

Kingdom of Cambodia

**COUNTRY PAPER
ON**

FORESTRY OUTLOOK 2020



**Forestry Administration
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Forestry Outlook to 2020 - Executive Summary

Forests cover 59 per cent of Cambodia's total land area corresponding to approximately 10.7 million hectares. The **net annual rate of deforestation** was estimated as 0.5 per cent during the period 2002-2005/06 representing a significant decrease compared to earlier estimates. The Cambodian Millennium Goals aim to maintain forest cover at 60% by 2015. Currently, insecure title over forested land and unclear rights to use *de facto* open access forest resources mitigate efforts to maintain the forest cover, to secure livelihoods or to contribute to rural economic growth in Cambodia. This situation reflects a lack of coherence in rural land management policies, weak capacities of sub-national sector line agency departments, poor service delivery mechanisms and the limited involvement of rural land and resource users in formalized natural resource management procedures. The key challenges in the sector are the need to ensure sustainable management and equitable use of forests, to improve rural livelihoods, and to promote a balanced socio-economic development in Cambodia. Past forest management systems have not contributed sufficiently to these broad policy objectives.

The Forest Administration (FA) is the key government agency in the forestry sector in Cambodia. There are also a large number of other actors including forest-dependent rural communities, Development Partners (DPs), investors and international and national Non Governmental Organizations. In 1998 the Royal Government of Cambodia (RGC) initiated the forestry reform process by establishing a national committee on forest policy reform with support from DPs. In 2002, the secretariat of the committee formulated a national forest policy statement. Subsequently, a new Forest Law was promulgated in 2002, and a new Forestry Administration was established in 2003 (replacing the former Department of Forestry & Wildlife). A temporary Joint Coordinating Committee, representing RGC and DPs, and chaired by the Minister of MAFF, commissioned an Independent Forest Sector Review in 2003. The review resulted in a comprehensive report containing some of the background information necessary to develop a **National Forest Programme** (NFP) (available at <http://www.cambodia-forest-sector.net/index.htm>).

In November 2004, the RGC established a Technical Working Group on Forestry and Environment (TWG-F & E) to provide a mechanism for government-DP coordination to support and strengthen development activities within the sectors (details available at www.twgfe.org). A four-year *Forestry and Environment Action Plan 2007-2010* and one-year *Framework Work Plans and Indicative Budgets* for 2007 and 2008 have specified 26 prioritised activities within six prioritized programmes of the NFP. The finalization of the NFP is the critical next step in the FA's efforts to promote sustainable and equitable forest management in Cambodia during the period 2008-2020. Preliminary results indicate that DPs in the forestry and environment sectors are increasingly aligned with government institutions, and government-led reforms.

The **Vision** of the RGC is to ensure "...ecologically, socially and economically viable conservation and management of forest resources as a major pillar of public welfare directly contributing to environmental protection, poverty reduction and socio-economic development" (RGC 2002a p. 1). The RGC **Policy** is to ensure that forest resources are used in an efficient manner in order to support sustainable and equitable socio-economic development, protect forests from degradation, and support the decentralization, effectiveness and accountability of forest governance.

The purpose of the National Forest Programme is to promote the conservation and sustainable management and use of forest resources in Cambodia. The NFP will address local, national, regional and global needs by coordinating national and international partnerships to manage, use,

protect and regenerate forest resources for the benefit of present and future generations of Cambodians. The preparation of the NFP in Cambodia emphasizes national sovereignty with regard to the management of the country's forest resources, and the need for country leadership and responsibility. The NFP will provide strategic orientation for the forestry sector in harmony with other sectors of the national economy during the period 2008-2020, aligned to the RGC's five-year National Strategic Development Plans. As a framework for action and investment, the NFP will also facilitate concerted and coordinated implementation of programmes and activities by all stakeholders based on mutually agreed objectives and strategies. The on-going development of the NFP focuses on six programmes, constituting the key priorities of the RGC, viz.,

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. 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. 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 - 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 modeling. 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. To count the few, couple of CF sites in Siem Reap province have been piloting by the cooperation of FA and FAO.

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 DPs and NGOs (CI, WildAid, WWF, etc.) enforcing Forestry Law and related Regulations in core forest areas such as Cardamom mountain and North-Eastern 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 project submitted to the International Tropical Timber Organization, is actively trying to strengthen the monitoring and control of illicit cross-border trade in timber in Cambodia's eastern provinces.

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 additional conversions of community forestlands to Economic Land Concessions in accordance with draft REDD methodological guidelines. The community-based forest management model 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 and the Clinton Foundation 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 - 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 decentralization and de-concentration of core functions; strengthening forestry extension services for all Cambodian citizens; broadening on-the-job and specialized 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.

Chapter I General Information

1.1 Introduction

Forest management in Cambodia has been a challenging work for the Cambodian government since its start during (1863-1954) and post French protectorate, from 1954 to the present. According to the remaining available records, forest management systems have been evolved from solely timber benefit management to timber and environment benefit management. Past management, moreover, was focused mainly on national economics. However, since last ten years or so forest management has been considered benefit of timber, environment, tourism-recreation, and benefit sharing among national and local economics. For the latter management purposes, the Royal Government of Cambodia (RGC) has been confronting with a challenging task due to fast emerging demands of timbers and NTFPs while human and financial resources are a changing need.

However, with the strong leadership of Samdech Akka Moha Sena Padei Techo HUN SEN - the Prime Minister of the RGC, while FA and MAFF play very important roles for the RGC, a number of laws, regulations, and declarations related to sustainable forest management and conservation have been ratified and entered into force. Commitment of the Third mandate of the RGC in cracking down illegal activities of forest related issues have been recognized among civil society and the ASEAN country members. One of the outstanding achievements, for example, is the significant reduction of rate of forest degradation. The RGC, moreover, committed itself to work harder to maintain the country forest cover up to 60% in 2015. To catch up with this forest cover figure, RGC needs, also, to work with and is needed regional cooperation among regional countries particularly neighboring ones.

The RGC of the Third legislature of the national assembly has set out numbers of policies that related to sustainable management including land administration reform and natural "forest" resource management. The reform in natural resource management (NRM) has focused on strengthening action of sustainably environmental protection and natural forest resources that base on the three important pillars: Sustainable Forest Management Policy, Natural Resource and Biodiversity protection, and Community Forestry development promotion. Incorporation with the United Nations Millennium Goal, the RGC set out its own Cambodian Millennium Development Goal (CMDG) visioning to 2015. The Cambodian CMDG includes maintenance of: forest covers, Protection Forests and Protected Areas, increase fishing lots, and increase issuing land titles. Specific Sector Policies include: Forestry Policy, Sustainability of Operation and Maintenance of Irrigation System Policy, Strategic Development Plan for Water Sector, Natural Water Resource Policy, Strategic Framework for Decentralization and De-concentration Reform, and Land Policy.

Among other countries and duties, Cambodia has been actively working with ASEAN country members, FAO, UNFF, and ITTO to fight with further degradation of forest and the lost of biodiversity. With neighboring countries, Ministerial and Prime Ministerial agreements on curbing illegal activities in timber and endangered wildlife species trades and trans-boundary issues were signed with Lao, PDR, Thailand, and Vietnam.

1.2 Background

To continue carrying out Forestry Outlook for the second phase 2020, members of Asia-Pacific Commission agreed to conduct forestry outlook studies, facilitated by United Nation for Food and Agriculture Organization (FAO). The study is objectively looking to better understand how the future of forests and forestry is unfolding in Cambodia and in the region of Asia-Pacific in the coming decades. This paper is the second to the one study conducted by Narith Hong in 1997 "The Outlook Study toward 2010".

Narith Hong's assumption predicted that forest cover could reduce from 38,000 ha to 110,000ha per year from 1993 to 2010. He underlined three scenarios: *Scenario 1*, if there would have "non-intervention" the forest cover would loss 110,000ha per year from 1993 to 2010. *Scenario 2*, if some level of intervention the forest cover would loss 77,000ha per year; and *Scenario 3*, if very strong policy and complete intervention the forest cover would loss 38,000ha per year from 1993 to 2010 (Hong, 1997). However, Statistic Book showed that the forest cover reduced 60,026ha per year by 2006, which is around 0.33% of country forest cover, was lost annually during 2003 to 2006 (percentage of the country forest cover was 62.7% in 2003 and 59.8% in 2006) (FA, 2007).

With the assistance of financial and technical support of the United Nations of Food and Agriculture Organization (FAO), a desk study was conducted. The study was mainly based on available documents especially existing papers from the Forestry Administration (FA) and from websites. Base on those documents, it is questioned that: "what would the Cambodia forest covers likely be in 2020?"

1.3 Objectives

The general objective is to foresee Cambodia forest status in 2020. Base on the current challenges of forest management efforts and current trends of forest situation the [paper is discussing relevant impacts, strength, weakness, threats, and opportunity, on natural forest resources from the present to the year 2020](#). The specific objectives are to:

- Review existing forest related papers,
- Seek opinions of development and conservation stakeholders or partners in foreseeing future forests by 2020,
- Present reviewed findings, and based on which better policy would be made.

Chapter II Current forest situation

2.1 Forest Resources

2.1.1 Forest cover

Cambodia forest cover used to have up to 73% of the total country lands in 1970s. This figure, however, reduced down to about 60% in 2004 (FA, 2004). It is to recognize that the Cambodia forest cover varies from 58% to 63% of the total country land depending on different definitions of “forest types” (FAO, 1998 and JAFTA, 1995 in FA 2004).

Table 2.1a shows that forests have been reduced from 73% in 1965 down to 61.15% in 2002, although some fluctuation areas during this period of time. The fluctuation of forest areas was because of different sources of agencies that conducted forest cover inventories such as FAO/UNDP or MRC/GTZ (FA, 2004) at different scales and definitions of forest types. For instance, one survey includes forest plantation into forest covers while another not.

Table2.1a. Forest cover changes from 1965 to 2002

Year	Total forest cover, ha	Percentage	Change in forest cover, ha	Percentage*	Forest cover annual change	
					Forest cover, ha	Percentage*
1965	13,227,100	73.04	-	-	-69,389	-0.39
1973/76**	12,711,100	70.02	-516,000	-3.02		
1985/87**	11,852,400	65.29	-1,374,700	-7.75		
1992/93**	11,284,200	62.16	-1,942,900	-10.88		
1992/93***	11,378,664	62.68	-1,848,436	-10.36	-66,015	-0.37
1996/97***	11,134,615	61.34	-2,092,485	-11.70	-65,390	-0.37
1993 (JAFTA)	11,961,833	63.30	-1,265,267	-9.74	-45,188	-0.35
1992/93 (GTZ)	10,859,695	59.82	-	-	-	-
1996/97 (GTZ)	10,638,209	58.60	-221,486	-1.22	-55,371	-0.31
2002 (FRM)	11,104,293	61.15	+244,598	+1.33	+27,177	+0.15
FA (2006)	10,864,186	59.80	-240,107	-1.33	-60,026	-0.33

* Percentage was calculated compared to the country total land areas.

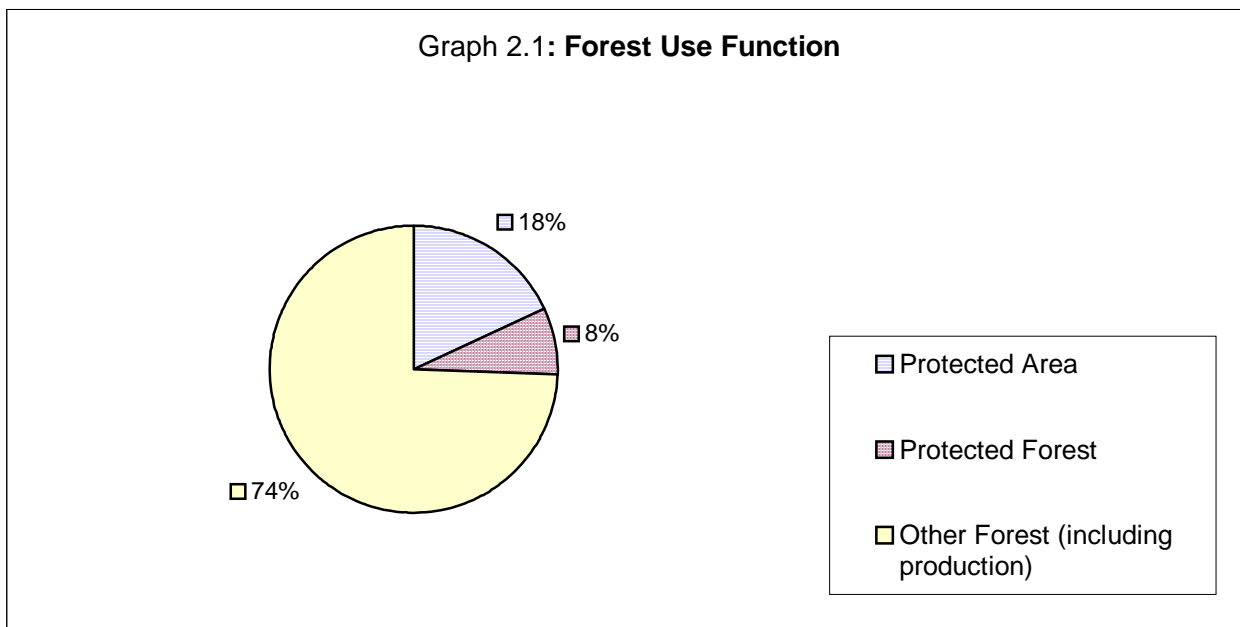
** FAO/UNDP

*** MRC/GTZ Including wood/shrub land evergreen and Bamboo and excluding forest plantation
Source: Forestry Administration, 2004. The Forest Covers of Cambodia.

The Cambodia Forest Statistics book (Cambodia: Forest Statistics, 2007) shows that according to the use function, forests in Cambodia are classified as following (Graph 2.1):

- Protected Forest and Forest Research Station areas cover 1.5 million hectare (7.5%) that is under the jurisdiction management of the Forestry Administration, MAFF
- Protected Areas cover 3.13 million hectare (18%) under Royal Decree that is under the jurisdiction management of the Ministry of Environment (MoE)

- Valid (current) forest concession areas cover 3.4 million hectare¹
- Tree Plantation is approximately 96,348ha.



Due to the needs of agricultural lands and economic land development concession, forest cover could be going further changed. As everywhere else, short-term investments in forestlands, especially on the degraded forestlands, for agriculture and industrial crops are favorable to national and local economics. However, with some financial and technical supports from donors like DANIDA, DFID, JICA, the FA, MAFF, and the RGC have committed themselves to keep the forest cover of Cambodia at around 60% up until 2015.

2.1.2 Forest Types and Forest Areas

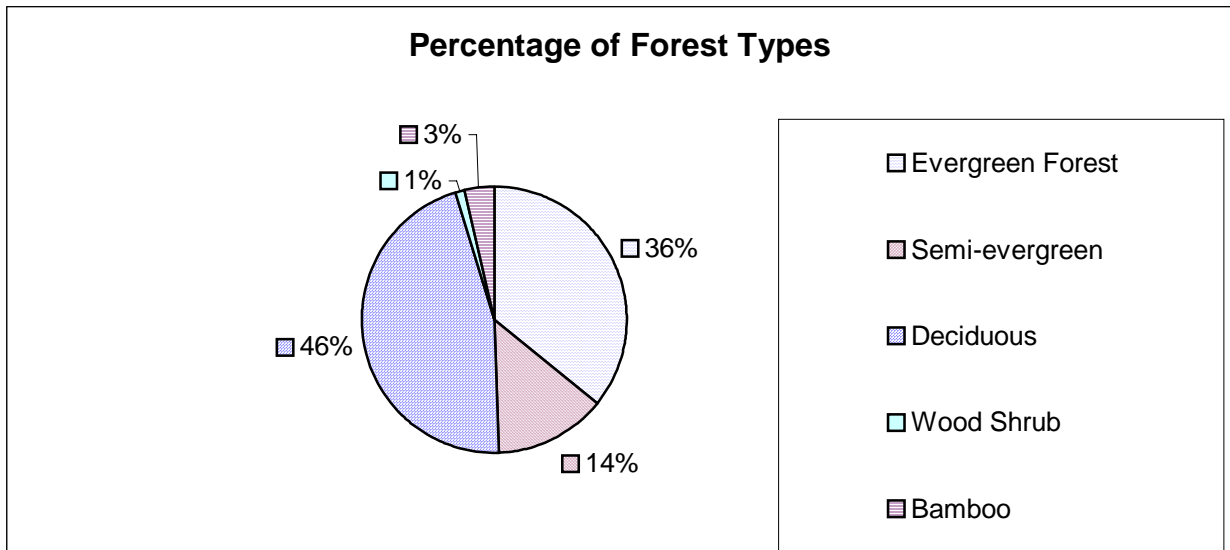
Located in Southeast Asia of the Indo-China sub-continent under monsoon rains, relatively high temperature and humidity, Cambodia consists variety of forest types from shrub lands, deciduous forests (dry dipterocarp), semi-evergreen, and evergreen forests. Mangrove and rear-mangrove forests are in the coastlines of Koh Kong, Kampot provinces and in Sihanouk Ville and Kep town. There has been little study on Mangrove forests in Cambodia, however. The Cambodia forest types could be classified as following:

Table 2.1b: Extent of forest types in Cambodia

No.	Forest type	Areas (ha)
1	Evergreen forest	3,668,902
2	Semi-evergreen forest	1,362,638
3	Deciduous forest	4,692,098
4	Wood Shrub lands Dry	37,028
5	Wood Shrub lands Evergreen	96,387
6	Bamboo	35,802
	Total	10,864,186 (appr. 11 million)

¹ All forest concessions have been suspended their harvest activities since 2002.

Graph 2.2 below shows that of the total forest types (11 million hectare), Deciduous forest is the biggest area (46%) followed by the Evergreen forest type (36%). Majority of Deciduous forests are located in northwestern and northeastern parts of the country whereas evergreen forests are in the coastline and along the Mekong River areas. Definitely, there is difficult to have a shape lines between one-forest types to another. They are usually located adjacent each other in small areas.



Graph 2.2: Percentage of different forest types

2.1.3 Permanent Forest Estate

According to Forestry Law Article 10, all natural production forest types are state property. The FA, MAFF, solely officially manages them. However, the Forestry Law clearly states that private forest plantations are encouraged. With the economic management purposes, the natural forests in Cambodia are classified as following (Article 10):

The Permanent Forest Estates consist of:

- 1- Permanent Forest Reserves; and
- 2- Private Forests

The Permanent Forest Reserves consist of three categories:

- 1- Production Forests shall be maintained in a manner to allow for the sustainable production of Forest Products and By-products, and their protection function considered as a secondary priority. Production Forests consist of the following:
 - Forest Concessions;
 - Production Forests not under concession;
 - Forests rehabilitated;
 - Reserve Forestland for reforestation or tree plantation;
 - Reserved forestland for forest regeneration;
 - Degraded Forestland; and
 - Community Forests under agreement.
- 2- Protection Forests shall be maintained primarily for the protection of the forest ecosystems and natural resources therein. Protection Forests consist of the followings:
 - Reserve Forests for special ecosystems;

- Research forests;
- Forests for regulating water sources;
- Forests for watershed protection;
- Recreation forests;
- Botanical gardens; and
- Religious forests.

Local communities have customary user rights to collect Forest Products & By-products within the Protection Forest with minor impact of the forests.

- 3- Conversion Forestland for other development purposes is idle land, comprised mainly of secondary vegetation, not yet designated for use by any sector that shall be classified as Permanent Forest Reserves until the Royal Government decide to use and develop the land for another purpose.

Private Forest shall be maintained by the owners with the interest rights to manage, develop, and harvest, use, sell and distribute the products by themselves.

2.1.3.1 Production Forest

Production Forest (PF) is forest areas having the primary function for sustainable production of timber and Non-Timber Forest Products. PF includes forest concession, forest permitted for harvesting, degraded forest, forest to be rehabilitated, reserved area for forest regeneration or forest plantation, reforested areas and forest areas under agreement between the forestry Administration and the local community.

2.1.3.2 Protection Forest

Forest areas having the primary function for the protecting the forest ecosystems includes the water resources regulation; conservation of biodiversity, land, water, watershed and catchments areas; wildlife habitat, fishes, prevention of plots, erosion, seawater intrusion; soil fertility and valuable for cultural heritage which serve the public interests. Protection Forests under Forestry Law does not include Protected Areas under the jurisdiction of Ministry of Environment pursuant to the environmental protection and natural resource management law

2.1.3.3 Conversion forest for other development purposes

Idle forestland covered mainly by secondary vegetation that is not yet designated for any use, and shall be classified temporary as permanent forest reserve.

2.1.4 Private Forests

Forest plantation or trees, whether planted or re-grow on private lands under registration and legal title and pursuant to authorized legislation and procedures.

2.2. Forest Management and Conservation

2.2.1 Forest policy

Since the 1980s while forests were resumed to be managed under laws and regulation after Khmer Rouge regime, there two main regulations have been undertaken: the Sub-Decree and the Forestry Law. Sub-Decree (Kret-Chbap) No. 35 entered into force in 25 June 1988 and had been implemented up until 2002 when the new was replaced it. Compliance with these two main regulations there has been a bunch of forest regulations issued and implementing. Those are included:

- Royal Decree on the establishment of the National Authority for forestland conflict resolution 2006. The National Authority plays role in identifying illegal forestland encroachment of state forests, registering them, and appealing them to the national court. Definitely, whenever the court have had seen that if the encroached areas were really illegally encroached the areas must be returned to FA for reforestation.
- Sub-Decree on:
 - o Re-organize of Department of Forest and Wildlife (DFW) to FA (2003)
 - o Community Forestry Sub-Decree CF (2003). The Community Forestry Sub-Decree is one further more step to deliver decentralize forest management to local communes. Since then, number of CFs has increasingly been established. By December 2006 there are 264 CFs in place.
 - o Elephant corridor in southwestern Cardamom Mountain (2004). The areas of the corridor used to be under forest concession. But having seen that the areas are important for local communities and the wildlife conservation, elephant, the FA and its partners, WildAid, seeking approval of the Premier to have the areas for special protection and community development.
 - o Convention of International Trade in Endangered Species (CITES 2006). CITES was introduced to Cambodia in early 1990s and Cambodia became member of the CITES in 1997 but species lists of appendices I, II, or III have not yet ratified by the RGC until 2006. It was long process but it is important to have it carefully identified which species should be in which appendix.
- National Forest Statement. While developing the country, the RGC take into consideration of sustainable development, good governance, poverty alleviation, environmental protection, and equity benefit sharing compliance with the 1992 Rio de Janeiro declaration of the United Nation Conference on Environment and Development (UNCED) in forest management and biodiversity conservation. The RGC, also, acknowledges multiple perception, interests and objectives of numerous forest interest stakeholders of the countries in the Mekong Basin region in sustainable natural resource management.
- Forest Concession Management Sub-Decree (2000)
- Declaration (Prakas)
 - o Mother Tree Seeds (2004)
 - o Endangered tree species banned classification (2005)
 - o NTFPs classification and rights of their use (2005)
- Premier declarations for urgent resolution on immediate emerging issues such as
 - o Prohibition on Export of Round Logs and Sawn Wood from the Kingdom of Cambodia (1996). Having seen that processing of round logs in the country could provide more jobs and save wood materials, the RGC declared that export wood could be permitted unless sawn. Export of all kinds of round logs from Cambodia had been prohibited since 1996.
 - o Suppression of illegal forest cutting (2004)

- Cracking down of forestland encroachment (2006)

Forest concession policy has suspended all timber harvest activities since 2002 due to having seen their improper implementations by the forest concessionaires. Instead, Annual Coupes have been taken into consideration and some initiatives activities have been started. The Annual Coupes are under the Bidding process among private companies, mainly local own companies, and monitored by the FA. Majority of timbers and non-timber forest products are objectively for domestic markets.

With limited capacity, financial support, and seeing increasing roles of local communities the RGC policy pro-actively support Community Forestry. One of the problems, however, CF goes well with additional supports regarding technical and financial from non-government organizations to local communities. Experiences show that most CFs failed after withdrawal supports.

2.2.2 Forest governance

Forest governance in Cambodia has been passed through various regimes and system aspects. The records show that forestry sector started its management systems in 1898 after 36 (1863-1898) years since the start of French protectorate ruling Indochina and Cambodia. During the periods of the time before the French management initiative forest and non-forest products uses were completely free of control. The French strict forest management rules in Cambodia, however, confronted with traditional uses. Later on, the system was reluctant and traditional uses of forests for local consumption had been looser. Although French protectorate in Cambodia was ended in the 1950s (1954), the French forest management system had been continuously implemented till the early 1970s by then the country entered into civil unrest and civil war. The French forest management system could be considered as centralized governance because the center (based in Phnom Penh) made all decisions in regard to forest exploitation, rehabilitation, and or plantation.

During the 1970s to 1980s forests, in particular, and natural resources, in general had no proper or even no government control with the exception of duration of Khmer Rouge regime (1975-1979). During the Khmer Rouge time all public sectors were under absolute decision of the leader of top ranking people (Angkar or Organization). The forest management system was even more top-down approach during the Khmer Rouge time compared to historical forest managements in Cambodia.

People Republic of Kampuchea, and later on called State of Cambodia (1979-1993), was a communism management regime. During that time Cambodia forests were under central decision annual timber harvest plans. With technical recommendations of the Department of Forestry and Wildlife (DFW) and the MAFF, timbers and non-timber forest products (usually timber only) were exploited according to the central government plans. Again, this system of forest management was central governance with annual or five-year plan.

The forest governance, however, was significantly changed in the 1990s. New forest management approach was introduced into forest management system, which is “forest concession management” system, beginning in 1993. With the decision of the central government, forest concession areas were completely made without communal consultation. Later on, due to increasingly democracy applied in Cambodia, in 2001 all forest concessionaires were required to develop Strategic Forest Management Plan (SFMP) for forest concession management and by then

communities were involved in the process of forest management. The SFMPs are requested to include different coupe levels, such as Compartmental and Annual, and Environmental and Social Impact Assessment (ESIA). The forest concession SFMPs, moreover, were required to put into public disclosure among all relevant stakeholders especially communes and civil society. The public disclosure of the forest concession SFMPs and ESIA was requested in order to have forest harvest transparent and equitable benefit sharing.

In addition to the involvement of communities in forest management, communities have been given rights to establish their community forestry (CF) that located near communes or villages. Very recently, in 2003, CF Sub-Decree was ratified and entered into force trough out the country. This is shown that some level of decentralized governance of forestry management system has been introduced into the Kingdom of Cambodia.

Following its reform, forest management and governance have been noticeably improved. In 2006 the National Forest Programme (nfp) was established under technical and financial support from Danida, DEFID, NZ, and FAO. The project was planed to run up until 2010. The nfp is developed under new model that is broadening as many stakeholders as possible including inter-ministerial, private, and civil society to participate in policy development and planning (Sokh Heng, 2007).

2.2.3 Sustainable forest management

Royal Government of Cambodian (RGC) has committed its efforts to sustainably manage forests in Cambodia since forest management resumed in 1981 after the Khmer Rouge regime. In order to achieve sustainable forest management, the RGC gradually increase both technical capacity, number of staff, and international cooperation. For that important forest management, some most important guidelines, regulations, and laws were established and implemented. Up to date there bunches of legislations are implementing as following:

1. Forest management guidelines including Reduce Impact Logging and forest concession monitoring guidance;
2. Code of practice for forest harvesting (1999), officially bound;
3. National Forest Statement (2002);
4. Sub-Decree on the Request of Master management plans of all legitimacy forest concessions (till present);
5. Ministerial declaration (Prakas) on Seed Source Site establishment.

However, sustainable forest management has not always, like in many other countries, been satisfied as planned. Concerns in regard to forest degradation and deforestation have been confronted due to high population growth (approximately 2%), high timber market demand, and expansion of agricultural and settlement lands. Recent emerged problems were larger scale of forestland conversion to agro-industrial crops. There is 6% of country land allocated for economic land concessions throughout country . Nevertheless, MAFF permitted agro-industrial lands only on already degraded forestlands in order to develop country economics and contribute to rural poverty alleviation.

While implementing RGC economic development strategies and rural poverty alleviation road infrastructure must be built. Definitely, short-cut roads are preferable to road constructors. For this reason, some roads are built across permanent forest estate and of course forests must be cleared. Whenever roads accessible and useable for local and national transports, especially forest products

transports, more forests and forest areas are disturbed and quite often being settlement. Compared to the last 30 to 40 years road infrastructure increased for 3 to 4 times in the early to middle 2000s.

2.2.3.1 Forest concession

Production Forests (PF) were allocated for forest concession areas. The forest concession areas are approximately 3.4 million hectare, which is about 20% of the total country lands (see Graph 2.3). PFs are allocated to be sustainable harvest for the national and local economic benefits. Throughout the 1990s the PFs were managed under concession system. The areas were contracted to forest concessionaire companies for 25 years of sustainable harvest. During their operational activities PFs contributed around 12% of the national GDP, provided several thousands of employment to the country. After a decade or so, during the 1990 and early 2000, contracted forest concessionaire companies had too much focused on their short-term benefit seeking rather than following what had been stated in the contracts, which was sustainable forest management and applied selective cutting methods, led to many of the forest concessionaire companies were ended their contracts, on one hand. On the other hands, the forest concessionaire companies who respected and followed sustainable forest harvest but had not long-term harvesting management plans were requested to provide their Sustainable Master Plans. Since 2002 all legitimated forest concessionaire companies have been suspended their operational loggings due to awaiting their comprehensive Sustainable Master Plans.

Because of the forest operational moratorium while awaiting their Sustainable Master Plans, many forest concessionaire companies have been reluctant from their forest concession protection activities and left the forest areas without properly controlled. Therefore, forest protection has been turned to FA responsibility which a heavy duty for FA and MAFF because of the lacks of technical and financial capacities. Illegal tree cutting and land encroachment activities have been occurred in many areas of the PFs. With that confrontation, FA, MAFF and the RGC have been cooperatively working with donor agencies like JICA, DANIDA, FAO, UNDP, GTZ, etc. to overcome the problems. Several suggestions were given by forestry experts and expert agencies to change management system from forest concession to other types such as: CF should be allowed to cover the areas of PFs and Partnership PF management. FA, MAFF, has taken these suggestions into consideration.

According to Forestry Law PF could be transferred to the other types of Forest Use Function such as Protection Forests if their outstanding biological values should have found compared to the rest of forests of the country or regions.



2.2.3.2 Annual Bidding Coupe

Annual Bidding Coupe (ABC) for local wood demand: seeing the needs of domestic markets in wood and non-wood products, the FA/RGC ensures that forests should have capacity to meet that needs. The ABC method could lead to take forest harvests under control, too. As mentioned earlier in this paper, due to the short of staffing within FA, it is not realistic and not effective enough for FA to cover patrolling on huge forest areas. Therefore, ABC responsible companies could, also, help to take the forests under control.

2.2.3.3 Forest plantation

Forest plantation has been supported by the national budget. Figure of forest plantation areas has been increasing although some fluctuation along the period of plantation years. There are two types of forest plantation: annual planed and Arbor Day plantations. The annual plantation usually covers on degraded lands or former forestlands that were some how deforested long period of time ago. Arbor Day plantation is legitimated to celebrate every year in order to encourage publics, government institutions, and private sectors to participate in forest maintenance and reforestation. The Arbor Day usually chaired by the Head of the State or the King of the Kingdom of Cambodia. Certainly, media broadcast, television and radio push out the event throughout the country.

The plantation has been increased since it started in 1985 six years after Khmer Rouge regime toppled down in 1979. However, due to its dependence of national budget, area of plantation was drastically dropped to small size twice one in 1998 (2ha) and another in 2004 (631ha). The reason of the small area planted was due to the stuck of government establishment after national election that caused to the late or suspend of budget release (table 2.5).

In order to increase ability of larger areas of plantation and to catch up with plantation season (usually in July), the RGC have involved Royal Army/Military into the plantation activities since 2005. The involvement of the Royal Army into forest plantation shows that the RGC tries its best and use all government sector agencies to keep, or increase, forest cover up to 60% of the country areas by 2015.

Table 2.5: Forest plantation, 1985-2006

Year of plantation	Area planted (ha)
1985	289
1986	435
1987	601
1988	576
1989	867
1990	504
1991	226
1992	909
1993	732
1994	853
1995	677
1996	611
1997	485
1998	2

1999	502
2000	984
2001	869
2002	1,230
2003	2,013
2004	631
2005	1,733
2006	1,096
Total	16,825

Source: Cambodia: Forestry Statistics 2006, FA



2.2.3.4 Community forestry

Community Forestry (CF) management approach of forest management has been increasingly considered among government, NGOs, private sector agencies, and research scientists. The relevant sectors believed that CF should be pursued to manage the remaining forests. With the existing Sub-Decree on CF, remaining forests are hoped to improve and maybe increase in the short future. Because of their wood and NTFP needs, local people will make sure that their CF resources continuously available for them and their future generations.

2.2.3.5 Carbon sequestration

Carbon credit is very demanding for countries around the world. Developed countries, which have emitted majority quantity of CO₂, are requested to pay for countries that absorb CO₂. Cambodia is one of those countries that its forests are able to absorb CO₂. Very recently, in May 2008, the Council Minister of the RGC declared one of the high forest-degraded-rate areas (about ## ha) in Oddor Mean Chey province for the first Reduce Emission in Deforestation and Degradation

(REDD) implementation site. Nevertheless, FA has been working with Danida and some of NGOs to introduce the REDD approach implement in south west of the Cardamom areas, too.

On the other hand, Clean Development Mechanism (CDM) and the deals with its have been undertaking by the Climate Change Office that is under the line management of MoE. So far, couples of trainings and awareness raisings on CDM have been held nationally and sub-nationally/provincially. Projects related to CDM have been focused on PA cluster of costal line areas of the south western of the country.

2.2.4 Wildlife protection and management

Wildlife Protection and Management have been significantly started in the early 1990s, although the activities had been carried on from the past as old as French protectorate time in 1925. Different from the past during which forest management was focusing mainly on timbers and wood fuel, forest management since 1990s has been concentrated on timber, wood fuel, and wildlife. In 1993 Royal Decree declared 23 Protected Areas (PA). The PAs are allocated on the biological diversity significance. All PAs combined covers up to 18% of forested country areas. Moreover, seeing additional significance of endemic species of flora and fauna some more production forest areas were allocated to Protection Forests including: Preah Vihear, Mondulkiri, and Central Cardamom. Total of all kinds of protection forest areas is up to 25% of country lands.

For the purpose of in-situ conservation, the DFW (former FA) worked with IUCN to allocate 23 Protected Area sites. In 1990-1993, although working in the field was impossible, DFW-IUCN identified (mainly on maps) significance of important conservation areas and sites. Identification was also based on previous forest reserve maps and IUCN Protected Area standards. DFW-IUCN main purposed were to allocate all conservation significant areas of the country to be protected for long-term uses. It is worth to notice that Ministry of Environment was not established until 1993. Therefore, DFW/MAFF was solely responsible for all forest management and conservation. The 23 PAs were identified and submitted to MAFF by DFW-IUCN for further consideration. At the same time, the 23 PAs were ratified and signed by the King, and the Secretary of State of Environment (former MoE) was established in 1993. Following the Royal Decree, there are lower levels of regulations issued. Those are as following:

2.2.4.1 In-situ Conservation

- Sub-Decree on Protection Forest Areas (2002) (government)
- Bird Important Areas (government)
- South-West Elephant Corridor (SWEC) and Community Eco-development (2005) (government)

Efforts have been spent for in-situ conservation by RGC with technical and financial cooperation from NGOs. Certainly, community development is taken into consideration while implementing in-situ conservation. For instance, FA-WWF applied eco-tourism into Srepok Protection Forest site using South African model. For about four years now, local villagers of the areas have cooperatively supported the project. It is proud to claim that couples of endangered species have been safeguarded including Else deer (*Cervus eldii*), Elephant (*Elephas maximus*), Leopard (*Panthera pardus*), and Hog deer (*Axis porcinus*). Although some struggles need to be overcome,

those species populations have been increased. Hog deer was re-recorded in 2006-2007, which was not seen by wildlife experts during the 1990s and early 2000s.

While conserving forest animals, FA/MAFF actively work on water bird conservation. With several bird conservation organizations such as BirdLife International and WCS, the FA, MAFF issued special protection zones/areas for intensive bird protection. Sarus crane (*Grus Antigone*), Giant Ibis (*Pseudibis gigantea*), and several Vulture species have been among special bird species for intensive protection.

2.2.4.2 Ex-situ Conservation

- Phnom Tamao zoological Park and Wildlife Rescue Center (government)
- Prey Angkor Zoo (private)
- Angkor Center for Conservation Biology (private)
- Wildlife Development Center, in Kampot province (private)
- Koh Kong Safari World (private)

Very recently this year, Samdech Hun Sen, the Premier of the RGC chaired the inauguration of “Wildlife Rescue Center” located within the Phnom Tamao zoological Garden. The Rescue Center is served to immediately take care confiscated live-wildlife that illegally traded in the country. The rescued animals could be released back to the wild after seeing their health strong enough to be self survive in their original habitats. For those that are not healthy enough to be released back to their habitats should be continued to keep in the zoo.

Besides wildlife In-situ and Ex-situ management, there are couples of wildlife private development farms. Those farms run captive breeding, mainly monkey species, and sell farm-born animals to markets. With the exception of small number of them, those animals usually sold to Vietnam and some of those further sold to China. For those animals exported from Cambodia, CITES regulations are applied.

Above all else, wildlife populations for almost all conservation objectively key species have been decreased. Tiger, for instance, is one of the species at the brink of extinction nowadays while it was a possible recovery population in the early 1990s.



2.2.5 Soil and Water Security (Environmental) Services

Forests have played a very significant role in environmental services. Those services are:

- Soil erosion prevention

Unlike many other countries in Asia and the Pacific Code of Practice for Forest Harvest of Cambodia was officially bound in 1999. One of the main objectives of the code is to prevent soils from heavy erosion during and after logging activities. The code clearly and specifically states that logging is not allowed along the water streams at least 50m on either side of the waterways. Soil erosion could be, also, happened during road building activities. Regarding to that the code technically provides guidance to log operation people. At this stage although large-scale forest concession timber harvest been suspended, the Code is implemented for the existing Annual Bidding Coupes.

However, soil erosion has been occurred, either solely in Cambodia or in the Mekong basin regionally, due to upland slash and burnt agriculture. Due to population increase, especially in rural areas, many more slash and burnt activities increased that caused to soil erosion particularly in the areas around Tonle Sap Lake.

- Flood control

One of the main roles of forests is water absorption and water retain after rains, especially after heavy rain in a short period of time. Forests reduce water speed by playing at least two functions: prevention rainwater from direct fall into soil, which mechanically erodes soil, and penetrates water into soil through tree roots.

- Landscape view

Forests provide very good scenic views. Many forested National Parks such as Kirirom, Bokor, and Ream, provide opportunity to tourists to visit the areas. Mosaic landscape or seascape provided by different types of forests makes the areas valuable. Mondulkiri Protection Forest has been attracted to increased number of tourists to visit since it has been intensified management and protection in the early 2000s. The area is and will be managed using South African country model of eco-tourism. At the early stage of its management Department Heads and General Directors of FA, MoE and MoT accompanied by WWF Country Directors were sent to visit the management of eco-tourism model in several government and private-own parks of South Africa. The Mondulkiri eco-tourism Forest Protection management could be a pilot site to the rest of other Protection Forest areas including Preah Vihear and Central Cardamom Mountain.

- Recreation sites

Green Spaces are very important for city, especially metropolitan cities. However, many cities grow bigger with few or without green spaces. Therefore, forests areas either inside or outside cities play significant role in recreation sites. Citizens very much enjoy having time outside their city and spend lots of money in recreation time and sites. While playing role in recreation site, forests provide much more healthy time to tourists who visit them. The Royal Cambodian Government allocated three outstanding sites for the recreation purposes: Phnom Tamao Zoological Garden, Ang Tra Peang Thmar Crane Reserve, and Seima Biological Conservation Area. Phnom Tamao (approximately 500ha), located about 50km from Phnom Penh city, plays significant role of recreation site. Up to half million of tourists, majority of them are national, visits it each year (Phnom Tamao zoological Park and Wildlife Rescue Center). The area was completely forest degraded in 1996. Nevertheless, re-growth forests nowadays are up to 10m high,

which can be enjoyable for the tourists. As a result, some local animal species, including wild pig (*Sus scrofa*) and barking deer (*Muntiacus muntjak*), are recovered.



2.2.6 Watershed management

Watershed management was officially started in 1999 endorsed and signed by the King of the Kingdom of Cambodia. Watershed management is under taken care of FA, MAFF, while water management is under the Ministry of Water Resource and Meteorology (MOWRAM). FA has been working with many main water management agencies like Cambodia National Mekong River Committee (CNMRC) and MOWRAM to classify watershed in different levels of management importance. To some extent watersheds have been well managed. Most of the water catchments are assigned to be either Protected Areas or Protection Forest areas that could be automatically protected.

Some concerns are mining activities on the upper water catchments. Mining usually occur in the forest areas of upper water catchments that so far little measure has been taken into concern. The mining companies or family-scale mining usually have no treatment on their mining waste. In stead, they flow their waste down to rivers and downward that may cause health problem to people of the down stream areas. Some difficulties have happened to FA responsibility are coordination between ministries. Fore example, Ministry of Industry, Mines, and Energy (MIME) allowed mining a company to do research on possibility of mines in the forest areas but the company started digging and clearing forests without informing FA or FA staff at the local levels. Some companies, moreover, started mining while their permits are allowed only to do research.

2.2.7 Capacity Building for Sustainable Forest Management

Capacity building is a continuous need for all over agency activity life. FA staff has been trained in internal and external institutions. FA provides two opportunities for the staff to be trained in SFM: short term training and long-term academic courses.

For those who are busy with their office works could attend short training course at the internal institution. For them “learning by doing” is the most appropriate one. The Internal trainings have been conducted using senior staff to teach junior staff with additional technical and financial supports from JICA, GTZ, and DANIDA. The capacity buildings were conducted in forest silviculture, tree plantation, law enforcement, and basic use of new equipments such as GIS and

GPS. The training in GIS and GPS was in order to locate illegal cases and forest areas demarcation. For detail specific topics and number of trained staff, see table 2.2b.

For those who are really enthusiastic to obtain academic programs in SFM, either in abroad or in the country, could obtain their supports through partnership scholarship of free candidate applications to related universities such as Japan, USA, Australia, or European Unions. During their training period of time those FA staff are officially recognized as staff but considered as in capacity building transaction time.

At the current time FA staff consists of PhD. M. Sc. and lower academic levels as shown in table 2.2a below:

Table 2.2a: Forestry Administration Human Resource, 2006

Academic level	Number of individuals
PhD/Doctorate	3
Master of Science	79
Engineer (most of them are in forestry science)	470
Association in forestry	320
Skill worker	168
Non-degree	627
Total	1667

Table 2.2b: Number of officials trained and SFM topics during 2002-2006

Topic	Number of individuals trained
Forestry Law	300
Community Forestry	334
Nursery	60
Silviculture	358
Forest plantation management	63
Wildlife Management	161
Forest Management	220
Forest Management Planning Formulation-I (FMPF-I)	19
FMPF-II	20
FMPF for Division FA	370
Nursery Management	23
Nursery Establishment	21
Agricultural chemistry	28
Other	16

2.3 Forests and Forest Products

2.3.1 Wood and wood products demand (Timber, NTFP, Fuel wood)

Non-Timber Forest Product (NTFP) has not been systematically studied till recently. Hansen and Top (2006) provide very detail calculation of NTFPs in benefits to rural Cambodian people. Their study found that at different provincial villages local poor households gain in between USD167 and USD424/household/year from NTFP; and among all family-livelihood dependency, 30 - 42% of their incomes come from forests annually. With very concrete number of wood energy, Mr. Cheap Sour emphasized that NTFP play significant role in wood energy. According to Mr. Cheap Sour, approximately 70% of national energy consumed is fuel wood and around 7,000,000 m³ fuel woods are estimated to be collected annually, half of those are from forest areas (Cheap Sour, 2007).

2.3.2 Production and utilization of wood industry

During the 1980s there were two big sawmills named Casotim and Colexim. The Casotime (Cambodia Soviet Timber Import Export) was a joint venture between Cambodia and former Soviet Union. Colexim, however, was run by Cambodian enterprise in partnership with Japanese corporation.

Woods were increasingly supplied to augment sawn mills in Phnom Penh during whole decade of the 1990s and early 2000s. The peak timber (round and sawn) harvested was during 1993-1997. The desk study conducted by Hong Narith (Hong, 1997) shown that log production reached 1,500,000 m³ in 1995. Solely round log productions reached up to 846,113 m³ in 1994 (FA, 2002). Export wood industry products, however, dropped to zero cubic meters in 2002 after suspension of all forest concessions.

Nevertheless, domestic consumption of woods have been carried on due to the need of local constructions such as house, pagoda, and public building like school and hospital. Those uses by family and public buildings are allowed by Forestry Laws. It is inevitably that illegal transport of small scale of timber and NTFP across international border occurred, although efforts have been spent by FA and sometimes by the joint military and border police. Those illegal activities happened mainly in the areas with Vietnam and Thailand while in the areas with Lao should be less due to geographical difficulty.

2.3.3 Forest trade

International forest trade was made in timber and wildlife products whereas domestic forest trade is timber, wildlife, and non-timber forest products. Trade in timber had fluctuated from time to time. Timbers were increasingly available in the markets during the 1980s and the 1990s but the status of forest trade has been slow down since early in 2000s. Immediately after the Khmer Rouge regime topping off power, Cambodia economy depended very much on natural forest products mainly timbers, to be exchanged for foreign currency. Up until the 1990s Cambodia timbers had been traded with communism community markets. During that period of times, timbers were harvested and sold mainly to Vietnam and Soviet Unions. After the Soviet Unions collapsed and the change of Cambodia market system (from State-Plan to free competition markets), Cambodia timbers entered into many countries where never happened before. Those countries are Thailand, Malaysia, China, Japan, etc.

However, seeing heavy harvests of timbers in the last two decades before hand (the 1980s and 1990s), Cambodia government decided to suspend all export-oriented timber harvests in January 2002. Since then all forest concessions have been requested to submit proper Strategic Forest Management Plans (SFMP) of their sustainable timber harvests within their legitimate forest concession areas. But no a single forest concessionaire has reached sustainable timber harvest standard up until the present time.

Besides timbers harvests for foreign currency exchange, non-timber forest products were heavily collected. Wildlife and wildlife derivative products such as forest turtles, monitor lizards, and several species of snakes, large decorative forest bird species (Green Peacock and Parrot) were collected and sold to neighboring country markets. Rattan and bamboo were and are the most outstanding two NTFP species to be heavily collected for domestic and export markets. Records show that mostly NTFPs have been as forest goods traded within the country and exported (table 2.3a) (FA, 2006).

Table 2.3a: Forest products trade during 2000-2006

Forest product types	Year	2000	2001	2002	2003	2004	2005	2006
	Unit							
Round log	m ³	187,488	126,697	644	0	4,248	9,552	2,526
- Domestic coupe*	m ³	0	0	0	0	0	0	1,338
- Concession coupe**	m ³	179,330	121,497	0	0	3,065	0	0
- Bidding***	m ³	8,158	5,200	644	0	1,183	9,552	1,188
Acacia & Eucalyptus	Double stere	0	514	3,449	0	820	0	1,880
Sawn/Process timber	m ³	19,789	16,174	10,016	3,269	3,971	3,675	1,020
Veneer	m ³	25,749	9,501	1,360	0	0	2,872	-
Plywood	m ³	17,980	26,039	3,762	0	0	0	-
Firewood	Stere	56	0	7,000	12,753	0	1,350	1,166
Charcoal	ton	350	0	0	10	0	50	-
Poles	pole	6,210	1,875	52,213	22,961	23,552	0	20,255
Rattan	ton	0	79	23	10	147	4.5	40
Liquid resin	ton	157	208	304	364	683	185	1,494
Solid resin	ton	0	10	0	0	0	0	0
Gardenia angkorensis (Edxøa)	ton	0	0	0	15	4.5	0	0
Small bamboo	ton	89	32	0	0	0	0	0
Bamboo	ton	719	208	3,075	2,562	1,634	558	3,280
Yellow vine (powder)	ton	0	22	0	0	1,504	0	0

Source: Cambodia: forest Statistics, FA, 2007.

* Domestic coupe has been introduced to harvest timber for local and national uses. The Domestic coupe activities have been not been undertaken until 2006 due to regulation preparation and bidding process.

** Some logs were remained in the concession depots after felling. Therefore, they were allowed to process even though after the concession era.

*** Bidding process was focused on selling seized illegal woods. While woods were accumulated as results of confiscation they are announced for bidding/auction.

Table 2.3b: Forest revenues during 2000-2006

Description	Year	2000	2001	2002	2003	2004	2005	2006
	in 1000Riel or USD							
Fine	in 1000Riel	195,228	197,597	273,052	207,586	535,717	815,979	754,545
	in USD	4,005	16,392	1,065	0	0	0	0
Auction	in 1000Riel	5,273	2,495	350	159,173	393,729	1,049,349	944,744
	in USD	449,449	175,744	67,619	0	0	0	0
Reforestation fee	in 1000Riel	0	0	0	0	0	0	0
	in USD	313,040	370,755	89,675	11,250	8,802	29,879	12,736
Royalty from forest concession	in 1000Riel	0	0	0	0	0	0	0
	in USD	8,689,657	5,921,531	87,205	0	0	0	0
Royalty from other forests	in 1000Riel	82,690	143,861	351,112	730,360	272,485	339,785	786,843
	in USD	0	645	1,609	362,630	460,716	761,146	528,916
Other	in 1000Riel	0	13,600	0	36,767	13,624	190,984	0
	in USD	1,615,356	1,192,375	137,926	32,836	25,823	57,271	15,743
Total	in 1000Riel	283,191	357,554	624,514	11,338,86	1,215,555	2,396,097	2,486,132
	in USD	11071508	7677443	385100	406717	495341	848296	557395
National Budget	in 1000Riel	979836	3832991	3489932	1983760	1969467	4114936	6531675
	in USD	96165	0	0	0	0	0	50688

Source: Cambodia: forest Statistics, FA, 2007.

Note: exchange rate: 1USD has been fluctuated around 4000Riel during 2000-2006

2.4 Forest Contribution to poverty reduction and socio-economic development

2.4.1 Population growth

Forest resources, in particular and natural resources in general, are affected by the increase of human population and human activities. Cambodian population was about 9 million in the 1960s and early 1970s while forest cover was around 73% of the country total areas. However, FA (FA, 2004) demonstrates that forest cover was about 60% in 2004 while Cambodian population was around 13 million people. This means that forest cover has been and is disproportionate to human population: bigger human population could cause forest cover to be smaller areas. According to the National Institute of Statistics (NIS, 2007), the projection of Cambodian population could be increased up to about 19 million people in year 2020. Hence, the forest cover should be further reduced due to the need of lands for settlement and agriculture if proper actions will not be taken.

It is noted that comparing to neighboring countries, Cambodia forests are still in good conditions and could be one of the main national and local economic revenues if they were managed for not only short-term purposes but for long-term as well.

2.4.2 Income and poverty

As known to the region, Cambodia is one of the poor developing countries in Southeast Asia. Around 35% of Cambodians are living under poverty lines (NIS, 2007). Majority of Cambodian population, around 85%, are rural people depending on agricultural and forest productions (CMDG, 2003). The study of Hansen and Top shows that forest resources contribute from 30% to 42 % of total household incomes for those rural people (Hansen and Top, 2006). People of the country remote areas are always dependent on forest products for their everyday consumption. One can say that forests are market for them.

Besides agricultural products, timber and non-timber forest products have been the main sources of local people economic incomes. To name the few, timbers are used for home constructions, agricultural equipment, and exchange for cash incomes whereas NTFPs have been the vitally sources of incomes for local livelihoods, especially in the years of poor agricultural products. Of the same remote local Cambodians, those are living near or adjacent to productive forest areas have better lives than those who live far from forest areas. The villagers who live near the forest areas could gain wild vegetable, meat, and medicinal plants. In case of needs, some of those wild products could be sold to other villagers in exchange for agricultural products and cooking ingredients.

2.4.3 The rights of indigenous people

The rights of indigenous people on forest uses have been granted since before and after French protectorate in Indochina in general and in Cambodia in particular (Lao Bun Hak, 1972). During the 1980s' and the 1990s' forests were managed under the lower level of law called Anukret (Sub-Decree) No. 35. The Sub-Decree was stated that all forest uses for local people consumption are allowed without demanding for permit. The local subsistence could be wood for house construction, firewood, and poles for making fences. Moreover, indigenous people have used forest areas surrounding their home as pasture for their domestic cattle grazing. Usually during six months off-farming period of time their domestic cattle are released into forests for grazing and browsing.

At latest Forestry Law, which was ratified by the National Assembly and Senate, also, makes it clear on traditional uses of forest products (RGCb, 2002). Shifting cultivation, at family-scale and

usually manual tree cutting and clearing, is considered by the law to be traditional use. However, due to many more newborns and in-migration, shifting cultivation could cause serious problems of forest clearance.

At this stage, processes of developing law on the using rights of indigenous people on their ancestors' lands have been undertaken among relevant ministries led by the Ministry of Land Management, Urbanization Planning and Construction (MLUPC). The law could be ratified soon. There are at least three types of traditional ancestor's land use: first is land areas used for agriculture and non-timber forest production collection, second is land areas used for cemetery, and the third is spirit forests.

2.4.4 Rural poverty reduction

It seems that forests could be played a vital role of rural poverty prevention but not further reduction of poverty. Forest could be main reserve for rural people when their agricultural production faces problems in the previous year. Studies showed that forests could be a safety net when draught or flood happened to rural people in the previous year (Hansen and Top, 2006). Several species of wild yams can be used instead of rice by thousands, if not hundreds, of rural people when they confront with scarcity of rice. Wild meats derived from common species of wild animals are the main source of protein for local people when their domestic animals faced with diseases.

However, forests could be one of the main sources of incomes and can contribute to poverty reduction and even improving rural livelihoods if proper management could be achieved. Thinking of renewable resources, forests play a pivotal role in rural development and local economic improvement. From sustainable forest and non forest products such as resin, rattan, and bamboo collection local people can continue to benefit from their nearby natural forests. Demands of non-wood forest productions like rattan, bamboo, and other liana for furniture used in the cities and hotels provide more opportunities of benefits to local people who are collecting those raw products.

Chapter III Challenges in Forest Management

3.1 Population growth

As every third world country else, Cambodia population has growing continuously. From around 3 millions in 1980 now is about 14 millions. Of those 14 million people, there are about 2-3 million are living in cities while the rest are in rural areas and depend mainly on natural resources, especially forest and non-forest products for their day-to-day lives. The population growth rate, that is about 2.5, has been almost stable for the last two to three decades. This figure shows not yet change to be smaller. The big population growth rate like this may cause to more deforestation due to their needs of lands for settlement and agriculture.

Increasing gap between the rich and the poor is also one of the driving forces in deforestation. The rich gains more lands in the productive agricultural zones, whereas the poor force themselves to clear forestlands for settlement and agriculture. The two parties, the rich and the poor, affect each other, along with the particular opportunities of laws and regulations (for instance: the rights of traditional use of natural resources for family consumption), to contribute to forest clearance.

The problem is, however, how and who are supposed to control the continuous human population, which has been remained the main question.

3.2 Demand of Agricultural lands

Being one of the most agricultural dependence-countries and with the population increase rate of 2.5, Cambodia will need more forestlands to be cleared from now and onward. One of the most reliable strategies to solve agricultural lands is that to improve agricultural yield and to increase number of rice plantations each year. Meaning that intensive agriculture should be applied.

Early countrywide land allocation: forest areas, agricultural lands and development, industrial zones, and township development areas should be prepared before hand and implemented. Preparing so, may orientate sector-objective development, and forest areas could be maintained and forest productions could be developed. Definitely, everyone accepts that forests are positively contribute to agriculture in particular, and to human life in general, in terms of fertility, flood prevention, temperature and rain regulation, and watershed protection.

3.3 Road development

Road access facilitates to bring modern doctors to remote areas. Due to road access, health has been improved among local people, especially who have been living within or near forest areas, while birth control has yet happened at the same time. Therefore, many more mountainous people are born. On one hand, with the increasing number of mountainous people slash and burn agriculture and wet rice fields are, also, increased.

On the other hand, whenever roads are improved transportations are automatically, and usually simultaneously improved. Because of the availability of road and transport, high technology could be imported to where there had never be available before. And while high technology is in place, with improper use of natural resources by local people, the forests are tremendously cut down. This does not mean that roads are bad to forest management activities but roads open new

opportunities for negative impacts on forests if proper and on time reversing measures on forest preservations are not taken care early enough.

3.4 Demand of wood: domestic and regional scales

Woods have been always one of the main sources of raw materials for construction, especially for rural people, which account for more than 85% of the Cambodians. Although other sources of construction materials such as metal, concrete, and plastic have been competitively available on markets, wood is still demanding, especially luxury timber species. The RGC have declared that luxury timber species are prohibited since 2002.

In addition to the Cambodian domestic demands of woods, regional wood markets are increasingly demanded. The closest to Cambodia: two country-markets of wood demands are Thai and Vietnam. Thailand publicly announced that all logging activities were prohibited since the 1980s. Vietnam, on the other hand, increasingly needs woods to supply booming free-markets since the late 1990s. It is worthy to notice that majority of Cambodia forests are located along the international border to Thailand, Lao, PDR, and Vietnam. With limited of human, financial resources, and huge areas of remote forest areas, Cambodian forests face very difficult situation in their protection and development. One may agree that Cambodia timber had been increasingly exported to neighboring countries, like Malaysia, Thailand, and Vietnam, during the 1990s and early 2000s until the RGC suspended all round and sawn timbers export in early 2002.

Under the National Forest Programme (NFP) wood supply and demand of provincial and national levels has been undertaken by FITDO (Forest Industry, Trade and Development Office), FA. The objective of the study was to gain knowledge of forest supply capacity and increasing demand based on that harvesting policies could be made for forest sustainable management. The study results were expected to be available in the year 2008.

3.5 Human resources

Insufficient staff for forest management has led to unsatisfied management. Incapable human resources and staff cause even more difficult for proper forest management in the country. Qualified human resources are needed in order to cope with emerging issues and updated forest management demands. Because of forest management has been shifted from solely timber purposes to timber and environment purposes at the same time, updated human resources are vitally required. Many of policy studies on forestry management and conservation in the country since the late 1990s and early 2000s were led and conducted by Technical Advisors. This is not to discriminate but to mean that most of experiences and skills have left the country at the same time as the TAs left. Moreover, most of the remaining documents are available only in non-native languages (English or French). However, government staff have gradually taken up the policy developments of forestry management and conservation, especially since late 2000.

Long-term management skills for sustainable forest management are needed for staff of both FA and private. Lack of updated human resource leads to improper forest management and caused lots of difficulties to the institutions. Therefore, human development is and will be needed with the emerging forest management and conservation issues.

3.6 Financial support

Forestry management have been the main challenges for forestry development sector of Cambodia. Couples of external financial supports have been conducted for capacity building, forest and wildlife researches, and forest sector development programmes, but those supports were ended at too-early stage based on which responsible government agencies could have enough time to take over. For instance, Tree Seed Conservation project, Tiger Conservation Programme, and Tree Plantation Development were stopped at the lack of national budget for further continuation.

Since after FA reformed, the FA, the RGC have planned to poster forest boundaries, which is the most priority option, but limitation of financial supports is the only obstacle for speeding up the job. Nevertheless, with available national budget and financial aids (Danida, DFID, NZAid, FAO, etc.) FA has started forest demarcations in priority areas of the country.

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Forest concession was left out its harvest since 2002. Having seen that there were difficulties with forest concession management, the RGC decided to suspend timber harvest and approximately 3.4 million ha of forest concession areas have been under moratorium. Some of the forest concession sites were terminated concession status and the areas are solely under the FA responsibility. However, on one hand, FA is responsible for taking care in a proper way of those forest areas. On the other hands, with local communes, local authorities, and relevant NGOs, FA/MAFF have developed and made final approval for Community Forestry establishment.

4.1 Setting for the future

For guiding tools, the RGC has and committed to a number of overall development and conservation strategies. These include the Cambodian Millennium Development Goal (CMDG), National Strategy Development Plan, the Rectangular Strategy for Growth, Employment, Equity and Efficiency, Governance Action Plan, Strategic Framework for Development Cooperation, the National Poverty Reduction Strategy, and Environment Protection Action Plan.

In addition, the RGC has formulated some general reforms, among others the Legal and Judicial Reform, Public Administration Reform, Forestry Reform, Fisheries Reform, Land Reform and Mine Clearance, and Armed Force Demobilization.

The Forestry Organizational Reform and Forest Policy Reform could be an opportunity to improve socio-economic conditions of local provincial and national livelihoods through improves attention, partnerships and coordination management. Lately, the Technical Working Group on Forestry and Environment (TWG F & E) was established in order to ensure sustainable development and coordination of natural resources. Further on, the National Forest Program, which is under the leadership of The TWG F & E chairperson, developed Action Plan 2007-2010 in December 2006 and it is going to be implemented in the coming four years.

Fighting for 60% of the country land areas for forest covers is the main target of FA from present time to 2015. Main responsibilities of FA from now on are and will be to fight against forestland encroachment, illegal tree cutting, and sustainable forest management in the time of increasingly demands for natural resources. Increasing demands are not only within the country, but also among the countries in the region that drive FA and the RGC to work even tremendously harder.

Community Forestry (CF) management approach of forest management has been increasingly considered among government, NGOs, private sector agencies, and research scientists. The relevant sectors believed that CF should be pursued to manage the remaining forests. With the existing Sub-Decree on CF, remaining forests are hoped to improve and maybe increase in the short future. Because of their wood and NTFP needs, local people will make sure that their CF resources continuously available for them and their future generations.

Annual Bidding Coupe (ABC) for local wood demand: seeing the needs of domestic markets in wood and non-wood products, the FA/RGC ensure that forests should have capacity to meet that needs. The ABC method could lead to take forest harvests under control, too. As mentioned earlier in this paper, due to the short of staffing within FA, it is not realistic and not effective enough for FA to cover patrolling on huge forest areas. Therefore, ABC responsible companies could, also, help to take the forests under control.

4.2 The way forward for the Cambodia forestry

With emerging social, financial, and environmental issues, the forest management and development are not an easy task. What the forests of Cambodia look like in 2020? What should be done at the present time in order to have better forest management and development in 2020 in Cambodia? These are among the questions that FA, the RGC have kept asking and reminding.

4.2.1. Forest Demarcation

The Permanent Forest Estate (PFE) across the country is planned to establish demarcation, classification and registration. The demarcation is an important tool to slow the rate of forest loss, reduce associated livelihood and environmental impacts and improve governance.

4.2.2. Sustainable Forest Management

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 modeling. 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. 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.

4.2.3. 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 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.

4.2.4. Forest Law Enforcement and Governance

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 is the main tasks of the forest management mandate. 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.

4.2.5. Forestry, Climate Change and Innovative Financing

Supporting the inclusion of GHG emission reduction from forest conservation and avoided deforestation in post-Kyoto regimes is essential consideration for forest management in an emerging climate change. Reduced Emissions from Deforestation and Degradation (REDD) are not eligible to the Clean Development Mechanism during the first commitment period (2008-2012). 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.

4.2.6. Capacity Development and Research

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. Furthermore FA's commitment is to institutional reforms including the introduction of a Performance Incentives Management Programme to strengthen the delivery of national and sub-national forestry services; the decentralization and de-concentration of core functions; strengthening forestry extension services for all Cambodian citizens; broadening on-the-job and specialized training for FA personnel.

Conclusion

Changes in forest cover, through forest management history, have been driven by demands of timber and non-timber forest products, agricultural and settlement lands, and economic development. In addition to the practical demands, forest management policies have played a pivotal role in forest management and development.

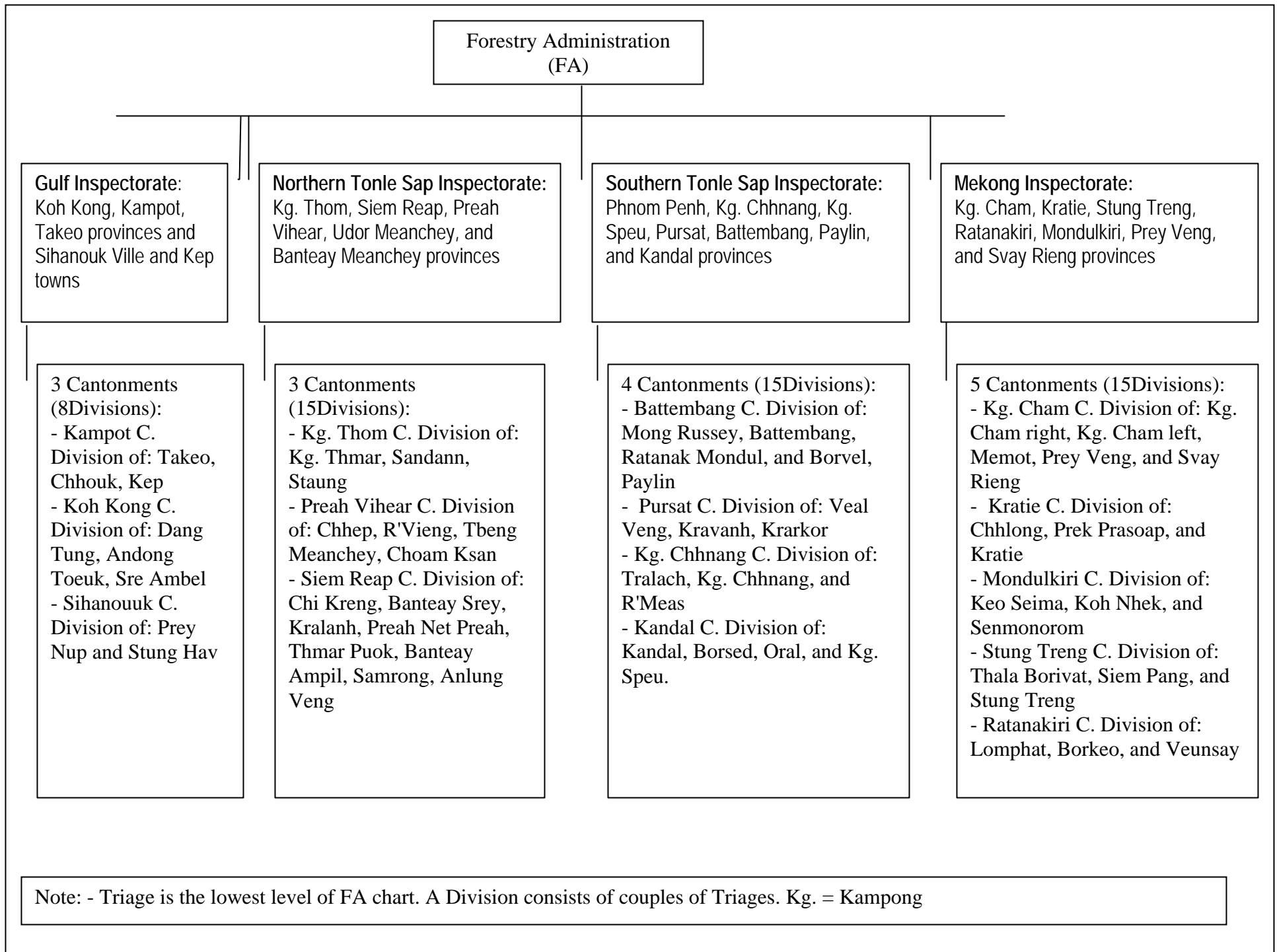
For the coming time and with the current suspended forest concession, short and long run, large-scale forest conversion (especially for economic industrial purposed), policy establishment and its implementation commitment, and level of rural community participation affect (positively and or negatively) on the existing forest covers in Cambodia (see *scenario analysis of country forest cover 2020* box below).

Scenario analysis of country forest cover 2020

<p>Weak Commitment of Forest Related Policy Implementation</p> <p style="font-size: 2em;">↑</p> <p>Strong Commitment of Forest Related Policy</p>	<p>2. Inequality of benefit sharing & Top down Management approach</p> <ul style="list-style-type: none"> . Problems of forest policy implementation mistrust . Forest management could be effective in short-term . Groundless forest policy implementation . Forestlands could be easily converted to other land use types (agriculture, economic concession, etc.) 	<p>4. Achieve maintenance of 60% of CFC</p> <ul style="list-style-type: none"> . Rural poverty alleviation . Sustainable forest management . Permanent Forest Estate is respected and forest plantation can be increased . Annual Bidding Coupe will be supported . CF (CCF) will be well managed . Forest Governance will be included
	<p>1. Forest Management Failure (< 60% of CFC)</p> <ul style="list-style-type: none"> . High Deforestation . Land use planning will not be possible 	<p>3. Fragile Land Tenure & Forestland Grabbing</p> <ul style="list-style-type: none"> . Continuous conflicts in forestland ownership . Forest development will not be possible (because forest development needs long term investment)
<p>Inactive Forest Community Participation → Active Forest Community Participation</p>		

Note: CFC – country forest cover, CF – community forestry, CCF – commercial community forestry

Annex 1: Forestry Administration Organization Chart (Source: MAFF, 2003, Prakas No. 509)



Glossary

Chamkar (dry rice-field) Chamkar is (Khmer word) the areas usually dry during the dry season and temporary wet (after few rains and being wet during the rainy season) during the wet season. Chamkar is used for growing rice or other crops during wet season.

Wet rice-field (or Sre) Wet rice-field or Sre is area where contains permanent water during the rainy season where rice grows.

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