 04 November 2014]

⁴⁹ <http://www.moe.gov.kh/site/index> [accessed 04 November 2014]

⁵⁰ <http://www.moc.gov.kh/beta/en-us/certificate-of-origin> [accessed 04 November 2014]

⁵¹ Sub-decree on the institution set up of ministry of commerce, No.131/RGC

3.3.4 Ministry of Land Management Urban Planning and Construction (MLMUPC)

The ministry is responsible for the cross-cutting sectors of land administration, land management and land distribution, working towards the RGC's declared vision of land policy: *"To administer, manage, utilize and distribute land in an equitable, transparent and sustainable manner in order to contribute to achieving national goals of poverty alleviation, ensuring food security, natural resources and environmental protection, national defense and socio-economic development oriented towards a market economy."* (MLMUPC, 2011).

3.3.5 Ministry of Mining and Energy (MME)

The MME is responsible for developing, implementing and managing GoC policy, strategy and plans with regard to energy and mineral extraction and industries. MME has the responsibility to coordinate electricity sector policy, planning and development, though new projects and plans are subject to EIA under the jurisdiction of MoE. MME has overall responsibility for policy formulation, strategic planning and Technical Standards. However, the oil and gas sector is handled by the Cambodian National Petroleum Authority (CNPA). Regarding its more specific responsibilities, the MME is responsible for setting and administering government policies, strategies and planning in the power sector.⁵²

3.3.6 Anti-corruption unit

To strengthen good governance in Cambodia, fighting corruption is a key program to achieve social justice, and sustainable and equitable social economic development. The Royal Government of Cambodia (RGC) adopted the "Anti-Corruption Law"⁵³ in 2010, and established the Anti-Corruption Unit (ACU)⁵⁴ to fight corruption. The ACU has set up a complaint mechanism for citizens to report corruption cases.

To enhance the accountability of government to the public, social accountability boxes have been installed at provincial, district and commune offices in the country. Written complaints or requests can be placed in the boxes so the government can respond to the needs of citizens and ensure better governance, better public services, and more citizen participation. At the project level, all relevant stakeholders in the project can report or make a complaint on any corruption case via a hotline designed to prevent and deal with possible corruption and misuse of funds. The system appears to be working well and needs to be scaled up across the country.

4 Policies and measures to address deforestation and forest degradation and exist SFM and Rehabilitation

Cambodian Government agencies (FA/MAFF, GDANCP/MoE, FiA/MAFF) already have a long experience of implementing projects to reduce deforestation and protect existing forests in areas under their jurisdiction (for a list see the Cambodia REDD+ Background Document, Section 3). The Government has developed a National Forest Programme 2010–2029, whereby the 10.8 million hectares of forest areas are classified into five land use categories.

⁵² RGC, 2013, Cambodia energy sector strategy, p. 9

⁵³ Anti-Corruption Law: <http://goo.gl/dkND0I>

⁵⁴ ACU is a government body under the management of the Office of the Council of Ministers which has a role as the implementing agency in fighting against corruption in every aspect, level, and sectors in Cambodia nationwide.

Table 6: Forest allocation in Cambodia (2015)

Area	Size	Regulated by
Protected Areas	3 million hectares	Ministry of Environment
Protected Forests	3 million hectares	Ministry of Agriculture Forestry and Fisheries
Community Forests	2 million hectares	Ministry of Agriculture Forestry and Fisheries
Forests Under Private Concessions	0.3 million hectares	Ministry of Agriculture Forestry and Fisheries
Production Forests	2.6 million hectares	Ministry of Agriculture Forestry and Fisheries

Sources: Understanding timber flows and control in Cambodia in the context of FLEGT, (March 2015)

However current data on forestland allocation, and forestland use change are not clear, and comprehensive national land planning does not exist. As a result, many forest areas (e.g., inside Protected Areas and Protection Forests) have been converted to other land uses.

4.1 National Forest Program/Forestry Law (2002)

Cambodia's National Forest Programme (NFP, 2010), which is a 20-year national forest management plan for the sector (2010-2030). The National Forest Programme provides a transparent, participatory process for planning, implementation and evaluation of all forestry activities, including direction for the overall course and approach of the wider forest sector by aligning activities with both national and international priorities and harmonizing with other sectors of the national economy. Cambodia's NFP will be implemented through five-year rolling plans for each sub-program. In addition to providing the overall policy framework, it incorporates detailed strategic programs for forest management activities in the Permanent Forest Estate (under the FA).

The NFP prioritizes six programmatic areas that will receive emphasis over the next two decades in order to achieve these objectives: i) Forest Demarcation, Classification and Registration; ii) Forest Conservation and Development of Forest Resource and Biodiversity; iii) Forest Law Enforcement and Governance; iv) Community Forestry; v) Capacity and Research Development, and; vi) Sustainable Forest Financing (MAFF, 2010).

4.1.1 Protection Forest

Protection forest is governed by the Forestry Law 2002 and the government sub-decree on protection forest. The government plans to set up 3 million hectares of forestland for protection forest by 2029. To date, up to 1.6 million hectares of forest have been declared as protection forest. The protection forest will ensure the long-term management of forests and biodiversity, and benefit forest dependent communities living inside and adjacent to forests. The legal support for forest protection will prevent the conversion of forests to other land uses. Various efforts had been made by Forestry Administration in current protection forest include conducting forest law enforcement, monitoring forest and biodiversity, demarcating forest boundaries, and supporting community livelihood activities.

4.1.2 Community Forestry Program

The country recognizes community forest development as an approach to sustainable forest management. The 2000 National Community Forestry Strategic Plan, 2002 National Forestry Policy,

provisions in the 2002 Forestry Law allowing for Community Forestry in Production Forest areas, 2003 Sub-Decree on Community Forestry, and 2006 Guidelines on Community Forestry all support Community Forestry (CF). The government targeted two million hectares of forest to set up community forestry by 2029 (NFP, 2010). Experience has shown in the Oddar Meanchey REDD+ project that communities could address deforestation and forest degradation.

4.1.3 National PA strategic management plan

Protected Areas management is based on the 2008 Protected Areas Law, the 1996 Law on Environmental Protection and Natural Resource Management, and the 1993 Royal Decree on Creation and Determination of Nature Reserves. Additionally, Cambodia has ample experience to draw on from its various existing PA projects (e.g. Samkos, Lomphat, Bokor, Virachey, Kulen Promtep).

4.1.4 Land Law (2000)

The land law has a provision on the role of Indigenous Land titling (2009 Subdecree #83 on Registration of Land of Indigenous Communities). The sub-decree provides legal rights and clear guidance to all Indigenous Communities in Cambodia to register their territory as collective groups. The Ministry of Rural Development and Ministry of Land Management Urban Planning and Construction (MLMUPC) took the lead in facilitating the process of IP land registration.

4.1.5 Fishery strategic management plan

The Strategic Planning Framework for Fisheries (2010-2019) (SPFF) and the three-year Fishery Development Action Plan for the fishery domain define the country's fishery planning. The Strategic Planning Framework for Fisheries is based on the 2006 Fisheries Law and subsidiary legislation. The flooded forests and mangroves are managed by the Fisheries Administration, according to the Fisheries Law and the SPFF. In relation to fisheries management, the SPFF is Cambodia's overarching vision and implementation plan for the fisheries sector in Cambodia. The SPFF identifies targets and indicators regarding the protection of flooded forests (Objective 5.2), and the need to address climate change is referenced throughout the Framework.⁵⁵

4.1.6 Cambodia REDD+ Roadmap

In The Cambodia REDD+ Roadmap (2010) suggested existing policies interventions and already now functioning in the country that attempt to address drivers of deforestation and forest degradation in Cambodia. The potential outcome of the implementation of the Cambodia REDD+ roadmap is to produce a National REDD+ strategy and it is expected to finish by 2015. Cambodia is considering developing an initial proposal to submit to UNFCCC in accordance with the Warsaw Framework. Cambodia will be able to make a submission to the UNFCCC before the end of 2015, in order to establish conditions to start receiving results-based payments for REDD+. Cambodia is expected to submit a proposal on Reference Levels, Results-Based Action (RBA) and Safeguards Information System (SIS) to UNFCCC as its first initial commitment to Warsaw Framework. Cambodia has applied for funding under the FCPF/Carbon Fund of the World Bank by presenting its early idea note in June 2013 at the 10th Carbon Fund meeting.⁵⁶

4.1.7 Other government policy

In May 2012, the Cambodian government adopted Order 01BB on *Measures for Strengthening and Increasing the Effectiveness of the Management of Economic Land Concessions*. In addition MAFF and MoE signed an inter-ministerial proclamation, or prakas, order in May 2014 aiming to amend the management of ELCs to better protect local community interests. Since the order and prakas were

⁵⁵ <http://theredddesk.org/countries/laws/protected-area-law-cambodia>

⁵⁶ <https://www.forestcarbonpartnership.org/CF10> retrieved 02 July 2014

issued, figures from the Ministry of Land Management, Urban Planning and Construction (MLMUPC) indicated that by March 2014 over 330,000 hectares were cut from existing ELCs.⁵⁷

5 Analysis

5.1 Trends driving deforestation and forest degradation

- The RGC identified 10.8 million hectares classified as forests based on forest cover that was divided into five functional land use categories: Protected Area, Protected Forests, Community Forests, Forest Concessions and Production Forests in accordance with the NFP. These classification defined clear management roles and institutional responsibilities with concrete legal support from the government. Meanwhile, the current classification of Production Forests indicated a total area of 1.2 million hectares undefined in respect to location, boundaries, area and mapping of each unit within each province. Thus, deforestation and forest degradation mostly happened within unclassified forest area, with no clear land tenure
- The Ministry of Environment regulates Protected Areas based on defined zones for protection in core and conservation zones and land use within sustainable use and community zones. However, zoning of Protected Areas has not been completed in order to define sustainable use zones and community zones, while the PA strategic plan is in the design process. However, some parts of the PA were converted to Economical Land Concession (ELCs), Social Land Concession (SLC), electronic dam construction, and other land uses. The current site of the PA is not clear, while the NFP (2010-2029) mentions that PAs cover 3 million hectares. The slow progress of adopting the PA strategic plan and unclear zoning system, both in terms of legal support and boundary demarcation, have induced deforestation, and degradation.
- The significant increasing numbers of Social Land Concessions (SLCs) in the past four years, if the trend continues to rise, is likely to result in more forestland being converted. This is not limited to Protection Forests, Protected Areas, or Community Forestry areas. Moreover, according to comprehensive studies on the impacts of SLCs on forest cover change or impacts to poor/landless households, the trend in requesting SLCs will increase in the coming years as many proposals from the communal and provincial levels have been proposed to the government.⁵⁸ However, SLCs are correlated strongly to deforestation and degradation, especially in areas nearby SLCs.
- Forest Concessions occupy approximately 3.3 million hectares that are still under a harvesting moratorium, though some forest concessions have been converted to Protection Forest due to the value of forest and biodiversity conservation. Some parts of forest concessions were cleared by immigrants and land speculators. The future for forest concessions remains unclear, as the RGC urges validated concessions to review their master plans and develop clear, comprehensive business plans to submit to RGC for approval. This is true for all forest concessions that want to re-open and operate their logging concessions. According to current trends, deforestation in forest concession is from conversion to Social Land Concessions and illegal forestland clearing.
- Community forest management needs assistance from the Forestry Administration to ensure forests are managed to produce a sustainable yield. CFs have been influenced by negative drivers from the outside, such as illegal land enforcement, illegal logging, and existing agriculture expansion by local members. There is a strong need to support existing CFs, not

⁵⁷ <http://www.opendevdevelopmentcambodia.net/briefing/economic-land-concessions-elcs/> visited 22 December 2014

⁵⁸ http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2008/07/15/000003596_20080717130115/Rendered/PDF/PID010Final0with0Steven1s0comments.pdf visited 10 June 2015.

only forest law enforcement but support for local livelihoods. The CFs are targeted to grow to 2 million hectares from the current 329,587 hectares (2015) of approved CF areas.

- Data on ELC establishment from the Ministry of Agriculture Forestry and Fisheries and the Ministry of Environment is not easily available with respect to area and locations. The Ministry of Environment has approved the establishment of ELCs within Protected Areas in the absence of pre-defined sustainable use zones, no inventories are conducted within ELC harvest blocks in Protected Areas, and comprehensive social and environmental impact assessments are not conducted. The current classification of Production Forests indicates an area of 1.2 million hectares that are not identified within each province or mapped but may contain large areas of ELCs. Unclear planning in forestland allocation inside the PA and classification of Production Forests induce deforestation and degradation.
- Timber supply in Cambodia is dominated by harvesting within ELC concession areas with a total of 129,300 m³ harvested in 2011 and 127,142 m³ in 2012 based on Forestry Administration annual reports (Timber flow study, 2011/3). Very little material was recorded as supplied during 2011–2012 from hydropower projects (7,781 m³ and 8,396 m³ respectively), and no material was recorded from Community Forests, plantations and mining areas based on Forestry Administration annual reports in 2011 and 2012. This is due to the different data collection methodologies of the ministries.
- Population is an important factor with respect to its effect on the changes in forest area in Cambodia; as the total population increases, the demands for land, agricultural products, timber products and new job opportunities also increase. Low agricultural productivity leads more people to focus on agriculture, and the increase in agricultural production leads to the extension of agricultural land areas.
- The significant impacts of agriculture production on forest area changes. However, the evidence does not show much impact of rice cultivation area on forest area changes as expected. First, it means the conversion of forestland is small for rice cultivation and large for the cultivation of other crops, such as rubber, cassava, sugar cane, etc. Second, in the past decade, rice production by volume in Cambodia has increased faster than the rice cultivation area, indicating that rice productivity has been increasing. Average yield per hectare of paddy rice increased from 1.9 ton in 2002 to 3.0 ton in 2010 (NIS, 2012a). When rice productivity increases, the pressure from rice production on the forest is reduced.

5.2 Trend driving sustainable forest management, reforestation, and afforestation

Timber originating from ELCs contributes more than 90% of the timber supply to the domestic and export markets that are regulated by the Ministry of Environment for Protected Areas and the Ministry of Agriculture Forestry and Fisheries for other forest areas (Timber flow study, 2013). The cancellation of ELC by Order 01BB (*Measures to strengthen and enhance the effectiveness of management of economic land concessions*) might affect local timber supply, considering sustainable forest management modalities. Enhanced community forestry, community protected areas, sustainable local forest concessions, and forest plantations for timber supply all play a role in filling future timber demand.

5.3 Gap analysis of existing data on drivers of deforestation, forest degradation, sustainable forest management, reforestation, and afforestation

The Cambodia REDD+ roadmap identifies two main strategies to address the main drivers of deforestation and forest degradation as a part of national REDD+ strategy. An effective strategy to address drivers from inside and outside the forest sectors need to be identified, including its design and implementation. The review of available data on drivers of deforestation and forest degradation in Cambodia has found the potential gaps below:

- Drivers outside forestry sector were not identified clearly, different institutions have presented various data sets, which sometimes contrast with each other. The review showed that qualitative drivers seem to be biased, since most of them were identified by outside consultants without participation from different local stakeholders, especially local community and relevant government institutions.
- Drivers identified at national, sub-national and project levels using different methodology. Most analysis on drivers were conducted at site-specific levels, while the methodology used in identifying drivers at the national level mainly focus on series of consultation with stakeholders, and rely on research results from the consultant. Moreover, ARKN-FCC has developed its own decision support tool to identify and address drivers of deforestation and forest degradation.⁵⁹ Using different methodologies might lead to producing incompatible data on drivers operating in Cambodia.
- In most cases, national, sub-national, and project-based studies have qualified drivers of deforestation and forest degradation. However the lack of quantification of each driver leads to uncertainty as to which are the priority drivers to be addressed and monitored. This fails to ensure that existing or new PAMs are implemented or designed effectively, and that resources to counter the drivers are allocated efficiently. The absence of sound statistical analysis on the current and future trends of direct and indirect drivers of deforestation and forest degradation in occurring both outside and inside the Cambodia forest sector leads to unclear future planning.
- Population, economic growth, agriculture commodities, wood production (pulp, paper, saw logs, semi-products), fuel wood/charcoal, mining exploration, electricity dam construction, and weak forest governance are the main indirect drivers of forest degradation and deforestation.
- Although some drivers have been identified, research or studies on the correlation between those drivers either inside or outside the forest sector with current or future deforestation or forest degradation remain a gap. Understanding the strong correlation between drivers and deforestation and forest degradation might give Cambodia a clearer direction and the ability to prioritize which drivers should be addressed in the national policy.
- Cambodia has experience in identifying drivers of deforestation or forest degradation and various research papers and reports have been published on the issue. However, since there is not yet agreement at a high level on what are the main negative drivers to be addressed and monitored, a drivers monitoring framework is not yet in place. A drivers monitoring framework could help the country to ensure the effectiveness in addressing driver of deforestation and degradation. The design of a monitoring framework would provide an opportunity to share information about drivers among stakeholders, and would ensure that potential drivers of deforestation and forest degradation are addressed transparently and with adequate participation. Establishment of appropriate indicators for each driver occurring inside or outside forests, and both direct and indirect, might help to improve monitoring frameworks. Driver indicators can be designed on consent from different stakeholders - especially relevant government institutions.

5.4 Proposed new PAMs to address deforestation and forest degradation

- The RGC of Cambodia already adopted key policies to address negative drivers of deforestation and forest degradation. Those policies have been updated and reviewed through different technical working groups such as TWG on Forest Reform and TWG on Fishery. However, a lack of capacity to enforce existing policy and a lack of specific policy to address specific drivers remain gaps.

⁵⁹ <http://www.leafasia.org/tools/decision-support-tool-identifying-and-addressing-drivers-deforestation-and-forest-degradation>

- In May 2012 the Cambodian government adopted Order 01BB on *Measures for Strengthening and Increasing the Effectiveness of the Management of Economic Land Concessions*. This announced the suspension of new ELC grants and called for a review of existing concessions. This policy could address deforestation and degradation from ELCs through enhancing the effective implementation of ELCs in Cambodia. The MoE and MAFF already implemented this policy and as a result more than 50 ELCs covering roughly 300,000 hectares were cancelled.
- The Anti-Corruption Law has been adopted in 2010, under which many illegal forestry cases have been addressed. There is a need to enhance this law and conduct legal analysis on how to mainstream the anticorruption law into the Forestry Law (2002), PA strategic plan, and national REDD+ strategy.
- Moreover, the MoE is in the process of designing a comprehensive EIA, this law should be fostered and more sub-decrees to address specific drivers of deforestation and forest degradation under the EIA law should adopted. The EIA should apply mainly to the development of mining, large-scale road construction, electric dam construction, and social land concessions.
- The Cambodia National REDD+ Strategy will show the strong commitment of the RGC in reducing deforestation and forest degradation. The government should adopt this strategy to ensure that deforestation and forest degradation are eliminated and reduced with a transparent monitoring system. The strategy should be harmonized across all existing policies and measures that aim to address drivers.

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Annex 1: Protected Forests, Conservation Sites and Forest Research Stations

No	Name	Province/ Municipality	Designated by	Year	Area (ha)
1	Anlung Pring Sarus Crane Reseerve	Kampot	Sub Decree	០៤អនក្រ.បក	217
				06.01.2011	
2	Bengal Florican Conservation Site and biodiversity	Kampong Thom, Siem Riep	Declaration	០៦ប្រក.កស ក	26,523
				08.02.2010	4,636
3	"Seima" Protected Forest for Biodiversity Conservation	Mondul Kiri, Kratie	Sub Decree	១៤៣អនក្រ.ប ក	292,690
				02.09.2009	
4	Oyadav Protected Forest for Recreation and Hunting Game	Rattanakiri	Sub Decree	៤៧អនក្រ.បក	101,348
				23.03.2009	
5	Mondul kiri Protected Forests (Land Area Cut)	Mondul Kiri	Sub Decree	២០៦អនក្រ.ប ក	372,971
				28.12.2007	
6	Beong Preak Lapov Sarus Crane Reserve	Takeo	Sub Decree	១៤៩អនក្រ.ប ក	8,305
				15.10.2007	
7	Southern Cardamon Elephant Corridor	Koh Kong	Sub Decree	៦៥អនក្រ.បក	144,275
				06.10.2004	
8	Preah Vihear Protected Forests	Preah Vihear	Sub Decree	៧៦អនក្រ.បក	190,027
				30.07.2002	
9	Central Cardamom Protected Forests	Koh Kong ,Pursat,Kg Speu	Sub Decree	៧៧អនក្រ.បក	401,313
				30.07.2002	
10	Seed Source	Kg Thom	Declaration	2002	117

11	Seed Source of Dalbergia bariensis	Preah Vihear	Declaration	2001	13
12	Ang Trapeang Thmor Saruas Crane Reserve	Banteay Meanchey	Royal Decree	/រកត/០២០០/១ ១០	12,650
				22.02.2000	
13	Kbal Chhay (Preak Tueksap)	Sihanouk	Sub Decree	៧៦អនក្រ.បក	6,202
				20.11.1997	
14	Phnom Tamao Zoological Garden and Wildlife Rescue Center	Takeo	Declaration	៣១៣ប្រក.ក សក.ចត	1,200
				22.05.1996	
15	Siam Pang Protected Forest	Steoung Treang	Sub Decree	៧៧អនក្រ.បក	66932
Data sources Department of Wildlife and Biodiversity, 2015			Total		1,629,419
Full names of the Protected Forests, Conservation sites and Research stations, referred to 6.1					

Annex 2: ELCs granted inside Protected Area (PA)

National Parks	Numbers of ELCs	Areas of ELCs (ha)
Kep	0	0
Phnom Kulen	0	0
Virachey	2	17,998
Kirirom	3	11,868
Botum Sakor	5	41,287
Phnom Bokor	5	32,475
Ream	6	9,892
Sub-Total	21	113,520
Wildlife Sanctuaries	Numbers of ELCs	Areas of ELCs(ha)
Peam Krasop	0	0
Roniem Daun Sam	1	4,095
Phnom Samkos	2	8,617
Phnom Nam Lyr	3	14,250
Phnom Prich	4	25,396
Phnom Aural	5	33,735
Lumphat	6	47,642
Snoul	9	45,014
Boeung Per	16	75,300
Kulen Promtep	17	105,653
Sub-Total	63	359,702
Protected Landscapes		
Multiple Use Areas	Numbers of ELCs	Areas of ELCs (Ha)
Angkor Protected Landscape	0	0
Preah Vihear Protected Landscape	0	0
Banteay Chhmar Protected Landscape	2	9,000
Samlaut Multiple Use Area	0	0
Dong Peng Multiple Use Area	1	321
Sub-Total	3	9,321
Core Area wetland	Numbers of ELCs	Areas of ELCs (Ha)
Prek Toal	0	0
Stung Sen	0	0
Boeung Tonle Chhmar	0	0
Sub-Total	0	0
Total	87	482,543

Sources: MoE/GIS Office (2014)