

UNDERLYING CAUSES OF DEFORESTATION AND PARTICIPATORY FOREST MANAGEMENT POLICY IN NEPAL

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I. INTRODUCTION

Nepal has about 54 percent of surface area under vegetation cover. Different type of vegetation cover and other information is as follows:

Table 1: Profile of Nepal

Type of Land	Area/number
Total Land	14.7 m. ha
Cultivated land	3 m. ha (21%)
Forest Land	5.5 m ha (37%)
Grass Land	1.75 m. ha (12 %)
Shrub Land	0.71 m. ha (5%)
Others	3.7 m. ha (25 %)
Human Population (1981)	15.02 m.
" (1991)	19.50 m.
" (1997)	21.66 m.
growth rate (1991)	2.1 %
Literacy (1991)	39.6%
Men	52 %
Women	16 %
Livestock (1985)	6.2 m.

Source: MPFS 1989 and Central Bureau of Statistics 1996

Percentage of forest area and forest biomass in different ecological regions of Nepal is given in the table 2 below.

Table 2: Forest Area and Forest percentage In Different Ecological Regions

Ecological Zone	Forest Area (million hectare)	Percentage (%)
High Himal	3.3	22.4
High Mountains	3.0	20.5
Middle mountains	4.4	29.9
Siyalike	1.9	12.9
Terai	2.1	14.3
Total	14.7	100

Source: MPFS 1989

Phytogeographically, Nepal is known to contain plants and animal species as found in different ecological regions. A total of 118 ecosystem, 75 vegetation types and 35 forest types have been identified. The vegetation contains more than 6,500 species of flowering plants, over 1,500 fungi species, over 3,500 species of lichens. Equally diverse is the range of fauna. It is estimated that and over 6,000 species of moth are found in Nepal.

II. CAUSES OF DEFORESTATION

Deforestation, meaning changing forests into other land use, and forest degradation, meaning deteriorating in quality of forests, are one of the biggest environmental problem in Nepal. Although not scientifically, trees have been cut from long time for different purposes like increasing agricultural area, fulfilling local demand of firewood, fodder, timber, leaf litter and agricultural implements as well as for resettlement programs; and building roads and reservoirs for hydro electric projects.

In Nepal, most of the families depend upon agriculture for their livelihood. Their agriculture is very subsistence. The main components of the subsistence farming specially in the Hills of Nepal are land, humans, livestock and forest. All these components are very inter-related with deforestation and forest degradation. For the purpose of analysis only these cause will be spelt. Out of those different causes, main causes of deforestation and degradation are explained below.

1. Agricultural Production

Deforestation in the Hills of Nepal has a long history of two hundred or more years. In the pasts, there were hundreds of independent territories in the area, now called Nepal. All Kings of those territories perused expansion of kingdom. To achieve this objective, they expanded the armies, but this led to greater demand for arable land to feed their soldiers. Mahat et. al (1987) claims that deforestation in Nepal has a long tradition that has been observed by the government since the eighteenth century. Forests, which were given to warriors as a reward, were used for agriculture to continue expansion of the army. There was also a need for growing more food when the kingdom went on expanding on the seventeenth and eighteenth century. At that time also many forest land were converted into agricultural land. In 1768, there was a royal order decreeing that all lands convertible into fields should be reclaimed and that if any homesteads were built on such land they should be removed. Presently also main basis of Hill farming is compost of leaf litter brought from the forests. On the basis of the study Mahat (1987) claims that 50 percent of the leaf litter produced by the forest are removed annually for composting. So, agricultural production is the biggest reason for forest degradation in the Hills of Nepal. This argument is also supported by Bajracharya (1983) on the basis of his study on a village in eastern Nepal.

In the Terai, deforestation has continued through the present. After control of malaria, and until 1965, the government allowed deforestation in the Terai, the southern plains of Nepal, to raise land revenue. At the same time government of

Nepal launched the resettlement program for the poor and natural disaster affected people, who had no land. So large area of forest in the Terai were opened and cleared for resettlement. At the same time government wanted to resettle the poor people, who were encroaching on the forests in many parts of the Terai. From 1964 to 1985, about 570,000 hectare of forests land in the Terai and Siwaliks has been converted for agriculture production (MPFS, 1988). Hence, agricultural expansion in Siwaliks and Terai is the biggest reason for deforestation in Nepal.

2. Firewood

In Nepal, for all household residing in the Hills and many residing in the cities, firewood was the only fuel available for heating and cooking. In cities also until 10 years ago, people could not afford kerosene, electricity and liquid petroleum gas. It is reported that firewood accounts for more than 90 percent of all wood consumption. (MPFS, 1988). However, only scattered and isolated efforts have been made so far to access the quantity and pattern of fuel biomass used by rural populations. Fox (1984) says that firewood consumption is influenced by family size, cast and season. Due to change in temperature, altitude of the village also effects the amount of per capita firewood consumption. Master Plan for the Forestry Sector estimates 75 percent of firewood come from the forest and shrub land. Intensity of firewood availability varies from location to location. Its availability is big problem in and around the cities where there is concentration of population. However, recently many households in town have switched to kerosene from the firewood.

In brief, for majority of the people the only alternative available was firewood. But the estimate of per capita consumption of firewood varies greatly from 0.1 cubic meter to 6.67 cubic meter per annum, however, the distribution is clustered around 1.0 cubic meter (Thompson and Warburton, 1988). This resulted demand of 10 million cubic meter of firewood ten year ago and 18.5 million cubic meter presently (NPC, 1994). Demand for firewood is directly related to population size and Nepal is among the world's least developed countries with a high and rising density of population. Rural population density reaches over 1,500 square kilometer of cultivated land and there are districts in the Mid Hills with even higher densities.

3. Livestock

In the Hills of Nepal animal rearing is integral part of human life. They keep animals like cattle, goats and sheep for dung, milk, meat and cash. Livestock play a major role in nutrients recycling, draft power, transportation, food and cash income during the emergency. In different altitude of Nepal, there are many species, which are used as tree fodder. Hopkins (1987) reported more than 60 species of fodder trees in Nepal and lopping of these trees to feed animals is very common.

However, there is also excessive free grazing in the forests and browsing continues as a part of traditional livestock management in the Hills. These excessive and uncontrolled grazing has also resulted serious problem by

destroying new regeneration and plantations. Forest fire is also related with livestock because many herdsmen make deliberate fire in anticipation of new tender grasses, which will be palatable to livestock.

The population of these animal in 1991/92 was 17.2 million including sheep and goats, almost equivalent to that of humans (NPC, 1994). Such large herd demands a large supply of grasses and tree fodder. Fodder is especially necessary in the winter when the grass is dormant. So, the demand for tree fodder is also a big factor in forest degradation (Bajracharya, 1983; Macfarlane, 1976; Mahat et. al, 1987). At present, local people are committed to cutting trees for fodder, firewood and other tree products for their survival. A survey on different sources of nutrients availability shows that about 50 percent of total digestible nutrients come only from the forests (Rajbhandari and Pradhan, 1991).

4. Unemployment

Unemployment also increases deforestation especially in the areas where there is market for firewood. For many people in the vicinity, going into the forests, cutting firewood and selling it in the town is the only survival alternative available. It is still surprising to see local people bringing hundreds of loads of firewood to sell in the town. This is also true for many towns in the Terai of Nepal. Similarly, a group of villagers gather and go to forest to bring timbers. The timbers sold in the towns illegally are much cheaper than the timber sold from legal channels and illegal channels.

Due to the problem of unemployment not only the firewood and timber but also other forest products like orchids are collected and sold illegally. Similarly endangered wildlife products such as hides, skins, horns, bones, musk are collected and sold illegally in different places.

Table 3: Total Digestible Nutrients (TDN) Availability from Different Sources in '000 metric tons

Ecological Zones	Cultivated land	Pasture land	Forest land	Shrub land	Others	Total	Percentage
Terai	1,132.2	28.8	333.3	0.5	1.08	1,501.9	23.0
Siyalike	263.2	11.9	839.4	10.4	—	1,124.9	16.3
Mid Hills	539.1	169.8	1,036.9	139.2	0.6	1,886.6	28.9
High Hills	105.0	294.1	944.7	61.5	0.7	1,406.0	21.5
Mountains	21.3	482.3	89.5	22.6	0.1	615.8	9.4
Total	2,060.8	986.9	3,250.8	234.2	2.4	6,534.1	100
Percentage	31.5	15.1	49.8	3.6	0.0	100.0	

5. Tourism and Trekking:

Tourism is very popular in Nepal, which is one of the main source of income for the country. Trekking is one of the popular activity of tourists who come in Nepal. Although tourism has very positive impact in local people but their impact on forest and biodiversity is serious. Tourists follow certain tracks for their trekking depending upon the duration of trekking. Annapurna area is very famous for long trekking of two to three weeks. Similarly, other short duration trekking routes like Helambu is famous among tourists. Due to arrival of tourists, there are many small teashops, hotels and lodges in concentrated along these trekking routes. These hotels and lodges demand big amount of timber for construction and firewood for cooking and heating. As the result, the forests along these routes are heavily damaged. It was mandatory to all trekkers to take amount of kerosene necessary for their cooking, heating and lighting purposes by the government of Nepal. Although there are strict rules and regulation and mitigation programs to protect forests, deforestation and degradation still is continuing in these areas.

III. EXTENT OF DEFORESTATION

Assessment of deforestation is not possible before 1964. Because, for the first time, forest survey was carried out by Forest Resources Survey Office of Department of Forests only in 1964 on the basis of aerial photographs and forest resources maps were prepared only after 1964. In that survey, land with 10 % or more crown cover has been classified as forestland. So, it is forest degradation until crown cover is reduced to 10 percent and when crown cover is reduced below 10 % then it is deforestation. Due to the tremendous population pressure there is higher need of firewood, fodder, timber and agricultural implements, reducing density of forests and resulting wide spread forest degradation in the Hill of Nepal. A study done by Water and Energy Commission shows that percentage of crown cover is reduced significantly. Forest of the Hills which has the crown cover of more than 70 % in 1964-65 is reduced from 40% to 13% in 1978-79. Similarly in Siwaliks and Terai such forests are reduced to 12% from 41% and 37% from 44% respectively, which is indicated in the Table 4 as follows:

Table 4. Change In percentage of Crown Cover from 1964 to 1978

Region	Crown Cover					
	10- 40%		40-70%		>70%	
	1964	1978	1964	1978	1964	1978
Middle and High Mountains	18	35	42	52	40	13
Siwaliks	17	11	42	77	41	12
Terai	10	7	40	50	44	37

A nationwide land use survey was conducted by Land Resources Mapping Project in late seventies. The survey was based upon 1975 satellite images and 1978 aerial photographs. This survey has also analyzed forest resources and forest resources statistics was also published. Changes in forest area of natural forests according to these surveys are as follows in Table 5:

This shows that forest area in the High and Middle Mountains has not decreased significantly. But forest degradation is wide spread in the Hills. However, the rate of deforestation is high in the Siwaliks and Terai. From 1964 to 1978 net loss of forest area is 380,000 hectares most of which are in the Siwaliks and Terai. This result is also supported by the many analysis done by such as Water and Energy Commission (Neild, 1985) and Master Plan for the Forestry

Table 5. Change In Area of Natural Forests 1964 - 1979 (In '000' ha)

Regions	1964-65	1978-79	Area Change	Percent Change	Annual % Change
High and Middle Mountains	3,950	4,000	+50	?	0.1
Siwaliks	1,740	1,475	-265	-15	-1.2
Terai	780	590	-190	-24	-2.0
Total	6,470	6,080	-380		

Sector (HMG/ADB/FINNIDA, 1988 e). These figure are against the original misperception of continuing high rate of deforestation in the Hills of Nepal which many agencies has conceived such as (Eckholm, 1978).

FRIS has also done a National Forest Resources Inventory using satellite images and field verification. This report also shows some reduction in area of forest as well as area of woody vegetation. The Table below presents brief status of woody vegetation in 1978 and 1992 and 1996 in three regions. From above analysis, it is clear that deforestation and degradation can not be generalized for entire Nepal. Hills have the problem of degradation; and Terai and Siwaliks have the problem of deforestation.

According to the estimation of Master Plan for the Forestry Sector (HMG/ADB/FINNIDA, 1988 b), by 1985 Nepal should lost about 570,000 ha of forests most of which is in Terai and Siwaliks.

Table 6: Percentage of Woody Vegetation in Different Year

Region	1978/79	1992	1998
Eastern	44.3	37	—
Central	48	42	—
Western	30.3	—	27.3

IV. SOCIO-ECONOMIC AND ENVIRONMENTAL IMPACTS OF DEFORESTATION

Nepal has experienced a full range of the known deforestation-related problems like shortage of firewood, timber, tree fodder and medicinal plants, soil erosion, land slides, floods, siltation of lakes and reservoirs and increase in peak flow and decrease in minimum flow. Further more in some places, some additional local symptoms of deforestation are evident.

1. Decrease in Firewood Production

Firewood and timber deficit in Nepal is estimated at 2.6 million tons and 0.25 million cubic meters per year respectively. This is estimated to increase to 3.5 million tons and 1.2 million cubic meters respectively, by the year 2000, if current practices continue (Master Plan, 1988). Now it is common for many villagers to walk from morning to evening to collect a back load of firewood. Women's labor has increased by 1.13 hours per day particularly for collection of firewood, tree fodder and grasses (Kumar and Hotchkins, 1988). The ratio of firewood demand to supply is estimated as 2.3:1 in the Mid Hills and 4:1 in the drier Far-western Hills (Blaikie 1988).

2. Natural Disaster

Every year there has been landslides and floods, resulting in human and animal death and causing damage in millions of Nepalese rupees. According to Ministry of Home Affairs, in an average 300 lives are lost, 8600 homes are washed and 12,000 to 15,000 hectares of arable lands are washed away every year in Nepal by landslides and floods (NPC, 1991). These are at least a partly a consequences of deforestation.

3. Decrease in Agriculture Production

In Nepal agricultural productivity has not increased in spite of government's effort in agricultural extension (NPC, 1991). Farmers used to put composts made from dung and old animal bedding material. The amount of composts was decreased. Because, firewood is less available, both dung and leaf litters are being used to cook the food. Farmers say that the size of the corn cob and wheat grains has reduced due to decrease in fertilizers. In khet fields where farmers show four manas of seeds and used to get one muri of paddy, now they need areas with eight mans seeds to get one muri (Blaikie, 1988).

If households were able to get kerosene and chemical fertilizer, then deforestation and forest degradation might not be so clearly linked to land degradation. It is estimated that for sustainable hill farming in Nepal, more forests land is needed to get sufficient fodder and animal bedding which will ultimately used as fertilizer.

4. Decrease in Biodiversity

Loss of biodiversity is occurring at all level; ecosystem and communities are being degraded and destroyed. Species are being driven to extinct due to deforestation and other activities. Deforestation has more effected plant diversity. Even if some threatened species survive, its genetic diversity is widely reduced due to deforestation. For example, many kind of orchids are on its way to extinction. But, due to lack of baseline data magnitude of such loss is not exactly known.

5. Damage to Cultural Heritage of Indigenous People

Damage done by deforestation to the unique cultural heritage of tribal people is irreparable. Chepang tribes in the Mid Hills of Nepal used to make wooden utensils and barter those with cereals, now their way of life is forced to change either into agriculturist or laborer. Valli and Summers (1993) explain that people in the Himalayas used to take Yak and sheep to Tibet and south to Nepal for trading salt, cereal and clothes etc. Because few forests are left, local people in different trading route campsites hesitate to allow grazing for animals or give permission for firewood necessary for traders. So, it is believed that those traders have to change their life style greatly before construction of road forces a change in their life style. Valli and Summers further adds

A caravan, traders with groups of animals carrying food stuff, burns much firewood in a day as villagers burns in a week. The caravanners pay two rupees per sheep for pasture right to DFO but destruction is much higher. They are extremely discouraged due to CF program.

Today, thousands of hectares of mountain lands are even without grass leading to extreme gully erosion. Thus deforestation is not only threatening the survival of the people of Nepal but also jeopardizing the beauty of magnificent the Himalayas. So, deforestation in Nepal results degradation of scenic beauty of the Himalayas. In long run, deforestation and forest degradation could also damage the eco-tourism of the country e.g. trekking, hiking and rafting, etc.

V. STRATEGIES APPLIED BY THE GOVERNMENT

1. MPFS Strategy

His Majesty's Government of Nepal has applied different strategies to cope

with deforestation and land degradation. Master Plan for the Forestry Sector has mentioned following strategies:

- reduce consumption of forest products which include use of energy saving devices, waste minimization, use of alternate species, research and development for reducing consumption, etc.
- increase production of fuel-wood, timber, fodder
 - by promoting community forestry, private forestry, leasehold forestry
 - by initiating intensified management of national forest
 - by giving higher priority to community forestry
- make effective harvesting and distribution by freeing internal trade and transport of timber and fuel wood from all restrictions, promoting internal market system etc.
- improve pasture and livestock management by integrated forage development program and coordinated research
- adopt decentralization policy by entrusting users for protection and management. Empowering users by means of training and extension programs
- generate employment in local level for poor and land less people from different forest development works
- promote private involvement by
 - Updating legislation
 - Reducing land tax on private forests
 - Increasing land ceiling for private forests
 - Supporting private entrepreneurs by providing technical assistance, training and extension

2. Ninth Plan Strategies

Strategies mentioned in proposed Ninth Plan (1997-2002) are as follows:

- Adopting participatory forest management by empowering local user
- Initiating ecosystem based holistic management approach
- Sustainable increase in production and poverty alleviation, not utilizing forests for non forestry purposes
- Establishing a revolving fund for forest development from 25 percent of the income received from sells of forest products.
- Strengthening inter sectoral coordination for better efficiency
- Involving private sector and non governmental organizations in forest development

3. Other New Strategies

1). People's Participation

Most of the development programs in Nepal are also related with upliftment of the poor. Almost all forest management practices effect local people. Because forest development is also going to benefit local people, they take keen interest on forest development and contribute their labor. So, people's participation is recognized as one of the very important basis of sustainable forest management. Originally more rights and responsibilities for the local people were given only in the community forestry. Later on, this idea is also incorporated in watershed management. Recently, people participation became an important integral of biodiversity conservation in conservation area management and buffer zone management. Now, local user groups are formed in watershed management, conservation area management and buffer zone management. In these user group appropriate share to woman representation is also considered.

2). Income Generation

Because, most of the villagers in Nepal are very poor and depended in natural resources, their involvement is necessary in all development programs. However, they can not contribute unless their problem of hand to mouth is solved. So, to make a real successful project, income generation must be one of the basic components of the programs. Considering this, Ninth Plan (1997 - 2002) of HMG has taken poverty alleviation as the prime objective. Hence, income generation component is included in many forest development projects wherever it is possible.

3). Involvement of NGOs

Forest and biodiversity resources of Nepal are very scattered in the country. Even endangered animals like snow leopard, musk deer etc. are found in High Mountain region. It is just not possible to mange those resources by the government alone. So, non-governmental organizations are mobilized as necessary for sustainable forest resource management. King Mahendra Trust for Conservation of Nature is a prominent national NGO involved in forest resource management in Western Nepal. This NGO is managing 7,629 square kilometer of land as Annapurna Conservation Area Project from past 11 years. Similarly, international NGOs like The Mountain Institute, WWF, IUCN etc. are involved in biodiversity conservation and sustainable forest resource management in Nepal.

4). Sector Program Approach

Involvement of many donors in the same area often creates problems due to different norms followed by different donors like additional donor employed staff, different levels of incentive etc. So, recently HMG/MFSC is giving priority for involvement of one donor in one area either in component-wise or in region-wise. DANIDA is involved in Natural Resource Management Sector Assistance Program (NARMSAP), where Community Forestry, Watershed Management, Tree Improvement Program and Institutional support components are implemented. Similarly, USAID is implementing Community Forestry, Biodiversity and Income

Generation component in Mid Western Development Region of Nepal where no other donors are working. Similarly, the World Bank is on the way to support the government managed forest resources in the Terai which is not yet managed systematically. The government managed Terai forests is one of the biggest potential financial resource of Nepal.

5). Coordination among Donors and Government

Being a small land locked country, Nepal has maintained relations with many countries and organizations in the world as its development partners. In such situation lack of coordination with donors could result inefficient use of resources and duplication of the programs. To avoid such complications MFSC has formed Forestry Sector Coordination Committee (FSCC). All donors are members of the committee, FSCC discusses problems and give advice to the government, maintains uniformity in program implementation and also avoids duplications. The FSCC meets twice every year; however, there are small working groups and sub groups which meet often as necessary.

VI. SOLUTIONS AND PROGRAMS TO SOLVE DEFORESTATION AND DEGRADATION IN NEPAL

1. Community and Private Forestry Program

As the priority was given for community forestry development program, more efforts were put for its development. Most of the donors are involved in the community forestry programs. As the result, one of the best forest legislation were enacted in Nepal empowering local forest users and by July 1998, 6,658 forest user groups were formed to manage community forests. They are managing 0.45 million hectares and 733 thousand households were involved. However, actual participation and forest areas managed by users are much more higher than the record due to poor communication information system.

In the past basic objective of community forestry was sustainable management of forests to fulfill basic need of local user only in forest products. However, recently the objective is widened to include forest based income and employment generation activities as basic need for rural life support system and conservation. So, new activities in community forestry also include management of non-timber forest products mainly medicinal and aromatic plants.

1). Initiation of Participatory Forestry in Nepal

National Forest Policy 1976: In Nepal, for the first time people's participation was thought necessary only in 1976. This is outlined in the National Forest Policy published by the Department of Forests (DoF). That policy mentioned that people's participation would be sought for protecting forests from fire, theft and abuse. This was first documented official publication in Nepal, which has envisaged people's participation in forest development. Before this document all official reports had not felt need of people's participation. Forest management was confined to forest protection through policing role.

1978 Amendment on Forest Act 1961: Two years after the publication of National Forest Policy 1976, Forest Act 1961 was amended. This amendment added clause 29 which gave, for the first time, right to government to handover parts of national forest as community forest (as called Panchayat Forest and Panchayat Protected Forests) to local people as the owners of the forests for protection, management and production of forest products for their subsistence need of firewood, timber, fodder and other forest products.

This amendment was followed by enactment of Community Forest Rules 1978 (as called Panchayat Forest Rules 1978 and Panchayat Protected Forest Rules 1978) which gave authority to Conservator of Forests to handover piece of government forest to local panchayat, a smallest elected political unit existed in villages. This rule was amended again and again to hand over forests to the group of communities who are real user in practice as explained in the table 7.

2). Background of Community Forestry Policy and Programs

With enactment of community forest rules in 1978, community forestry program was implemented throughout Nepal. In 29 hill districts, the program was implemented from the loan assistance of the World Bank with technical assistance from FAO, which covers 38 hill districts presently. In other hill districts, grant assistance was provided by the different donors which include USAID, ODA, Australian, Swiss, Germany etc.

Because, the community forest was new approach, there was absolutely no experience with the DoF. In the beginning most of the foresters were skeptical and scared thinking whether community forestry is transferring authority of DFOs to the local people. In the initial years only very poor sites such as steep slope, very dried land, highly degraded forests were handed over to the local people. However, as the time passed foresters as well as local people started realizing that community forestry is the only way to save and manage the existing forests in the hills and many parts of the Terai of Nepal as well as fulfilling the need of local people. While implementing this program big gap was identified with DoF staff to orient them towards the need of community forestry from its traditional approach of forest protection. Similarly, the gap was identified with local users on social and technical aspects of community forestry. To reduce these gaps massive training and extension programs have been implemented in all community forestry projects.

In last twenty years many technical, social, institutional and legal problems were experienced. Technical and social problems were mostly solved through training and farmer to farmer programs. Institutional problems were solved by institutional capacity building such as converting community forestry assistants into regular community oriented rangers of District Forest Office. To solve the legal problems, there were many amendments in Community Forestry Rules as well as new Forest Rules were enacted in 1995 in line with new Forest Act 1993. In summary evolution of the Community Forest Rules are explained and given below in table 7:

Table 7. Evolution of C.F. Legislation In Nepal

<i>Subject</i>	<i>1978 Rules</i>	<i>1979 Amendment</i>	<i>1987 Amendment</i>	<i>New Act 1993 and Rules 1995</i>
CF area	not more than 125 ha (PF) 250 ha. (PF)	125 ha. 500 ha	no limit no limit	no limit no limit
benefit share % to community	40%	75%	100%	100%
To be spent from the benefit	50% (for forestry)	50% (for forestry)	100% (for forestry)	Surplus fund for any community development
Pricing of products	not less than royalty	not less than royalty	not less than royalty	as per FUG's decision
Plan Preparation	by DFO	by DFO	by community	by community
Plan approved by	Conservator	Conservator	Regional director	DFO
Boundary	Political	Political	Political	Use practices
Management units	Panchayat (political unit)	Panchayat	User's committee under Panchayat	User Groups (assembly)
Chaired by	Elected village leader	Elected village leader	selected any body by political body	Selected by the assembly by consensus

Source: (Joshi, A.L 1997)

Main Features of Present Community Forestry Legislation

- a. Any part of accessible forests can be handed over to the communities who are traditional users of the forests, if they are interested to manage the forests.
- b. Any amount of National Forest can be handed over to the Forest User Groups (FUG) if they indicate that they are capable of managing the forests.
- c. Conversion of national forests to community forest has priority over conversion to any other forest use such as leasehold, protected and production forests.
- d. CF boundaries are fixed by traditional use practices rather than administrative boundaries.
- e. District Forest Officers are authorized to recognize FUGs and hand over Forests to FUGs. This authority was vested with higher officials or the center in the past.
- f. Forest User Groups (FUGs) have to manage the CF as per their constitution

and Operational Plan (OP) which are approved by the District Forest Office (DFO).

- g. FUGs are autonomous and corporate bodies with perpetual succession.
- h. FUGs can plant long term cash crops, such as medicinal herbs, without disturbing the main forestry crops.
- i. FUGs can fix prices of forestry products irrespective of the government royalty.
- k. FUGs can transport forest products simply by informing DFO.
- k. FUGs can establish Forest Based Industries based on the resources available in their CF.
- l. FUGs can use surplus funds in any kind of community development works.
- m. FUGs can amend their OPs simply by informing the DFO.
- n. Any government and non-government agency can help user groups to be organized and to manage CF.
- o. FUGs can punish any members who break the rules of their constitution or OP.
- p. DFOs can take community forests back from FUGs if they operate against the OP. However, the DFO must give the forest back to newly reformed FUG as soon as possible once the problem is resolved.

Source: (Joshi, A.L., 1997)

3). Achievement of the Community Forestry Program

Although community forestry program in Nepal was started in 1978 with enactment of Community Forest Acts and Rules, the initial progress was very slow. The CF Rules was amended in 1987 which compelled Village Development Committees (Village Panchayats) to implement the CF program through the user committee. There could be many user committees in one VDC. In 1989 Master Plan for the Forestry Sector was also published which gave high priority to community forestry. However, it took the speed only after reinstallation of democracy in 1990. Achievement of the Community Forestry Program until the May 1996 is given below in table 8.

By July 15 1998, 6,658 Forest User Groups are managing 0.45 million hectares and 733 thousand households were involved. World Bank study has indicated that from community forestry program additional benefit of rupees 660 per hectare per year is received. Even if the recognized community forest area is little, but there is wider impact on the areas around those community forests. From the management of these community forests, local people started getting firewood, fodder and timber as well as started generating income. The money earned by FUGs were spent for community development activities like building and

Table 3: Forest handed over to May 1995

Year	Handed over number	Area (ha) ²	Household (No.)
1987/88	3	79.8	398
1988/89	34	518.84	2,732
1989/90	29	1,916.48	5,356
1990/91	54	1,949.99	5,189
1991/92	354	1,991.89	37,506
1992/93	634	3,592.14	73,303
1993/94	950	63,308.43	99,249
1994/95	1,390	*98,530.91	141,159
1995/(May 1995)	(325)	26,983.28	39,255
Not Mentioned	(1,583)	116,446.99	181,531
Total:	5,356	362,551.5	585,658

*Total Forest area of Nepal = 5.5 m. ha.

Potential CF area = 3,355 m. ha (61%)

Percent of Potential CF already handed over = 11% (362,551.5 ha.)

It will take 20-30 years to handover all potential CF.

Source: (Joshi, A.L 1997)

operating schools, running classes, constructing drinking water and irrigation canals etc. So, it is seen possible that community forest could act as center for community and village based economic development.

Acharya et al (1993) gave concrete example of involvement of women in the community forestry program in the Hill of Nepal. After comparing aerial photograph of two hill districts (Kabhre Palanchok and Sindhu Palchok) of Nepal taken in the year 1964 and 1978, Gilmour (1988) claimed that to make up for the scarcity of tree products resulting from deforestation, farmers have planted tree on their farm at the rate of 120 trees per hectare per year. However, to compensate completely for the deforestation rate, 590 trees per hectare per year were necessary.

2. National Forestry Program

For management of government owned forests, operational forest management plans were made for 14 districts and four are under process. From the implementation of these operational forest management plans, it is estimated to earn rupees 5 billion (77 million US \$) as revenues to government where as costs to manage these forests were estimated as only rupees 700 million (11 million US \$) in five years from 14 districts. Because benefits from these forests are much higher than its costs, sustainable management of Nepalese production forests is economically beneficial to the country. According to the WB estimate, if all Terai forest are managed, then it is expected to give additional income of rupees 810

million (12 million US \$) per year over what has been local users are getting today. However, these plans could not be implemented due to lack of financial resources and sustainable management of these Terai forests is yet to be practically initiated. For implementation of these operational forest management plans, HMG/N/MFSC is proposing to establish a revolving fund where 25 percent of the amount received from sell will be deposited for future forest management activities.

3. Watershed Management

Soil erosion and watershed degradation problems were very extensive in Nepal. Efforts were made to reduce these problems by establishing District Soil Conservation Offices, preparing and implementing integrated sub watershed management plans and training local people in conservation measures. Emphasis was given on biological conservation measures, however conservation by constructing structural measures using local material were also practice extensively by the farmers.

4. Biodiversity Conservation

Biodiversity Conservation is continued to be an important part of overall forest management including endangered species conservation, management of corridors and connectivity, wetland management etc. Protection of biodiversity inside protected areas was continued. Recently, management of buffer zone and conservation area are major program in biodiversity conservation with involvement of local people. In these programs local people were empowered for the management of the forest in the buffer zone and conservation areas. In buffer zone management also community forestry user group principle is applied to fulfill the need of local people. Government has also legally committed to give up to fifty percent of income from protected areas for local community development including sustainable management of protected areas and all sectors involved with communities in the buffer zone.

5. Non-Timber Forest Products

Although non-timber forest products posses great potential for income generation in the mountains, this potential is not completely tapped. World Bank study has indicated that from the cultivation of Chiraito (*Swertia augustifolia*) a medicinal shrub, rupees 30 thousand per hectare per year can be received. However, this area is getting increased attention in the Ninth Plan period with the objective of poverty alleviation and income generation. Almost forestry programs and projects include non-timber forest product management for employment and income generations. It has become very popular in the community forestry and private forestry program.

VII. CONCLUSION

In fact, there was severe deforestation and forest degradation in Nepal. Various reports suggest that deforestation and forest degradation, which has occurred in the middle hills, was common for last hundreds of years ago and rate

of deforestation is neither rapid nor of recent origin. However forest degradation is continuing in the Hills. In the Terai and Siwalik deforestation is wide spread legally due to government resettlement programs and illegally clearing of forest for agriculture. In general, main causes of deforestation are agricultural production, need of firewood, forage for livestock as well as local unemployment and lack of management from the government.

To cope with deforestation and forest degradation Mater Plan for the Forestry Sector and Ninth Five-Year plan has put forward many strategies. Periodic as well as annual program are being prepared and implemented according to those strategies. Out of these program community forestry program in Nepal is very successful. By July 15 1998, more that 7,000 Forest User Groups are managing 0.5 million hectares and about 800 thousand households were involved. Due to user groups management of community forests most of the artificial problems or over population related problem, at least in the Hill, have been resolved and it is progressing very fast. Quality of forests is improving in the Hill of Nepal and amount of greenery has been increasing. Community Forestry Program of Nepal is the one of the grand success in the history of forest protection and management. So, for other countries also community forestry program of Nepal, i.e. policy formulation and forest management is good example to implement as per need of the concerned people of different regions.

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