

Local forest and rangeland management system in the hills of Nepal

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This paper aims at examining the forest and rangeland management system and to search for the appropriate strategies in order to enhance the productivity of these resources in Setidovan and Bangshing Village Development Committees (VDCs) of Syangja district located in Mid-hills of Western Nepal. Three types of forest management system: (1) indigenous community forest management system, (2) government initiated community forest management system, and (3) VDC owned open access forest, are apparent in both VDCs. The spontaneously formed indigenous forest management committees had well managed few patches of natural forests through "strict watch and control" policy. The government initiated community forest management committees had clearly written forest management plans, and the condition of forests under their jurisdiction is improving gradually. In contrast, VDC owned open access forests are degrading rapidly, and there is an immediate need to transfer the management responsibility from government to communities. However, there are no appropriate rangeland management systems in the ridges even in the Bangshing VDC and their condition is degrading gradually.

Key words: Forests, rangeland, watch and control, indigenous, community forestry, open access, management plans, management committees, degradation

Natural resources are steadily degrading in developing countries, though the extent and magnitude vary remarkably among communities and countries according to management practices adopted by respective societies (IUCN, UNEP and WWF 1991). In Nepal, natural resources, particularly, forest and rangeland resources underwent degradation as the demand has grown tremendously. Two arguments have been emerged since the 1980s about the condition, status and degradation of forest and rangeland resources in the hills of Nepal. First group of social scientists, environmentalists, resource planners and researchers have emphasized that the forest and rangeland resources are under heavy pressure since 1950s. Contrary to it, second group of scholars disagree with them, and believed that the reality have been dramatized (Paudel and Thapa 2001) and advocate that the degradation of forest and rangeland resources is not an immediate event rather they gradually depleted since last two centuries as the human and livestock population increased over

time. Some have even found positive changes in forest and rangeland resources in particular localities. Such arguments have attracted the attention of researchers and resource planners to undertake the studies at local level on current condition, management and utilization systems practiced by the people.

Forests and rangelands play an important role, if not exclusively, in determining the socio-economic condition of rural people. However, degradation of forest and rangeland has seriously reduced the availability of forest products and adversely affected the country's natural resource base (HMGN/NPC 1993). Moreover, the local rangeland management systems are virtually ignored in government policies and led to the reduced productivity and marginalization of subsistence farmers (Miller 1995). The ownership of these lands rests with the Ministry of Forests and Soil Conservation, while the utilization explicitly has been the right of almost everybody (HMG/N 1992). Rangelands in Nepal are under

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heavy grazing pressure, thereby causing the depletion of such resources which has resulted into fodder shortage and hence the livestock productivity. Removal and trampling of vegetation by livestock has led to reduction in water infiltration and increased surface run-off, causing accelerated soil erosion. Nutritional deficiency has made animals more susceptible to diseases and, therefore their production performance is severely affected (Jha 1991). In contrast, the well-managed rangelands have diversified grass species and higher carrying capacity (Hermans and Vereijken 1995).

Use of forest and rangeland resources is seen as a means to development in improving the quality of rural life (UNEP 1979). The question is how to sustain the impetus of these resources for subsistence farmers without doing further and permanent damage (UNEP 1988). Considerable debate has centered around the question of the most appropriate structure for collective resource management on forest and rangeland at the local level (Hobley and Shah 1996). This paper explores existing management systems of natural resources in the study area.

Materials and methods

Study area

This research was conducted in Bangshing and Setidovan VDCs of Syangja district. Master plan for forestry sector Nepal confirmed that this area has very poor watershed condition (HMG/N/ADB/FINIDA 1988). Major proportion of the forest is in degraded condition due to lopping of branches for fodder and firewood. Grazing-lands are often located in the ridges and are in general poor condition due to overuse (CARE 1989). This area is densely populated. There were 390 persons per sq.km in 1991, which is three times higher than the national average of 125.6. Being a mountainous area, there is

significant altitudinal variation and therefore lacks accessibility. It is about 20 kilometers away from the Siddhartha highway. Setidovan is near Siddhartha highway, and is linked with the highway by a fair weather road. In view of the topography and condition of forest and rangeland, the upper Andhikhola watershed can be considered as representative of the hills of the Western Development Region.

Research methods

Field survey was conducted in January-March 2001 to collect relevant information from the field. This study is based on primary and secondary information collected from the field. Methods and procedures undertaken to accomplish the study include reconnaissance survey, meeting, group discussion, and review of the management plans and analysis. The information used in this study is taken from various sources. Primary data include the information collected through group discussion, meetings with user groups and forest and rangeland management committees, meetings and discussions with the officials of District Forest Office, VDC executives and other Non-Governmental Organizations. Relevant secondary information was collected from district and village level offices, institutions, users groups, forest and range management committees, and indigenous forest management committees. Major local agencies surveyed for the study includes District Development Office, District Forest Office, District Agriculture Development Office, District Survey and Maintenance Office, Bangshing and Setidovan VDC Offices and CARE/ Nepal.

Results and discussion

Land use pattern in the study area

There are four types of landuse system in the study area (Table 1).

Table 1: Land use pattern in the study area

Land type	Setidovan VDC		Bangshing VDC	
	Area in hectares	Percent	Area in hectares	Percent
Agricultural land	328	38.40	571	71.40
Forest land	300	35.20	126	15.80
Rangeland	30	3.50	45	5.60
Private grassland (<i>Kharbari</i>)	196	22.90	58	7.20
Total land area	854	100.00	800	100.00

Source: CARE/Nepal Syangja, 2001 and District Survey Office Syangja, 2001

Existing forest management system

Table 2: Forest management committees in the study area

Name of committee	Location	Est. year	Executive members	Area in Hectare	Status	HH No	Initiative
Kamere	B.VDC	1960	7	13.0	Indigenous management	55	Indigenous
Devkotathar-Lankuri	S.VDC	1970	9	6.0	Indigenous management	55	Indigenous
Aringale Gaganpani	S.VDC	1970	7	14.0	Indigenous management	65	Indigenous
Baschhari	B.VDC	1980	9	7.0	Indigenous management	63	Indigenous
Betehani Gahate	S.VDC	1989	11	12.0	Legally Handed over	26	Spontaneous
Batase Kuhineto	B.VDC	1994	7	6.8	Legally handed over	99	CARE/DFO
Nigalo Budhaghare	S.VDC	1994	9	16.4	Legally handed over	80	CARE/DFO
Kuhineto	B.VDC	1994	7	0.4	Legally handed over	23	VDC/CARE/DFO
Karedanda	B.VDC	1994	7	0.5	Legally handed over	47	CARE/VDC/DFO
Sarkidanda	S.VDC	1994	7	19.0	Legally Handed over	74	CARE, VDC
Deurali	B.VDC	1995	9	12.4	Under hand over process	66	CARE/VDC/DFO
Sallaghari	S.VDC	1995	7	3.0	Under hand over process	23	CARE, VDC
Uppalobhir-Simkhet	S.VDC	1995	9	8.0	Under hand over process	66	CARE, VDC
Simalchour	B.VDC	1996	5	8.0	Indigenous management	80	Indigenous
Amaldanda	S.VDC	1996	9	5.0	Under hand over process	60	DFO/CARE
Banekhorja	S.VDC	1996	11	2.0	Under preparation	26	CARE/VDC/DFO
Pakhera	S.VDC	1996	7	4.0	Under preparation	25	DFO/ CARE
Total	-	-	-	137.5	-	933	-

Source: CARE, VDC Office, and Forest Management Committees, 2001

NB: VDC = Village Development Committee, B.VDC= Bangshing VDC, S.VDC = Setidovan VDC
DFO = District Forest Office Shyanja HHN0= Users households number

There are three types of forest management systems and vary with location in the study area. Out of 426 hectares of natural forest, 11 percent of the forest land is under strict indigenous community management system, 21 percent is under government initiated community forestry management system and remaining 67 percent is under VDC jurisdiction and poorly managed. There are some forests management committees formed either spontaneously or by outside assistance (Table 2). They work in close coordination with the identified user households. They have adopted different management strategies and harvesting practices.

Indigenous community forest management system

The user communities had indigenous knowledge to manage large part of natural forests located proximity to their settlements since long ago. The Forest Nationalization Act (1957) largely dismantled such system, however, some communities continued to protect certain forest patches in the vicinity of their settlements. Such forests, managed by local

communities through inherited knowledge and technology for their own benefit are defined as indigenous forest management system in Nepal.

About one tenth of the forest areas of Setidovan and Bangshing VDCs have such management system. They have formulated verbal rules and regulations which users have to respect. Three meetings were held with Kamre, Baschhari and Aringale users committees during the fieldwork. The salient features of these committees are summarized as follows based on group discussion and analysis of their written documents.

- Each committee has selected an executive body, formed by consensus for a certain period of time.
- Committee membership is granted to villagers based on their locational affiliation and traditional association with forests. Secondary membership is granted upon the consensus of the primary users. Such decisions are made in the General Village Assembly, arranged as per necessary.
- Forest management related rules are documented in the minute books of the committees.

- The amount of fine to be charged for the violations of the rules is mentioned in the minute, and the committees charge the fine in accordance with rules.
- The committees are not legally recognized, but are strong enough to implement the forest management activities.
- The price of timber, firewood and fodder for sale is fixed by the General Village Assembly, but are authorized to make changes as required.
- The secretary of the users committee keeps income and expenditure account and the General Village Assembly approves it whenever meets.
- The income could be invested either in replenishment of the forest or in the development activities as per the decision of the committees. The Bashehari committee had provided financial support to secondary school to purchase furniture. Likewise, small amount of saving have given to the local moneylenders on interest. Similarly, Kamere forest management committee had constructed a village trail using its savings.
- Any user can see minute book, as they like.
- The committees fix the fodder, firewood and timber collection/cutting schedule and all households are asked to participate in this process. The harvested forest products are shared equally among the household irrespective of the landholding size and income level.
- Entrance to the forest except the prescheduled days is considered illegal. The users follow this rule and normally do not enter. If anyone violates the rule he/she is subject to the punishment as per committee decision.

The indigenous forest management system of Kamere: a successful example

Kamere forest management committee was established in 1960 with the initiatives of villagers themselves. This committee has managed a patch of natural forest since 1960 through "watch and control" method. They have a cone, which is passed on from one house to another house on rotational basis. The recipient of the cone has to watch forest for a week in the year. Likewise, villagers have made rules and regulations, which are to be approved by the village assembly. Fuelwood and fodder are harvested annually. Normally timber cutting is strictly prohibited, however, the committee allows timber cutting when a user needs it for building new houses

or livestock shade. Trees are also cut whenever it needed for the construction of schools, health post, wooden bridge etc. Forest products are shared equally among the identified user households. If someone violates the rule he/she is charged Rs 50 per load (*Bhan*) of dry leaves, green fodder and wood fuel for the first time, Rs 100 for the second time and Rs 300 or more for the third time. The informant will receive fifty percent of the fine as an incentive. The decision and the rules are written in the minute books of the committee. The secretary keeps the income and expenditure account, and the village assembly approve it annually. The committee had spent the collected amount of money in upgrading village foot trail.

Similarity, Bashehari, Simalchour, Setidovan, Aringale/Gaganpani and Devkotathar Villages are also the successful examples of indigenous forest management system in the study area.

Government initiated community forest management system

The government owns the forests under such management system, while the management responsibility and usufruct right are legally handed over to defined user groups on time bound basis. The user communities elect or select an executive team, which thereafter acts on the behalf of its members. It takes the management responsibility and prohibits illegal cuttings and encroachments, and satisfies needs and aspirations of its member and renews its contract with the government whenever required.

The user groups are empowered and given the entire responsibility to make operational plans, manage, utilize, and enjoy the forest incomes. This programme was started twenty years ago in the hills of Nepal, but peaked after 1993 when the focus of the programme shifted from community leaders to user groups. The community forest user groups formed in Setidovan and Bangshing VDCs have their own action plans. The main aim of such plans is to prepare detail programmes for appropriate management.

There are twelve government initiated community forest management committees in the Setidovan and Bangshing VDCs. In order to overcome the fodder and fuelwood shortage, local people of Betehani Gahate formed community forest management committee in 1989 and started managing 12 hectares

of forestland. Other such committees were formed under the technical and financial assistance of the District Forest Office and CARE/Nepal (Table 2) out of which, six had been formally handed over to villagers, four forests are about by handed over and plans are under preparation for other two forests. All these committees are formed in line with the standard principle mentioned below. All community forest includes natural forest and reforested area.

Each management committee comprises seven to eleven executive members and they have prepared forest product harvesting scheduled and rule. They have also made provision of financial punishment for violating the rules (Table 3). The committee has appointed a watchman for each block of forest and the District Forest Office pays their salaries for the first three years of the establishment after which users have to bear the cost. Also the committees have arranged an incentive scheme for efficient forest management. If a person inform about the violation of the management rules, with evidence, he/she receives 10 percent of the total amount of fine collected from the offenders.

Betehani Gahate forest of Setidovan VDC is the first example of such management system in the study area in 1989. Pertinent features of the government initiated community forestry at Nigale Budhaghare, established in 1992 and Betehani Gahate, established in 1994 are as follows:

- Forest density, tree species, crown cover and area of the forest are clearly written in the operational plan.
- Fodder, fuel-wood and timber harvesting techniques and approximate amount to be harvested annually are specified.
- The area to be utilized is specified clearly. The forest is divided into different blocks and each block is utilized once a year on rotational basis.
- User households are listed in the action plan and they are updated regularly.
- The amount and extent of punishment for the violation of the rules are mentioned. The management committees charged fine in accordance to rules.
- Income and expenditure account is kept clearly. Some of them had audit report from the recognized authority.
- Every user pays certain amount of money as a fee.
- The collected amount could be invested either in replenishment of the forest or in the development activities as per the decision of the committees.
- The decisions of the committees are written in a minute book and any body can see the book as per requirement.
- Rules are clearly written.
- The executive committees are either elected or selected from the users for certain period of time. This indicates the clear provision of change in leadership.
- The committees are legally recognized.

Table 3: Amount of fine fixed by the Betehani Gahate Community Forest Management Committee

Offence	Primary users (in Rs)			Secondary users (in Rs)		
	First time	Second time	Third and more	First time	Second time	Three or more
Dry tree leaves collection	5	10	20	10	20	40
Fodder collection	5	10	20	10	20	40
Dry wood collection	10	20	40	20	40	80
Green wood cutting	20	40	80	40	80	160
Destroying samplings	10	20	40	20	40	80
Tree taking	The amount of fine depends on the estimated volume and type of wood. It will be doubled in each successive offence for the primary users and twice high to the secondary users.					

Source: Action Plan of Betehani Gahate Community Forest Management Committee, 1994, P. 5-6.

VDC owned forest management system

The forests under the VDC jurisdiction are defined as VDC forests. By virtue, these forests have no effective management system and are open to all users residing in geographical proximity. Majorities of the forests (67 percent) in the study area are characterized by "open access" status. These forests are under heavy pressure, owing to ever-increasing demand for fodder, fuelwood and timber. The VDCs have formed informal forest management committees. But no one is assigned to monitor the illegal cutting of trees for timber and firewood and lopping for fodder due to which the forest degradation process is rapid. There are four patches of VDC owned forests in the Setidovan VDC. The VDC even though has formed a forest management committee of 9 – 11 members for each patch of the forest, they have not been actively engaged in forest management. Salient features of the VDC forest are as follows:

- The forests are under the jurisdiction of locally elected Village Development Committee and forest management committees are not effective.
- Forest management committees have not assigned anyone for supervision and monitoring of the illegal cutting of trees for timber, lopping branches for fodder and wood fuel.
- All primary users are free to collect leaf litter for livestock bedding, grass and tree fodder for livestock and dry wood fuel for cooking and heating. However, the primary users sometimes create obstacles to the secondary users for free entry and collect forest products, if the primary users see their free entrance.
- Livestock grazing is free in many areas.
- Either the communities or the VDCs have not prepared management plans for the protection

and conservation. The "open access status" has bust for rapid deterioration depletion of such forests.

- There is no incentive and penalty system imposed strictly for the protectors and offenders.

The other examples of such forests are Thamakoban and Panchasekoban of Bangshing VDC. To find out the magnitude and extent of degradation, a sample survey was done in Thamakoban forest, a forest under the jurisdiction of Bangshing VDC. The survey team was accompanied by local farmers, school-teachers, VDC executives and NGO representatives. In this endeavor, firstly, the geographical mean center was plotted on a forest map. The actual mean was then fixed based on walking distance. A small plot of forest measuring 10m × 10m. was demarcated at geographical mean center and this was considered as a sample plot. Following this all tree species were counted and tree classes were identified on the sample plot. The results are presented in Table 4.

The number of trees, tree species and ground cover was significantly low as compared to inner and middle part of the forest. There were no bushes on the ground and there were few secondary trees. This leads to a conclusion that the forests are undergoing degradation, though the intensity gradually decreases from outer to the inner part.

Rangeland management practices

In the past, overstocking of grazing animals per unit area was one of the most serious issues for rangeland management. Realizing the problem, farmers in Bangshing village have started initiatives for sustainable rangeland management.

Table 4: Tree species and crown cover in the Thamakoban forest

Tree Classes	Sample Plot 1 (at the geographical mean center)		Sample plot 2 (center between first sample plot and outer border of the forest)		Sample plot 3 (500 meter inside the outer border of the forest)	
	No of trees	No of species	No of trees	No of species	No of trees	No of species
Canopy (High)	15	2	16	2	8	1
Secondary (Middle)	48	6	10	3	80	0
Primary (Low)	157	16	79	13	0	8
Sub total	220	24	95	18	88	9
Bushes	1,110	110	110	25	0	0
Total	1,330	134	205	43	88	9
Ground cover		80%		40%		20%

Source: Field survey, 2001

There are three types of rangeland in the study area: 1) the rangelands on the **valley floor** are in very small patches, scattered and are near settlements. 2) the rangelands on the **hill slope** are relatively large and located in steep terrain. 3) Rangelands on the **ridges** are interspersed with forest and are invariably grazed by livestock.

There are no special rangeland management committees except in Bangshing village. However, rangeland and forest management has been combined in many villages. Majorities of the villagers have accepted the grazing control in the hill slopes of both Setidovan and Bangshing VDCs. Although, grazing control programmes has not been approved in some wards of Bangshing and Setidovan VDC. The forest management committees strictly imposed ban on livestock grazing on the hill slope rangelands. The grazing control system is not introduced in the ridges of Bangshing VDC where livestock freely graze throughout the year over day and night. However, if farmers feel scarcity of grass, livestock is either taken to another rangeland or into the forest.

The farmers equally share the grasses of the managed rangelands for which management committees prepare a grass-harvesting schedule in consultation with villagers. One member from each household is requested to contribute in grass cutting. The hand cut grass is collected in one place and, then, is divided equally among the members. While, in some villages rangelands are divided into as many plots as the number of household and then each household is allocated one plot to cut grass on pre scheduled dates. Some rangelands, which are far from the settlements, have open access status. The farmers with fodder shortage collect grass from those rangelands.

A rangeland management committee formed in 1990 in Bangshing village is engaged especially in rangeland and forage development. The committee has formed some rules, which are as follows:

- No body is allowed to graze their livestock inside the demarcated rangeland area.
- If any person violates this rule he/she will be charged a fine of Rs 50 for the first time, Rs 100 for the second time and Rs 300 for the third time or more than this.
- The person who informs to the committee with evidence about the violation of the rule by member household is entitled to receive 50 percent of the total fine as incentives.

- All farmers listed officially, as users will share the grass grown in rangeland equally.
- The income generated by all sources will be utilized for improvement of the rangeland as agreed by the committee.

Following the grazing control, rangelands have improved significantly. Within two years of control, the ground was covered with well-developed grasses and farmer could harvest it three times a year. CARE/Nepal started its conservation activities since 1993 and reinforced such local initiative. Seeds of the leguminous grasses were distributed to farmers for sowing in the rangeland. The grasses have grown very well there.

However, there was some conflict in regard to the use of the grass. Earlier the committee used to announce the grass-harvesting schedule. Accordingly the users harvested the grass. The conflict had arisen from unfair sharing of grass, as the members with relatively large household size collected more grasses than the members with small household size. To overcome this problem rangeland is divided as many equal plots as number of member households, and each household has been allocated a plot.

CARE/Nepal has implemented a landslide control project in Samle village of Bangshing VDC. The management committee has introduced plantation and grazing control programmes in upper parts of the hill slope. Villagers are not obliged to follow management rules as in the case of Bangshing village. Still they are cooperating positively. Though, the farmers have understood the problem and random grazing is avoided since last two years.

Conclusion

Out of the 426 hectares of natural forest in the study area 11 percent is under indigenous community forest management system, 21 percent is under government-initiated community forest management system and remaining two third forests are "open access" types. However, the concept of community forestry has been widened and the process of forest handing over to user communities has been rapid since last five years. The indigenous forest management committees have managed small patches of forests through strict "watch and control" method. The management systems are very effective and the condition of forests is very sound. Similarly, the government initiated

community forest management committees have prepared management plans. Penalty and incentive schemes are written clearly in the plan. The concerned authority legally recognizes them. The VDC or 'open access' are not under proper management system and are degrading rapidly. The pace of degradation is more serious in Bangshing VDC.

In Bangshing VDC tremendous improvements has been made in condition of degraded rangeland under the leadership of spontaneously formed rangeland management committee. Likewise, the communities manage rangelands in the hill-slopes. On the ridges, however, there is no appropriate rangeland management system as a result degradation of rangeland is more severe.

The government programmes designed in line with the top-down planning model have paid little attention towards effective forest and rangeland management system in the past. Investments in forest and rangeland replenishment and protection from government side were at minimum. The communities cannot use their own resources, owing to poverty. The open access forests and rangelands, which covered large portion of the natural resources, are under heavy pressure and degrading rapidly as the process of formalizing natural forest into community forest was relatively slow. Majority of the poor and marginal farmers who collect forest products from these sources are likely to face severe crises in the future. The local subsistence economy, which depends on to a considerable extent on forest and rangeland resources, has been vulnerable thereby jeopardizing the local economy and the quality of life.

There is, however, good prospect of averting this possible tragedy. The condition of forests and rangelands could be improved effectively, if the concerned line agencies pay adequate attention. To improve the dwindling status of natural resources, some progressive interventions are required for accelerating the handover process of VDC forests to local communities. In this endeavor it is necessary to adopt area and group oriented approach. A shift of management from "open access" to community management could help control the degradation of VDC forests and rangeland resources. Identification of users groups of each area is necessary to resolve inter-community conflicts over the use of forest and rangeland resources.

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