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Impact of leasehold forestry on livelihood improvement of local poor and restoration of degraded forests in Makwanpur district, Bagmati province, Nepal

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Abstract: Nepal has adopted different community based forest management models for sustainable management of forest resources and fulfilling the forest products need of the local people that ultimately contribute to poverty reduction goal of the country. Leasehold forestry is among them that focus on people below the poverty line to support them for livelihood improvement through diversified income generating activities on leased degraded forest land. Apart from the livelihood improvement, leasehold has also the aim of restoration of degraded forest land through plantation of multipurpose tree species. Present study was carried out in two leasehold forest user groups in Bagmati Rural Municipality of Makwanpur district, Bangmati Province Nepal focusing on the research questions; whether leasehold forests being success to bring a significant change on local people's livelihood and restoration of the degraded forest areas? Relevant information was collected through household survey (n= 18), key informant interviews (n=5) and direct field observation in both leasehold forest user group during September-October, 20220. The result revealed that leasehold forest has contributed positively for the restoration of degraded forest land through plantation of broom grass, fruit trees and other multipurpose tree crops. Similarly, livelihood capitals have been generated in both of the leasehold forest and found effective for livelihood improvement of local poor.

Keywards: Capital formation, Leasehold forest, Livelihood, Makwanpur, Nepal

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Introduction

Nepal has adopted different community based forest management models including community forest, collaborative forest, leasehold forest, conservation forest and religious forest under forest act (GoN, 2019). Similarly, buffer zone community forests, buffer zone leasehold forest and forest management in conservation area are major community based forest management type under the protected area system in Nepal (MoFE, 2020). Among these variety of community based forest management models, leasehold forest has been implemented since 1993 (FAO, 1993). Leasehold forest means the national forest to be managed pursuant to Section 26 of forest act, 2019. There are two types of leasehold forestry provision in the forest act 1993 as well as forest act, 2019. The former one is the commercial type of leasehold forest that could be provided to any corporate body for production of industrial raw materials, agroforestry products, wildlife ranching and ecotourism development. In another type of leasehold forestry model, degraded forest area could be granted to the group of people who are in below the poverty line to implement the livelihood supporting activities (FAO, 2009; GoN, 2019). The number of households in each leasehold group should be at least 5 and maximum of 15 households united to support themselves for implementation of livelihood support activities. Division Forest office (DFO) allocates the degraded forest land for the period of 10 years (GoN, 2019). It could be renewed for next period as per the forest and livelihood condition of the people (MoFE, 2022) Leasehold forestry has intended for better ecological conditions of the degraded forests and to improve the livelihoods of the forest dependent poor through their active involvement in livelihood enhancement activities. Pro-poor Leasehold Forestry (LHF) is only the poor focused participatory forest management approach. The leased land could be managed mainly for cultivation of non-timber forest products (NTFPs), fodder grass and tree species and small size tree species that could provide fuelwood for household use. This has been demonstrated as a highly successful forest management approach that has resulted rejuvenation of degraded forests and income diversification of rural poor. The leasehold forestry has contributed financial assets more than other livelihood assets in midhill districts of western Nepal (Baral & Paudyal, 2007) however, acquaintance about the changes in livelihood of local people through leasehold forestry is vital in order to fill the knowledge gap, take essential steps to make it more efficient and beneficial for local people. Therefore there was an immediate need to identify the linkage of leasehold forestry in poverty reduction and environment conservation. Hence, this study aimed to reveal the current scenario on role of leasehold forestry in the upliftment of the livelihood of the poor and restoration of degraded land.

This study had explored the real scene of changes in livelihood of poor people through leasehold forestry initiations. The study has provided a clear view about the change in livelihood outcomes of poor people after the implementation of leasehold forestry activities in Makwanpur district of Bagmati province that province has the maximum number of leasehold forest registered in Nepal (MoFE, 2020). This paper has also reflected the success of non-timber forest products and other grass species planted in leasehold area that have been contributed to restore the degraded hills and supported the livelihood of leasehold forestry member household through the selling independently the forest products received from the leasehold forestry.

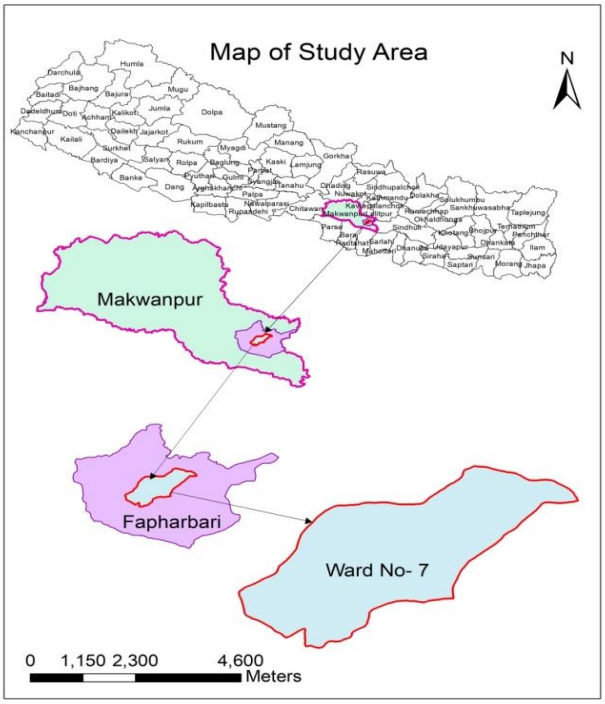

Fig. 1: Map of Nepal showing study area

Research Methodology

Study Area

The study was conducted in two leasehold forest user groups in Makwanpur district among the 194 leasehold forests registered in the district (DFO, 2020). Among the registered leasehold forests, two leasehold forests were selected on the basis of information available in Division forest office (DFO) after the coordination meeting with DFO staffs. Deurali leasehold forest (DLHF) and Arpan leasehold forest (ALHF), from Bagmati rural municipality-7, were selected for detail study. Both LHF have 9 households each and registered in same year about 10 years back in 2011. The group had the combination of two ethnic groups (Dalit and Brahmins) . Table 1 discribes the key features of selected leasehold forest user groups (LHF).

Table 1: Brief information about the selected LHFs

S.N	Name and Address of LHF	Area (ha.)	Date of handover	No. of members		Total population	HH by Caste
				Male	Female		
1.	Deurali LFUG, Bagmati-7	6.53	15-07-2011	0	9	40	Dalits* (5) Brahmins* (4)
2.	Arpan LFUG, Bagmati-7	5.83	15-07-2011	1	8	47	Brahmins* (5) Dalits* (4)

* Brahmins are regarded as higher level and Dalits are considered in lower level as per the caste system in Nepal.

Data Collection

Data was collected through household survey and key informants interviews. Household Survey was conducted in September, 2020 with all household head, who were members of leasehold forest user group (LHFUG). Simialrly, 5 key informants (school teacher-1, dfo staff-3 and municipality member-1) were interviewed for the in-depth information about the livelihood impact of the leasehold forestry in the area. The information was triangulated with direct observation by the researcher in October, 2020. Information received from the field were processed, tabulated and analyzed by simple statistical tools and interpreted accordingly.

Results

Respondent's characteristics

Most of the respondents were female (94%) as most of the decisions were taken by the female head regarding the LHFUG in the area. Most of the male counterparts were either outward migration or were engaged in other income source activities. Regarding the education status of the respondents, majority of the respondents (50%) had primary level of education followed by 33% had secondary level of education. 11% had higher level of education. Only 6% were illiterate. About one third respondents (67%) had agriculture with livestock rearing as major occupation followed by 31 % were engaged in wage labor and remaining were engaged in small business. Goat keeping was important livestock rearing practices followed by pig and buffalo rearing.

Livehood Capital Formation

Natural capital

Land, Forests, water and other natural resources associated with the livelihoods of the people were considered as natural capital. After the invention of leasehold forestry in the area, 100% of the respondents responded that broom grass, regeneration, plantation and water availability have been increased. There was broom grass (*Thysanolaena maxima*) plantation in both LHFs. Other multipurpose fodder tree species such as Ipil-Ipil (*Leucacaena leucocephala*), Tanki (*Bauhinea variegate*), Tejpaat (*Cinnamomum tamala*) were also planted in the leased land. Before engaged in LHFs group, the forest area was degraded due to use of forest area for open grazing activities. In one decade of leasehold forestry initiatives, the increased availability and coverage of fodder grasses like Stylo (*Stylisanthes guianensis*), Napier (*Pennisetum purpuream*), and Broom Grass (*Thysanolaena maxima*) in the understory and fodder tree species in upper

canopy confirms that LHF has contributed positive change in greenery maintenance and restoration of degraded forest land. The respondent's response on the changed in different natural capitals is tabulated in table 2.

Table 2 : Respondents response on different natural parameters

Studied Parameters	Responses		
	Increased (%)	Not Changed (%)	Decreased (%)
Tree density / crown cover	50	50	0
Broom grass and other plantation	100	0	0
Regeneration	100	0	0
Water	100		0
Wildlife	100	100	0
Soil erosion	0	0	100
Grazing	0	0	100
Encroachment	0	0	100
Illicit felling	0	0	100
Fire Incidence	0	0	100
Timber/fuel wood	0	100	0
Fodder, litter and other grasses	100	0	0

Human capital

Users got numbers of trainings regarding skill development and leadership development had increased human capitals who were engaged in the LHF user groups. More than 90% respondents responded that they had got at least one trainings in last 10 years of periods (2011 to 2020).

Financial capital

The biggest support and advantage of being the member of LHF was the financial fund available for startup of the livelihood activities. Subsidy and grant was provided by different government agencies whereas fund mobilization was done by the LHF User Group themselves. Mostly fund was provided for the startup of small microenterprises, livestock rearing and other necessary household affairs. The fund available in the LHFUG has reduced the dependency on money lenders and increased the financial access for startup of small businesses like livestock rearing and household affaires. Table 3 shows the response of respondents on financial capital.

Table 3 : Perception of the people regarding financial aspect of LHFG (In percentage)

Perception on	Increased	No Changed	Decreased	Total
Dependency on money lender	0	5.56	94.44	100
Financial access	88.89	11.11	0	100

Social capital

Out of 18 respondents interviewed, all of them responded that they were engaged in village level institutions, where the users' were involved in member of rural municipality, women group, farmer group as well as forest user groups.. All of them or their family members were participating in community activities. Hundred percent respondents were engaged in farmer group and 89% (16 out of 18) were also engaged in women group. In both groups, they were engaged for group based income generating activities like goat keeping (11 members), vegetable farming (14 members), broom grass cultivation (18 members), small business enterprises (2 members) and pig farming (9 members). 100% of the respondents responded that there is no conflict within and between the leasehold forest user groups.

Physical capital

Some common capitals where developed due to leasehold user group. User Group had invested for solar light, bio-gas plant, toilet construction, road construction, school, cooperatives buildings were the major changes that were

developed after the initiation of leasehold forestry activities in the area. Local people had perceived the activities was found effetive to bring the change in physical capital in the community.

Perception on the benefits in ecological and economic condition

All 18 members were found satisfied with the leasehold forestry activities. They responded that there had been remarkable change in the ecological and economic condition after the initiations of leasehold forestry activities in the area. Major changes were observed on reduced runoff, greenery maintenance, wildlife availability, household income, easiness in livestock rearing due to increased fodder and market linkage for selling the products.

Table 4 : Perception on change in Ecological and Economic condition after LHF handed over

Changed area	Before	After
Water Holding Capacity	There used to be runoff problem	Reduced runoff problem due to broom grass
Moisture content in soil	Soil used to be loose and dry	Soil contains more moisture due to increased organic matter
Greenery	Land was degraded due to heavy grazing and open crown canopy.	Increased greenery, broom grass covered the area.
Wildlife	Less or no presence	Increased number of rabbits, monkey and birds
Average income	NPR*. 7,000-10,000 $yr^{-1}Family^{-1}$	NPR. 25,000-30,000 $yr^{-1}Family^{-1}$
Livelihood activities	Agriculture, Business	Broom grass sale, Livestock rearing
Market access	No market accessibility, had to walk 2-5 hour to reach market	Increased accessibility, buyers come to home to purchase the broom

* Currency exchange rate 1 US$= 110 NPR during study period.

Discussion

This study explored that the impact on natural capital is quite satisfactorily as forest condition has quite improved through practice of all the possible management techniques of forest management. Similarly there was increased the access of finance and decreased the dependency on the money lenders to the poor household who were involved in the leasehold forestry activities. There was the limitation that under the LHP, the cultivation of cereal crops prohibited: only grasses, fodder and trees are allowed (FAO, 2009). For a poor farmer who cultivates vegetables or cereal crops on 'degraded' land, converting the land as a leasehold forest would mean that he/she will no longer to be allowed to cultivate those. It further adds, growing grasses or trees would not be rational because it would take months or even years before they are harvested. The study showed that increased fooder availability had increased the household income from 10,000 NPR to 25,000 NPR.

LHF has brought a considerable change in access to trainings like account holding, goat rearing training, NTFP cultivation training, exposure visits (FAO, 2011). Human capital increased through training (capacity building activity) e.g. training on land development, animal husbandry and seed production. The trainings were directly related to enhancing skills in relation to the livelihood strategy of the members such as land development, enterprise development and nursery management (Mishra, 2012). Out of 18 respondents, all of them responded that they had received atleast one training opportunity related to leadership and skill development related. All of them have a full influence on the decision made by Leasehold Forest Groups have also established the co-operatives too. Social capital of LFUG members also increased e.g. enhanced participation in and influence on decision making and increased confidence and self-esteem especially in the formation of intergroup and cooperative (NPC, 2005). The leasehold users had better access to market due to collective production of agricultural products that had attaracted the local buyer to purchase their products in bulk amount. The users had developed a common consensus for personal and community goals and has created a greater neighborhood bond between the leasehold families and neighboring communities. The cumulative impact of moral and ethnic uplifting has been progressively created by social capital building up in the communities. After the implementation of the program, there has been progress in the infrastructure in the study area

like road, solar lights, bio-gas, toilet, health centers, and co-operatives. Similar kind of result was found on the study done in Chitwan (Thapa & weber, 1995).

Conclusion

There was observed changes in livelihood capitals particularly on natural capital due to plantation of more fodder trees including *Thysanolaena maxima,*(*Leucacaena leucocephala*) and *Bauhinea variegate*. The planted fodder trees had contributed directly to local livelihood through increased availability of feeding materials (grass and fodder) to their livestocks and indirectly increased the market access due to collective production of livestock products (Milk & meat) by the household affiliated with leasehold groups. Landholding and livestock rearing pattern has slightly changed from open grazing to the stall feeding since the initiation of leasehold forestry activities. The study concluded that access of the group members to the credits/soft loans facilities has decreased the dependency on money lenders that has positively supported the start up of the small enterprises including livestock farming. Leasehold forest has found supported to increase the human capital through the skilled-oriented training oppertunity that had created positive impacts sustainability of the livelihoods options for the poor household.

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