

Project for the Study on the Use and Supply of Timber/Wood in Cambodia

1. Objective of the project

The objective of project on the use and supply of timber is to carry out a study with the aim to foresee the demand for continuous domestic timber use in the country and to develop supply strategy as well as to seek for sufficient supply source to balance between the demand and supply.

The second five-year plan (2001-2005) of the Royal Government identified some activities to be implemented with regard to the forestry sector, particularly the Royal Government raised a priority activity that needs to be reviewed in order to improve the domestic supply of timber according to demand of people.

2. Technical report

2.1 Information collection methods

The information used for the project has been collected by two methods; the field information collection from 11 provinces and the collection of secondary data (reference documents).

2.2 Field information collection from province

Forestry Administration (formerly called Department of Forestry and Wildlife) in cooperation with Cambodian-German Forestry Project (CGFP/GTZ) conducted an assessment study on the timber demand in local communities in 11 provinces selected to represent the whole country including provinces with abundant forest resources (Kampong Thom, Steung Treng, Rattanakiri, Siem Reap), provinces with average forest resources (Battambang, Kampong Cham, Kampong Speu) and provinces with no forest resources (Takeo, Kandal, Svay Rieng and Phnom Penh). Since the study focused mainly on wooden house and due to limited selection of area for the study, the data collected from the study was also limited. Therefore, it is necessary for the team to seek for other complementary data in order that the study's results can be appropriately accepted.

Some other documents that were used to support the project include national census report, technical report of entities within forestry administration and other relevant documents.

2.3 Timber use

Due to the shortage of information in some areas during the study, the team used some data on population and housing from the National Census book for the purpose of the study. Meanwhile, results of the study by Sarah Burgess of CGFP/GTZ in cooperation with Forestry Administration were also analyzed by the team. The study team led by Sarah Burgess divided the study into two sections; the rural level and urban level.

a. Population

According to the national census in 1998, 56.4 % of the total population was under age of 20 years old with the population growth rate of 2.49% which indicated rapid growth of additional demand for timber, other resources and services in the future.

According to the above figure, the number of population can be calculated for the year of project implementation (2004) and subsequent years as below:

$$Fv = Pv [(1 + k)^n]$$

Fv : Population in the future or population in the year of calculation

Pv: Current population or population in the year of selection

Population by census in 1998 was 11 437 656 people

k : 2.49% annual population growth

n : Number of year to be calculated

According to the above formula, it can be calculated that the population in 2004 is 13 256 412 people.

b. Demand of timber for housing

Detailed information was collected sufficiently for analyzing the house within the studied villages according to year of construction and demand for timber for each house.

The national census categorized the construction of house into long-term house construction (using timber, plywood, cement, brick, stone, zinc, tile... as raw materials), medium-term house construction (using bamboo, palm leave, grass, thatch, Treng, Pror Bos, plastic sheet, clay.... as raw materials) without using any timber but using poles as

column. Since the study led by Sarah Burgess did interviews to people living in wooden houses, there were not enough data for analyzing the short-term construction (house made of leaves or thatch). Although the types and size of houses varied from area to area, they were in the same rural area. In general, the people who cultivate Chamcar along the river or stream (Chamcar people) have better living condition than those involved in only one type of cultivation such as rice.

The houses of Chamcar people are mostly large, built of wood, and different from houses of people cultivating rice which are mostly small, built of leaves or thatch, and was not recorded by the study team.

In general, the long-term house construction is mostly seen in the urban area (61%) whereas the short-term house construction mostly seen in the rural area (47%). The demand for timber and raw materials for other types of construction or housing nationwide depends on the economic and financial condition and the preference of people in the area.

c. Long-term house construction

The information related to timber demand for building houses with different sizes in the studied provinces indicated that the long-term wooden house construction in the downtown requires good quality timber with good care using paint or resin to protect wood from soaking by rain water, making wood not easily decayed and more durable. Owners of the long-term house mostly have better living conditions. This type of house is mostly large and used timber between 6.90 to 12.14 cubic meters per house (average timber volume found in 8 provinces is around 8.9 cubic meters). While the demand of timber for long-term house construction in rural area is between 4.70 cubic meters and 10.89 cubic meters per house (average timber volume found in 8 provinces is around 7.2 cubic meters)

d. Medium-term house construction

Previously, the Royal Government had a policy to provide the demobilized soldiers with house of medium size (4.6 m x 3.4 m, 2.1 m in height from the ground with height of wall rib of 2.4 m) to be built by using 2.7 cubic meters of timber per house. If we only calculate the demand of timber for building frame of house built directly on the ground with the size as mentioned above, excluding the wooden wall and floor, the volume of timber to be used is only 1.5 cubic meters. If the house is appropriately cared to protect the wall from sunlight or water, this type of house can be more durable. The common care is to paint the house to prevent water from soaking the wood.

e. Short-term house construction

It was found out that people living in the rural area mostly built short-term houses because the majority of them are too poor to buy timber to build their houses. In general, houses of people living in rural area are built of leaves or thatch, using poles as columns and bamboo as floor (for house built higher from the ground), or houses built directly on the ground with leaves roof without using timber. According to the above study, the annual timber demand can be calculated as below:

Table on timber use for building house in the urban area

Duration of use	Total number of house			Number of house that uses timber		Volume of timber to be used			
	Years	Total number	%	Number by type	%	Actual use of timber	1 house (m ³)	Total (m ³)	Volume/ year
50	255 982	60.5	154 869	66	102 214	8.9	909 705	18 194	
30	255 982	15.6	39 933	100	39 933	5.8	231 611	7 720	
15	255.982	23.9	61 180	100	61 180	2.7	165 186	11 012	
Total								36 926	m³

Table on timber use for building house in the rural area

Duration of use	Total number of house			Number of house that uses timber		Volume of timber to be used			
	Years	Total number	%	Number by type	%	Actual use of timber	1 house (m ³)	Total (m ³)	Volume/ year
50	1 733 846	30.4	527 089	66	374 879	7.2	2 504 727	50 094	
30	1 733 846	22.2	384 914	100	384 914	2.7	1 039 267	34 642	
	1 733 846	47.4	821 843	100	821 843	Seedlings			
Total								84 736	m³

Based on the above data, the annual demand of timber for building houses is estimated at a volume of 121 662 m³ in 1998. If divided by population, one person needs 0.0106 cubic meters of timber for building house per year. Thus in 2004, the total population of Cambodia, 13 256 412 people (statistics in 1998 was 11 437 656 people with the growth

rate of 2.49% per year), need around **141 000** cubic meters of sawn timber for building houses. This is the need for timber for building houses in 2004.

The demand for timber for building houses largely depends on the economic condition of people. If people have better economic condition, the demand for wood will be high. Even the permanent house construction made of cement in cities, wood is also needed for using as frame, scaffolding, window, furniture and commodity. The calculation above is made from both the new construction and repair. This calculation does not include the demand for public building construction (bridge, hospital, school, pagoda...).

2.4 Demand for wood for producing furniture and commodity

Beside the need of timber for building houses, Cambodian people need wood for furniture and tools for their daily use depending on the level of income of household and production source. In general, the majority of people living in rural area do not have furniture compared to those living in urban or downtown. The furniture mentioned here refers to items such as table, cupboard, chair, sofa, dish cabinet, closet, bed and other wooden items. The furniture is mostly produced in the urban area to make it easy for the city dwellers to buy. In fact, the furniture made of luxurious wood will be durable and sold at higher price, while the furniture made of low quality wood will not last long and sold at lower price, but it can be afforded by many people. The biggest market of furniture in Cambodia is Phnom Penh where the majority of furniture is imported from abroad and some are produced locally in various provinces such as Steung Treng, Kratie, Pailin, Siem Reap, Oddar Meanchey, and particularly in Phnom Penh, off Beung Trabek district.

According to the study, the total number of furniture production enterprise in Phnom Penh is 144 places (around 50% of the number in the whole country), where one enterprise uses around 2.5 “*plan*” per day (“*plan*” is a unit of volume measurement in Cambodia). Thus, for 284 working days a year, Phnom Penh needs around 10 500 cubic meters of wood for processing furniture (out of which around 20% is the luxurious wood). The furniture is also sold to people from provinces around the capital and some are exported abroad. By calculating the demand for wood for processing furniture for the whole country in one year, it requires around 21 000 cubic meters of wood.

2.5 Total demand

Referring to the above calculation, the total demand for wood in 2004 is about 162 000 cubic meters, and the demand will continuously increase according to both the growth of social economy and population growth.

Table on the estimation of population and demand for wood

Year	Population	Annual Growth	Annual need (m³)
1998	11 437 656	2,49%	139 786
1999	11 722 454	-	143 248
2000	12 014 343	-	146 815
2001	12 313 500	-	150 471
2002	12 620 106	-	154 218
2003	12 934 347	-	158 058
2004	13 256 412	-	161 993
2010	15 364 377	-	187 753
2015	17 374 904	-	212 321
2020	19 648 522	-	240 105
2025	22 219 657	-	271 524
2030	25 127 241	-	307 055

2.6 Wood supply

Between 1992-94, the Department of Forestry and Wildlife arranged the forest coupe for public bidding for domestic use, with the annual plan of around 150 000 cubic meters of forest coupe? while only around 60 000 cubic meters of forest coupe were actually implemented. The remaining area of forest coupe was cut illegally by people living near the forest for their own use. The demand for wood was still low for that period because the nation was getting itself ready for the transitional period of free market economy. Investment in other sectors just began and living condition of people was poor due to lack of income generating activities, therefore the need for commodity was not so strong as the last few years, and the demand for wood was not so high as now. Since 1995-96, the management of forest in the form of concession began, therefore the bidding of forest coupe for supplying domestic use was replaced with the supply through forest concession.

Since the forest concession focused mainly on the exportation of timber to overseas market, it resulted in problems in the timber supply for domestic use. Similarly, due to weak legal system and insecurity, the anarchical activities in forestry sector happened, prompting the Royal Government to adopt continuous regulations and allow the concessionaire to export the processed timber only. With this regard, the export of timber was banned and the concessionaire was ordered to sell around 20% of the amount of timber of its exploitation from legal forest concession for domestic use. Meanwhile, there were also other sources of wood supply such as wood confiscated as state property by the verdict of the court and was put for public bidding, wood harvested from development areas and other areas etc.

Since late 2001, the exploitation of forest in various forest concessions was terminated completely following the Royal Government's policy to review the forest concession management system consistent with the international standard. With this regard, all forest concessionaires are required to revise their strategic forest concession management plan. As a result, the domestic wood supply previously came from the forest concession faced difficulty since the concessionaires were not allowed to exploit their forest coupe by the government until the strategic forest concession management plan and other required plans are approved.

2.7 Source of wood supply

There are three sources of wood supply including forest concessions, forest coupe for bidding, and forest plantation or Chamcar. The supply from the forest concession is not enough for supplying the domestic use. It is necessary to look at other sources of wood supply such as the allocation of forest bidding coupe within the production forest outside the forest concession and state or private forest plantation or family forest plantation.

a. Forest concession

At present, the country has around 3.8 million hectares of forest concession that has potential for supplying timbers of all types. According to the study on the annual increment of volume, trees with 30 cm of diameter or bigger increased the diameter around 0.5 cm per year on average, or around 0.9 cubic meters per hectare per year if it is calculated by volume (in case of evergreen forest). Therefore, 250 000 cubic meters of timber (volume calculated from all the SFMPs) can be harvested per year from Cambodian forest as an appropriate and sustainable rate between 2004 and 2025 (Translation note: 250 000 cubic meters are much less than the potential of concession forests therefore does not affect the sustainability). After year 2025, the harvest can be renewed from the forest coupe that was exploited in the first cycle. The results of the analysis of strategic management plan of forest concession developed and submitted by various forest concessionaires to Forestry Administration show that the total exploitation ability to harvest from all forest concessions is around 250 000 cubic meters of timber per year. Most of this amount will be processed by the concessionaires for export and some others will be used to supply for domestic needs. Therefore, the supply of timbers for domestic use by forest concession will not be enough to meet the domestic needs. With this regard, Forestry Administration needs to look for other sources to additionally supply the local market through the allocation of annual forest coupe for bidding within the production forest outside the concession forest area, and state or private forest plantation as well as family forest plantation. The wood demand will increase steadily, and if there is no effort to plant more trees and increase wood supply in the future, then Cambodia will encounter wood shortage crisis as same as in other countries in the region.

b. Forest coupe for bidding

One of various options that can complement the supply of wood for domestic needs as mentioned above is the allocation of forest coupe for bidding within the production forest outside the concession area. Large area of production forest outside the concession forest was severely destroyed due to anarchical activities over the past decade. Therefore the plan to harvest timbers from the above mentioned forest area for domestic use would have some difficulties in identifying the technically appropriate areas for forest coupe that can provide sufficient yields of the harvest.

The “production forest” mentioned here refers to the former concession forest that was terminated by the government and forest area that was not put under concession forest. Some of those forests have not yet been exploited, thus Forestry Administration can study and allocate it for annual forest coupe for bidding.

According to the estimation, this type of forest coupe is able to supply from 30 000 to 50 000 cubic meters of timbers per year.

c. Forest plantation

The present forest plantations under Forestry Administration are small, and some harvestable plantations were decided by MAFF to sell to supply to the paper factory. Two main species planted are *eucalyptus* and *acacia*. The long-term local species were also planted.

Eucalyptus trees are planted by rural people for columns of housing. At present, the private *eucalyptus* trees planted by people have become mature and are being harvested by people for selling in provinces such as Prey Veng, Svay Rieng and Takeo. The Royal Government should not ignore such source of supply since it is one factor to reduce poverty in the rural area. The Royal Government should provide capital to private sector and Forestry Administration should invest in forest plantation, because the natural forest is gradually being decreased and lost and the productivity is getting lower, but the wood demand is increasing due to consistent population growth which puts more pressure on the nature. The short-term species should be planted mixing with local long-term species to ensure the permanent forest cover by harvesting the short-term species for use and keep the long-term species for harvesting for later use. The yields harvested from the forest plantation are higher than the yields harvested from natural forest. While developing large-scale forest plantations, it is necessary to produce more seedlings for distributing to people to plant along the road, rice field or chamcar. As we previously experienced, such tree plantations are a contribution to local market even if it is still at very low rate.

The plantation of *Eucalyptus* is productive and useable from the age of 8 years old (can be used as short-term timber) as necessary with appropriate low price. The cost for transportation and capital can be saved since the species can be planted near the consumption area. Thus the plantation of trees from now on can help facilitate the use of wood in the future.

3. Conclusion

Previously, the forest concession processed a large amount of timber from its exploitation for export, and kept around 1/5 of the total timber exploited (21% of the amount of exploited timber) for supplying to the domestic market. Such a supply was just a small contribution to help meet the domestic demand, and it could not totally resolve the problem. Because the supply is lower than the demand and the production cost is high, the price of timber in domestic market has increased. As a result, the illegal logging has increased in order to supply for the insufficient timber demand. Because gap of the price between the legally- and illegally-cut timbers is wide, the users consider to buy timbers at cheaper price. Therefore the legally-cut timbers could not compete with the illegally-cut timber. This is one of the problems happened in the past.

Recommendations

- Due to continuous increase of timber demand and to secure the supply of timber for domestic use, the Royal Government of Cambodia should continue to ban the export of non-processed timbers;
- The Royal Government should supplement its investment in tree planting in order to meet the future demand for timber, especially when the natural forest cannot sufficiently support the demand. Tree planting requires long period of time, therefore, it is important for us to consider planting trees from now on for the benefits of younger generation; and
- We should think of ways to increase the duration of timber use, particularly timber for building house, by explaining people about the advantages in using paint, preventing timber from soaking with water, sunlight and insect damage. If these can be prevented, we will be able to considerably reduce the cost as well as the annual use of timber.