

# REFLECTION AND PERSPECTIVES OF TIMBER HARVESTING IN NEPAL

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## **1. Introduction**

### **1.1 Country description**

Nepal is situated in the transitional zone between the eastern and western Himalayas. Nepal is a small hilly and landlocked country located in between India and China at 80° 04' to 88° 12' E and 26° 22' to 30° 27' N. It has an area about 14.7 million hectares. It incorporates Pale-Arctic and Indo- Malayan biogeographic regions and major floristic provinces of Asia, culminating a unique rich biological diversity. Although contributing only 0.003 % in global land area, Nepal possesses a tremendous proportion of diversity in terms of flora, fauna and ecosystem. In terms of biodiversity, Nepal holds the rank of 11<sup>th</sup> and 25<sup>th</sup> position in Asia and the world respectively.

Broadly Nepal is divided into five physiographic zones namely High Himal (20%), High Mountains (23%), Middle Mountains (30%) Siwaliks (13%) and the Terai (14%).

The total forest area of the country is 4.3 million hectares, which is 29.% of the total area of Nepal. It is estimated that annual demand of timber of the country is 2.5 million cubic meter. Out of which only 1.6 million cubic meter timber is supplied from national and community forests. Still 0.9 million cubic meter timbers are deficit. The deficit amount of timber is supplemented from private forest (MPFS, 1989).

### **1.2 Vegetation types**

With its great range of temperature and rainfall, Nepal is very rich in vegetation. The distribution of vegetation generally follows altitudinal zones. The environment within the vegetation types is not entirely homogeneous, especially due to the variation in aspect. Northern aspects are generally moist, shadier and cooler than southern aspects with western and eastern in between.

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The recent study carried by Tree Improvement and Silviculture Component (TISC) of Department of Forest has produced an Ecological Map of Nepal where seven ecological zones and thirty-eight vegetation types have been identified.

The following are the seven ecological zones that include thirty-eight vegetation types of Nepal

- a. Lower Tropical zone
- b. Upper tropical zone
- c. Sub-tropical zone
- d. Temperate zone
- e. Sub-alpine zone
- f. Alpine zone
- g. Trans-Himalayan zone

### **1.3 Distribution of forest**

Out of the total forest and shrub area, the forest of Nepal is broadly distributed at 27.2 % in Terai, 49.0% in Hills and 23.8% in Mountains.

Terai is almost flat plain land that stretches from east to west of Nepal. This portion of the country is mainly comprised of Sal forest (*Shorea robusta*). Sal is one of the most popular and desired species in Nepal because of its hardness and long lasting nature.

The Middle Hill forests have both Softwood (*Pinus sp.*) and Hardwood (*Schima, Castanopsis* and other species).

Like wise, mountains are mainly dominated by softwood species..

### **1.4 Accessibility**

Road networking system in Nepal is comparatively better in Terai (plain) as compared to Hills. An East-West Highway passes from eastern to the western border of the country through Terai touching foothills and crossing few places of lower Siwalik hills and valleys. There is very less road networking in the high mountain region, while most of the middle mountain districts have accessibility up to district headquarters. However, few hilly districts have good road networking within the district but are accessible only during the dry seasons. Similarly, about a dozen number of North-South Highways, cross-different hills and valleys and ultimately join East-West Highway.

### **1.5. Inception of commercial timber harvesting**

Five decades ago, huge amounts of country's valuable Sal timbers were exported to India. The exported timbers were mainly used for the purpose of railway sleepers in India. For the regular supply of such kind of timbers, central Terai of Nepal was linked with small-

gauge Indian railways. Only about one and half decade ago, His Majesty's Government of Nepal had banned the export of unprocessed timber to outside countries.

In 1970's, the Timber Corporation of Nepal (TCN) introduced mechanized system in harvesting operation. Chain saws, loglifters, uprooting dodgers, tractors with winch, trucks, and other capital-intensive machinery were introduced. They were abandoned gradually due to the unavailability of skilled labour, spare parts, and high production cost. Since then, hand tools such as two-man crosscut saw and simple traditional tools have been used for felling trees. Similarly, farm tractors are being used to transport logs from felling site to log-yard.

Similarly, in 1980's, the Forest Product Development Board (FPDB) imported chain saws from Germany to use in its project area, but were not frequently used because of the same problems like unavailability of skilled manpower, lack of spare parts, soaring oil price, and unsuitability for cutting big hardwood trees. However, FPDB has again started using chain saw for chopping small trees. For cutting big trees, FPDP mainly use two-man crosscut saw. Farm tractors, and trucks are used to transport logs. Sagarnath Forest Development Project (a plantation project) had also used some modern machines for harvesting purposes in the past.

In general a semi-intermediate technology is being practiced in commercial based enterprises for harvesting. However, not a single timber concessionaire exists in Nepal for large-scale timber harvesting and hauling business.

## **2. Harvesting approaches in Nepal**

Forest Act 1993 and Forest Regulation 1995 are the basis of managing the state owned and community forests. On the basis of Forest Regulation 1995, Forest Products Collection and Sales along with Distribution Manual, 2000 (including few codes of harvesting) have been introduced for the purpose of harvesting trees in Nepal.

### **2.1 Community forest approach**

All the activities associated with harvesting are conducted by the forest user groups themselves or on contractual work at close supervision of user group members. Very recently, the government of Nepal has enforced compulsory inventory of community forest before harvesting forest products. Likewise provision has also been made to levy 40% tax on the sale of timber outside user group. Most of the forest user groups in the hills have been found to be conservative in harvesting of trees protected by them.

In community forests, both in hills and Terai, the following criteria are adopted to harvest trees.

- Dead, dying and fallen trees
- Thinning as prescribed in management plan of community forest

- Extraction of trees as per annual allowable cut prescribed in management plan of community forest
- Trees that obstruct development work such as stretching of high-tension line of electricity, construction work like road, canal, etc.
- For the implementation of highly prioritized development work at national level.
- Timber needed for the construction and management of house and agriculture implements of Users.

## **2.2 Government managed forest approach**

In 2000, the government of Nepal had made a general decision "*not to cut green trees*". This decision brought obstacles for scientific forest management especially in Terai. However, green trees can be extracted from the forests where management plans have been approved for various development and forestry activities.

The following approaches for harvesting trees have been adopted in the government managed forests:

- Dead, dying and fallen trees
- Drifted woods and trees brought by floods and landslides
- Trees are harvested from rehabilitation area, high-tension electricity line area, road and other project construction sites.

The department of forest approves periodic district forest management plan (including harvesting plan). The plan is generally not implemented as per schedule, because of various problems, out of which major problem is concerned with the budget. The allocated nominal budget is not sufficient to implement the annual harvesting plan. Furthermore, the nominal budget is also not released in time.

## **3. Prevailing harvesting practices**

### **3.1 Harvesting in Hills**

In the hills, timber is harvested from community forest or from the forest owned and protected by individual family. Very few patches of forest are recognized as private forest in the hills. Majority of the forest patches protected by individual family is not officially considered as Private forest. However, the products of such forest are utilised by the people for their domestic consumption.

The requirement of timber in the hills is very small; mainly the timber is used for domestic and few development works. Villagers as well as contractors still adopt traditional harvesting system. Conventional tools like axe, sickle (*khurpa*) and two men crosscut saw are the general tools used for felling trees. In the hills, logs and fuelwood are manually transported. Big size log is splitted into small size timbers and are transported manually by stout male. In few Himalayan districts, like Humla and Jumla, big size logs are also dragged downhill by a group of people with the help of rope binded at both the edges (forehead and backside).

### **3.2 Harvesting in Terai**

Harvesting in Terai (plain) is relatively advance and easier due to the availability of semi-skilled manpower and easy availability of felling tools. As Terai is closely bordered to India, the availability of semi-skilled labours is not a major problem. Depending upon the distance and amount of timber hauling, different means of transportation are used. Mainly, tractor, truck and bullock carts are used for transporting timber. Draught animals (oxen and male buffaloes), bullock carts and tractors are also used to drag out logs from interior part of the forest to the road head or dumping site. Application of machine for harvesting of timber is not a very common phenomenon in Nepal.

## **4. Cost associated with forest harvesting**

It has been estimated that in Terai and inner-Terai of Nepal the cost of felling tree, de-branching, debarking, chopping into logs, collection and transportation of timber from the felling to the yarding site incur approximately 15-20 US\$ per cubic meter. This cost is further discounted or compounded in accordance with the distance between yarding and the felling site. More is the distance; more will be the cost per cubic metre. The main reasons behind cheaper cost per unit of timber harvesting in Terai are because of flat land, cheap labour wages, high unemployment rate in the rural areas, easy availability of semi-skilled local or Indian labours. Likewise, dragging of logs is mainly done by bullock carts and tractors. The rate of labour and transportation is fixed by district level authorities and is revised every year.

In the hills, the cost of harvesting is relatively higher due to the difficult terrain and high wage rate of labour. Transportation is done manually. Skilled or semi-skilled labour is not readily available. Huge timber in the form of logs are not feasible to be transported. Therefore, the timber is converted into small size at the felling site and are transported by men. Therefore, the cost per unit rises eventually. The cost of felling trees and activities carried thereafter i.e. to bring the logs, planks upto the road heads ranges between US\$ 40-50 per cubic meter. The distance and difficult terrain further compound this rate.

## **5. Strengths and weaknesses of harvesting approaches**

### **5.1 Strengths in Community forests**

The harvesting approach in community forest has following strengths:

- It is a participatory work of users thus, per unit rate of harvesting is cheaper.
- It creates local employment and income generation to local poor.
- The forest user groups adopt transparent process in harvesting work.
- Harvesting is done based on actual demand of users.
- It fulfills the actual needs of users.
- The Community forest user group (CFUG) is very much aware regarding protection of regeneration during harvesting.
- Activities on tree thinning are done very precisely according to the action plan.

## **5.2 Strengths in Government managed forests**

The harvesting approach in government managed forest has following strengths:

- There are strict government directives and guidelines for timber harvesting.
- It handles a large scale harvesting of timber.
- It is done in an organized or semi-organized manner.
- Relatively improved tools and machines are used in harvesting.
- Harvesting is normally conducted under technical supervision of forestry professionals.
- Harvesting records are well maintained in regard to dates, quantity, location etc.
- Harvesting is done to fulfill the local markets and balance the market price.

## **5.3 Weaknesses in Community forests**

The harvesting approach in community forest has following weaknesses:

- Safety measures are not adopted.
- No insurance for workers involved in harvesting work.
- Harvesting is done in a small scale, basically to fulfill their subsistence demands.
- Generally unskilled or semi-skilled manpower are only used.
- Very traditional practices are adopted in harvesting.
- Mechanized or improved harvesting tools are not used.
- There is low supervision of forestry technicians because limited forest technicians cannot supervise large number of community forests in the hills.
- Records of harvesting are not maintained properly.

## **5.4 Weaknesses in Government managed forests**

The harvesting approach in managed forest has following weaknesses:

- Safety measures are not adopted as per government directives.
- There is no insurance related to injuries and life for the workers involved in harvesting.
- Local contractors and middlemen are generally involved but they are also not well-skilled
- There are no organized companies equipped with improved tools and techniques for harvesting.
- Improved and mechanised tools are not used.
- Training on harvesting is not given as due importance. Forest depots are not maintained to minimize losses and quality.
- There is no grading system for timber. The same basic price is fixed for all quality timber.
- Forest road networking is very limited.

## 6. Stakeholders involvement

Government agencies: Ministry of Forests and Soil Conservation, Forest Department, Regional Forest Directorates, District Forest Offices, Timber Corporation of Nepal Limited, District Forest Products Supply Boards, and Forest Product Development Board are the government stakeholders.

Similarly, Forest based industries, Forest User Groups, Private Forest Owners, Contractors, Middlemen, Truck and Tractor Owners, Labours are non-government stakeholders.

## 7. Impacts of timber harvesting

A. The following are the **positive impacts** of timber harvesting in Nepal:

- A huge amount of revenue is generated every year from timber harvesting. It is estimated that annually almost 7 million US\$ is generated from timber harvesting alone from the government managed forest of Nepal.
- These days, the timbers are not imported to Nepal, so fulfillment of timber demand of the nation is supported from different types of forests of the country.
- Timber harvesting increases the fund of Community forest user groups, which in turn have worthy contribution in various development works.
- Though raw timber is not exported from the country, still semi processed and processed timber i.e. veneer are exported, this in turn fetch good amount of royalty to the nation.

B. There are few factors which can be considered as **negative impacts or act as barrier** for timber harvesting in Nepal. They are as under:

- Export of timber from Nepal has been banned since one and half decade ago, this policy has reduced revenue earning from the forest.
- Forest management plan, which also includes annual harvesting plan, is not executed as per target because of limited budget allocation.
- Road networking is very poor in the hills.
- There is limited market of timber within the country.
- Government has also banned on harvesting of few valuable timber species from the forests.
- There is a long bureaucratic procedure in harvesting process. This type of practice discourages the healthy competition in bidding of timber.
- From conservation point of view, estimated amount of Annual Allowable Cut (AAC) in the forest of hills is not feasible to be harvested.

## **8. Conclusions**

Conventional harvesting tools and techniques are mainly practiced in the hills as compared to Terai. Code of harvesting in terms of "Forest Product Collection, Sale and Distribution Manual, 2000" has been approved by the Ministry of Forest and Soil Conservation, but it has not been materialized properly in the field.

Forestry staff, harvesting workers, private sectors also lack training and orientation in regard to harvesting practices. Proper attention has not been found to be given on the impact created in the forest such as damage and loss of regeneration.

Codes of harvesting developed by the Ministry of Forest and Soil Conservation should be brought under discussion with all the stakeholders so that it can be materialized easily at all levels. To adopt the codes of harvesting, it requires orientation and training programmes both at government and non-government level. Like wise it needs training, equipment and commitments to improve the efficiency of workers and staff.

## **9. Recommendations**

The following recommendations are based on practical experiences for effective and efficient harvesting practices in Nepal:

- Cheaper and appropriate means of extraction like "skyline ropeway system" should be applied for the extraction of timber from hills to yarding sites.
- As Nepal is very rich in river and streams it should be potential and cheaper means of timber transportation in hills and terai too. Therefore, transportation of timber through river and stream should be encouraged.
- In hilly area, axe should be replaced by saw and other improved tools and techniques to reduce losses and get high output of timber products. Similarly, wood wastage should be reduced by replacing local sickle (*khurpa*) by bow-saw.
- Harvesting workers both in community forest and government controlled forest should be made committed to maintain the codes of harvesting practices.
- The workers that are engaged in harvesting activities should be oriented to reduce negative impact on forest.



## **References**

HMG (1993): Forest Act, His Majesty's Government of Nepal.

HMG (1995): Forest Regulation, His Majesty's Government of Nepal.

MFSC (2000): Forest Product (Timber/Fuelwood) Collection and Sale Manual. Ministry of Forest and Soil Conservation.

MPFS (1989): Master Plan for Forestry Sector. Ministry of Forest and Soil Conservation. Kathmandu

Shrestha, R.B. (2000): Appropriate Harvesting Technology: an Overview. Ban ko Jankari (A Journal of Forestry for Nepal), Vol. 10, No. 2.

Tree Planting Zones in Nepal (2001): TISC Technical Paper No.103, Ministry of Forest and Soil Conservation