1. Introduction

Ratanakiri is the northeastern province of Cambodia bordering with Laos to the north, Vietnam to the east, Stung Treng province to west and Mondulkiri province to the south. Ratanakiri is characterized geologically by forest, upland plateau, watershed low land, lakes, rivers and demographically by having a population of almost 85 percent ethnic highlanders (Nhem Sovanna, 1998). A sparsely populated province, it is renowned for its unique natural beauty and wealth of natural resources.

Forest cover in Ratanakiri province varies from area to area, from the dense forest in the northern part, which are still rich in forest, found in the southwest. Forests support the good soil quality for the upland.

Since the open market in the country, the forest in Ratanakiri is remarkably declined. The major problems behind this are, the forest concessions, illegal logging, agriculture expansions…etc (Colm, 1997). Government considered concessions were paved the way to reduce the extent of illegal logging, speed the growth of value-added wood processing and increase timber royalties. On the contrary, the concessions are the environmental concerns in that area. The concessions have been awarded to large commercial interests through a process, which is not transparent and has involved only limited surveys (MoE, 1998). Similarly, illegal logging is highly magnitude contributed to the forest depleting. Thousands of cubic meters of illegal logs were exported (Global witness, 1997). Moreover, the agriculture expansions and swidden agriculture are being seen as elements associated with the forest clearing. As commercial interests and population growth, the forest is rapidly encroaching by the upland settlers and outsiders.

The inception of community forestry in Cambodia in the 1990’s was established. To the result of a concern of the forest losses are gradually prevailed in the depletion of the natural resources and adverse effects at the down steam area. In order to manage the existing forests, to use them in the sustainable way and to reduce the negative effects to watershed area, the community forestry taking into consideration. Ratanakiri province is one among of the five provinces, are carrying out the community forestry programs under the Lower Mekong Basin Project (Nup Sothea and Sun Kolvira, 2000). The case study in Yak Poy commune, O Chum district, was proposed and now is being established.

The purposes of this paper are to describe the causes and impacts of deforestation and to indicate the establishment of the community forestry in the highland of Ratanakiri province.

2. Livelihoods of the upland people

2.1. The people and traditions

Ratanakiri is a multi-ethnic province, with the lowland Khmer inhabitants comprising only 15 percent of the population. Local communities are comprised of various cultural groups including Lao, Chinese, Vietnamese, and indigenous people of the region of upland Khmer. There are six tribal groups: the lowland Kachor, Brao and the Kaver; the highland Jarai; and Kreung and Tampuen, who live in both upland and lowland (Bridget Emerson, 1997).
Cultivation land is distributed according to the decision of the village elders and spiritual beliefs. Land is distributed equally. The highlanders believe that if they farm the other side of the different village' Chamkar (farm), the spirit will not be happy and they will meet unfortunate or death. Alternatively, in every stage of the field preparation, planting and harvesting are accompanied by ceremonies which are designed to please the spirit, regardless cause illness or bad luck (Bridget Emerson, 1997)

2.2. Highland agriculture

The agriculture in the highland is based on swidden agriculture, which is the foundation of the indigenous livelihood and supplemented by hunting, fishing and collect forest produces. The features of the swidden agriculture called <Chamkar>, is the plots of land from the clearing forest. Usually, Chamkar are the area cleared of the forest with medium - old age ranged 8-20 year old or the secondary forest (Sara, Colm, 1997). The highlanders start planting in the plots in the rainy season and again these plots will be re-cultivated in the next 1-5 years depend on the soil quality.

3. Watershed issues

Ratanakiri province is the geographical coverage area that is classified into four ecological zones. The central plateau with highest elevation over 500 meters near the border of Vietnam with rich of red basaltic soils. The Hilly region, coverage 300 meters elevation and important watersheds of tributaries both Se San and Srepok rivers and it is supported shifting cultivation on the red and gray forest soils. The north of Se San river, is older and non-volcanic terrain rises to 1,000 meters elevation at certain points along the divide between Se San and Sekong watersheds. And the last one is the lowland plains region, with elevations from 60-100 meters support the area of lowland rice cultivation (Sara Colm, 1997)

Se San River flows through Vietnam's central highlands, passing Ratanakiri and Stung Treng provinces then to the Mekong river. In Ratanakiri, Se San river is a large lowland river with deep water areas, and it is the basin has a drainage area of 6,100 sq. km only in Cambodia (Mak Sithirith, 2000).

The population residing in the Se San Watershed are predominantly ethnics. The highland people living in this watershed area include the Brou, Kreung, and Tampuan people.

4. Causes of forest degradations In Ratanakiri province

4.1. Forest concessions

Government granted a 50 years concession for 1.4 million hectares to an Indonesian logging company, Macro-Panin (Ruth Bottomley, 2000). However, the Macro-Panin concession failed to begin operations due to continued insecurity in Cambodia, leaving open swathes of forest for those wishing to take advantage of it

In 1998 a 60,000 hectares concession in Ratanakiri Province was awarded to HERO Taiwan company and in April 1998 Pheapimex-Fuchan was awarded a 350,000 hectares concession directly bordering Virachey National Park (Ruth Bottomley, 2000).

In the present condition, due to this rapidly expansions of the concessions, the physical and environmental stability are changing. And these problems are being raised among of the environmentalists and researchers.

4.2. Illegal logging

The case of Ratanakiri during 1997’s and early 1998’s, Global Witness, 1997, reported that the illegal log exports escalated with log exports to Vietnam exceeding 200,000 cubic meters with virtually the round logs. Ta Veng, Andong Meas and
Lomphat districts are among of the serious areas, amount excess 10,000 cubic meters were extracted with estimated 70 trucks exported per day crossing the border.

The provincial survey detailed illegal logging and exports were the main companies and individuals involved. The majority of logging operations in the Province has reportedly been controlled by the local polices and military (Ruth Bottomley, 2000).

4.3. Swidden cultivation

Researchers indicated that because of the low growth rate of the upland people, the extent of the destruction of the swidden agriculture are not so high rate in the past (Ruth Bottomley, 2000).

However, population pressure comes from inside and outside. As the population raises in agricultural sectors, the forest becomes available for new cultivation. The subsistence agriculture had served as suitable strategy in the past, has become the major causes of gradual degradation of the watershed, as it has kept the majority of the farmers in a state of poverty and increases the dependency to the forest resources (G.B.Thapa and K.E.Weber, 1995).

The Department of Forestry (DoF) showed that the swidden cultivation in Ratanakiri done by 9,000 families (Phin Sopheap, 1994). Hence, the forests are beginning to be changed rapidly due to current political, economical and social condition. Swidden becomes a less sustainable system when forest resources become scarce or when people are relocated from their customary lands.

4.4. Agriculture expansions

The rich of red soil in this province promptly accelerated overwhelmingly of outside industrial plantations investment. According to the Ratanakiri Cadastral Office, there are more than dozen pending concession projects in the province, ranging form 100 to 20,000 ha (Sara Colm, 1997).

Because of the industrial pressure, the numbers of lowland Khmer are immigrating to the province, particularly near the market centers. Now land is being cleared and industrial crops planted on some of the other sites, while other unplanned sites waiting for the opportunities to re-sell at higher prices.

5. Major impacts of the forest degradations

5.1. Watershed impacts and alterations

Increasing the deforestation in the uplands of Ratanakiri province are recently resulting the causes of bad impacts to the watershed ecosystems in that area. Firstly, soil nutrients are being lost because of the transportation to the river. And as mentioned earlier, the expansion of swidden cultivation and commercial agriculture in that area has brought the depleting of soil properties particularly to aggravate the soil structures. Hence, the physical and biological watersheds are changed.

Secondly, erosion from the hilly and plateau areas are mainly affected to the down streams. Sedimentation to the Se San River is arisen worries in the present situation among the environmentalists. Researchers said that the sedimentation in the upland of Ratanakiri is a part of the conjunction with the Yali Falls dam’s impacts, which are built in the problems of water quality at the down stream (NTFP and Fishery Office, 2000). Some of rare fish species are reportedly disappeared.

5.2. Livelihood impacts

The settlers are depending on the forest as their subsistence living. The depletion of the forest is the sign of worsening their living condition. The intruding of the forest
concessions by the external people accelerate the highlanders to migrate to the other places. Culture and customary livelihood are altering in this certain social changes.

5.3. Land Conflicts

Highlander communities have always depended on common property resources, but there are some of the areas that are granting as concessions to private companies. The rights of these communities to access forest areas and collect forest products have become increasingly unclear. Conflicts over forest use are escalating between people, commercial timber operators, agricultural concessionaires, and protected area managers.

6. Toward establishment of community forestry in Ratanakiri province

6.1 General issues

The Ministry of Agriculture and Environment are currently preparing a draft community forestry sub-decree, which would authorize individuals or associations to access and use forest lands by entering contractual arrangement with the government. Community forestry has already been introduced in several pilot programs in Cambodia with the goal of ensuring the long terms security and stability of the forest covers. Due to the large scale of deforestation over two million hectares induced by logging, shifting cultivation and fire (FAO, 1997). The efforts will be viewed to this heavily situation.

The objectives of community forestry, in the upland area, are to emphasize the conservation, protection and subsistence use of the forest for the dweller people within the watershed basin.

In Ratanakiri province, after the forest policy is reformed, the forest conservation efforts are gradually appeared in some places of the province. The most involved agencies in this are NGOs, which play active roles in restoration of the forest issues. Within the NGOs’ programs, some community forestry is in the starting points and some are in the implementation processes.

6.2. Flow chart of participatory approach of stakeholders in community forestry

To establish the community forestry, stakeholders play very important roles in contributing the efforts in every stage to access to the formation of this.

Local people are the key actors, who proposed and raised the problems of the current situation within their communities. And NGOs are not only the facilitators who are identifying and coordinating the works, but also the good activists in supporting on technical and financial assistants. In the figure 1, NGOs are intimately involving in most of the step of forming community forestry. Alternatively, village, commune and district authorities are necessarily in supporting to the decision making processes. Further, provincial level is similarly as important role players to analyze, and decide the planning through adopting the national policies.
6.3. Management issues

The core management groups of the community forestry are formed by the villagers among the operational villages involved. These groups are called the central committees. The roles of these committees are to take responsible for overall management of the forest conservation. Yet, there is no clear or no written management plan yet of some community forestry. However, the central committee is discussing and agreeing in establishing the protection plan.

The protection plans are mainly addressed the identification of the boundary of the program locations. This will be beneficial to suppress the outside encroachments particularly the logging companies. In addition, they set up the patrolling teams in order to stop the illegal activities. Further, developing the fine standard for the illegal activities, that entered the forest. And this money will be supported for the forest rangers (Nup Sothea and Sun Kolvira, 2000)

6.4. Case study in Ya Poey community forestry establishment, O Chum district

In July 1996 the Non-Timber Forest Products Project (NTFP), in cooperation with International Development Research for Cambodia (IDRC) and the East West Centre of Hawaii began a study of customary use of land and forest in Poey Commune,
O’Chum District. This was the beginning of a pilot community forestry project targeting old growth forest and indigenous highland communities.

One forest plot was chosen for the pilot project. Comprising a total area of about 4,500 hectares, the forest, known as Ya Poey, is used collectively by six villages of Kreung ethnicity. The forest is divided into four sections.

In the spring of 1997 the six villages formed a Community Forestry and agreed on forest protection regulations, and the functions and responsibilities of the Association. Ya Poey Community Forest allows members to collect bamboo, rattan and vines for domestic consumption; to cut timber for domestic purposes with permission from the relevant authorities; to gather other NTFPs for commercial purposes within the rule of law and without destroying the forest; and to hunt small animals and fish using traditional fishing and hunting gears. The regulations prohibit burning, all kinds of timber exploitation for sale, clearing land for swidden and home gardens, mineral exploitation, fishing and hunting using modern technology and/or for commercial purposes, and hunting large mammals or endangered species. Twelve regulations were agreed upon and presented to the Provincial Rural Development Committee (PRDC) for consideration. The villagers submitted a request to the PRDC to approve a ninety-nine year concession for forest protection for the Ya Poey Community Forestry.

In early July the Community Forestry agreement for Ya Poey was approved by the heads of the Provincial and District departments of Forestry, Agriculture, Environment and Land Titles. According to the Governor, this process represented recognition at the provincial and local government level for Ya Poey Community Forestry. However, the Governor also requested that the Community Forestry Association submit an official request to the Royal Government of Cambodia (RGC) to recognize their community forestry. On the 4 July 1997 copies of the request were taken to the Ministries of Interior, Agriculture, the Inter-Ministerial Committee and the Forestry Department in Phnom Penh. The villagers are still awaiting approval.

7. Legislation and forest policy reforms

7.1. Forest policy reforms

The weaknesses of the forest policies are the server problems to address the aggravations of forest. One of the forest policy failures is the conflict between the sustainable economic development and preservation of social equity. The achieving of economic growth at pursuing forest based industrialization, or by converting forests into plantation, which will be depleted the forest, and lead to unsustainable development (Emmanuel D’ Silva, S Appanah and Dayananda Kariyawasam, 1994).

Emerging from the period of war and civil unrest has weakened the rule of law of forest sector. The assessment of forest policy in 1995 on the industrial forest concession is the step to improve the forest restoration in Cambodia (FAO, 1996). Further, Cambodia government has also taken another important step to improve an environmental management. These steps include the enactment in 1996 of the “Law on Environmental Protection and Natural Resources Management” and capacity building activities in the Ministry of Environment (MoE) and other relevant ministries, with assistance from the international donor community. Preparing the National Environmental Action Plan (NEAP) is the important step to ward improving environmental management in Cambodia.

Concerning to improve management of forest concessions, in July 1996 (MoE, 1998), the government established a steering committee on forest policy reform. And the steering committee, which has a permanent secretariat in the Department of Forestry and Wildlife is responsible for coordinating forest reform activities.
Community forestry activities are under operating in many area of Cambodia. The government is preparing the draft of the community forestry sub-decree, which would authorize individuals or association to assess and use the forest lands (Sara Colm, 1997). To support community forestry is as part of an approach to rural development and forestry resource management. Mechanisms will be initiated for the award of long-term tenure right to forest resources to local communities, indigenous people, and other targeted groups.

7.2. Institutional arrangement

Action for institutional reform in the forest sector are, (1) do better job with the present institutional structure, (2) share functions with private sector, NGOs and local communities and (3) Decentralize authority and accountability to the lower level of the government (Emmanuel D’ Silva, 1997).

Since the establishment of the Law on Environmental Protection and Natural Resource Management in 1996’s, the government of Cambodia developed the strategy to build up the environmental protection forces through strengthening the line-agencies and private sectors to perform the common role and integrated co-operation objectives. The efforts are now being directed towards building relationships and mechanisms for a coordinated approach to environmental management (Mok Mareth, 1994). At this circumstance, the arrangement of the forestry institution is well developed. After the forest policy reforms, the government is focusing to prepare the management platform of the department of forestry and identifying the roles of other sectors like NGOs and local communities to contribute in forest management.

8. Discussions

The evolution of the forestry sectors in Cambodia has hidden a long run of the history. After Pol Pot regime (19975-1974), all country’s sectors have been weakened because of the poverty. The forest has been fallen into the serious threats with the unstable political, social and physical environment. The improper management, policy failure of the forestry and corruption are the main agents to effect the forest degradation.

As mentioned earlier, the causes of the forest degradation are induced by the lack of the implementation of the policy, transparency. The illegal logging, concessions, agriculture expansions are underlying the server causes of forest depleting.

While Ratanakiri province, the upland people are undeveloped and uneducated, where extension services are inaccessible. The shortages of basic facilities and human resources of the central government are the implications to strengthen the awareness of the upland settlers. People are depending on the forest resource as their subsistent needs by continuing slash and burn without knowing the impacts of forest degradation to the watershed area.

After the forest policy was reformed, forestry in Ratanakiri province is under implemented gradually. Community forestry is initiated to that area, where mostly NGOs are strongly involved.

9. Conclusions

Ratanakiri province was one of the most heavily forested areas in Cambodia. The increasing of deforestation within the last many years was induced by politically unstable in the society. The extent of forest depleting has accelerated mostly in changing of the physical, environmental threats to the watershed area and social welfare of the upland people.
The forest policy, however, is needed to be improved and to be actively implemented to the right track in order to ensure the sustainable long-term use of the forest particularly in the upland area.

Establishment of community forestry in Ratanakiri province alarms of the needs of the government to finalize the sub-decree, recognize the community forestry as well as take into actions, that should follow the review of the Forest Policy Assessment in 1996 (World Bank, 1996). Furthermore, the present requirements to establish of the community forestry should be involved of the stakeholders in very management stage and the improving other relevant institutions. To do so, the community forestry will be successfully respected to in front of law.

10. Recommendations
To keep the community forestry project running smoothly in the future, NGOs, the government, relevant institutions and local authorities should remedy the following gaps:

- The Royal government should adopt the sub-decree of community forestry as soon as possible
- Provide professional training to the local community and the outsiders through seminars, and training courses
- The government should provide security, guarantee and find markets for the community's products
- Help to build or reconstruct small-scale irrigation so that the people can increase their production seasons.
- Help in agricultural development programs
- Promote and encourage the community's participation in forest management through providing rights to the community.

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Map of the study area