



## Research Article



# Assessment of the Role of Leasehold Forest in Livelihood Improvement in Gorkha District, Nepal

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### ABSTRACT

The leasehold forestry aims to free the poor from a complicated cycle of poverty by institutionalizing and manipulating the local resources. This study is based on the structured and semi-structured questionnaire and an examination of both published and unpublished records. The study was carried out in 283 Leasehold Forest User Groups (LHFUGs) of the Gorkha district representing 8 different clusters. This study makes a clear effort to identify livelihood improvement in the Gorkha district through leasehold forest by taking into consideration livelihood assets (natural, physical, human, financial, and social). The condition of livelihood capitals in the study area was examined using a judgmental scoring technique that looked at the changes that occurred in five different capitals. Three indicators have been used for each of the assets and scores; +1, -1, and 0 were given to represent improved, degraded, and remained unchanged respectively. A spider web diagram was used to express the change. The results depicted that Chepang, Gurung, and Magar are the predominant indigenous peoples who benefited from the LHF. The result showed the constructive impact of the leasehold forestry program on each asset. The social, physical, human, natural and financial capital received an average total score of 0.778, 0.951, 0.748, 0.589, and 0.722 respectively. The most notable accomplishments were construction and access to the physical capitals including the effectiveness of constructions and advancement of knowledge about community development. Better-managed natural resources can help achieve both conservation and livelihood options.

**Keywords:** Livelihood, Leasehold forestry, Gorkha, Forest, Forest User Group.

### INTRODUCTION

Forest is an essential part of the subsistence agriculture that the majority of rural Nepalese people use (Gautam et al., 2004). It fulfills the need for fodder and leaf litter for livestock, construction materials, raw materials for forest-based industries, sources of energy, etc. It helps to maintain the quality of the watershed and hence is the source of drinking water for households and irrigation systems. Other than the consumptive value of forest it also provides a vast range of social, cultural, and environmental benefits (Gautam et al., 2004).

Forest rights and ownership of Nepal were transferred to the government in 1957 with the nationalizations act after which the government became unable to enforce forest management regulations and hence excessive deforestation and degradation rise as a major problem in forest resource conservations (Kanel & Dahal, 2008). To tackle the problem and resolve the issues of forest degradation and deforestation, a concept of participatory forest management was initiated as a novel concept of forest management in the 1970s. There are six distinct modes of participatory forest management. Over the past three decades, Nepal has implemented community,

leasehold, collaborative, religious, forest protection area, and buffer zone forestry as a strategy for reducing poverty and conserving natural resources (Gautam et al., 2008). Although community forestry played a significant role in forest resources conservation and rehabilitation of the degraded area, equity in benefit sharing always remained problematic and poor households typically receive less benefit than the relatively better off (Bhattarai et al., 2007). So, to eliminate the prevailed discrimination and with the aim of uplifting the livelihood of poor and back warded people, the Government of Nepal promoted poor people focused Leasehold forestry program in 1993 through the Hills Leasehold Forestry and Feed Development Project (HLFFDP) and since 2004 through the Leasehold Forestry and Livestock Development Program (LFLP). The process of gaining access to a variety of livelihood assets or capitals, such as financial, human, social, physical, and natural assets, through a variety of livelihood strategies with the goal of achieving particular livelihood outcomes is fundamental to the concept of livelihoods (Ellis, 2000). Human capital refers to the

skill, knowledge, health status and ability of a person whereas social capital refers to the access of the person to social resources, inclusions, and public relations. Natural asset signifies the access of the person to natural resources such as water resources, forest resources, land, etc. Financial assets of livelihood refer to access to financial services and income-generating activities whereas physical assets refer to the basic physical infrastructure that the person needs to make his/her livelihood. Access to these assets determines people's ability to own, regulate, claim, or use resources that together evaluate an individual's or a household's standard of living (Ellis, 2000).

Forest Rules 1995 made provisions to handover the degraded land to the group of people that are under the line of poverty (PCI below NRs. 3,3035 per year and land holding less than 10 rapani). Thus, poor households get access to land for 10 years (Forest Regulation, 2079) which helps them to improve their livelihood. People can enhance their income through IGAs such as animal husbandry, apiculture, Sericulture, NTFPs cultivations, etc. It also promotes the participation of women and makes a remarkable shift towards sharing decision-making among men and women (Yadav and Dhakal 2000; Ohler, 2003). As a result, the LF program has been successful in improving the various capitals of the poor's livelihoods by increasing livestock production and restoring degraded land. (Ohler 2003).

Alongside this success, the scientific study related to the role of LF at the ground level in alleviating poverty is very less. Most of the studies are focused on the role of community forestry in livelihood improvement. Due to this, the learning and experience from leasehold forestry practice have not been well understood and have got relatively less priority in the policy. So, this paper seeks to analyze the extent to which the leasehold program has been successful in achieving the goal of enhancing sustainable livelihood capitals of the poor community of Gorkha, Nepal.

**MATERIALS AND METHODS**

**Study area:**

The study was conducted in 283 Leasehold Forest User Groups (LHFUGs) of the Gorkha district representing 8 different clusters as presented in Table 1. Gorkha, the fourth largest district of Nepal lies at the latitude of 28° 28' 35.0220" North and the longitude of 84° 41' 23.1036" East with an area of 3,610.70 Square kilometers. The elevation ranges from 330 m (Trishuli river bank) to 8,156 m (Mt. Manaslu) above sea level. The climatic zone of the district varies from the lower tropical zone in the South to the Trans-Himalayan zone in the North. The average yearly precipitation is 254.87 mm and the annual highest and lowest temperature varies from 19.35°C to 10.09°C. According to the Division Forest office, Gorkha, the total forest cover is 1, 32,120 hc of which 983.63 ha is covered by the Leasehold Forest.

**Table 1:** Studied Clusters of Leasehold Forest in Gorkha, Nepal

S. No	Name of Cluster	Address
1	Manakamana Cluster	Sahid Lakhana RM-3 and Gorkha Municipality-1
2	Masel Baguwa Cluster	Bhimsen RM-1 and 5
3	Simjung Muchchowk Cluster	Ajirkot RM-4,5 and Palungtar-1
4	Chyangli Gaikhur Cluster	Palungtar Municipality-4,6,7,8
5	Taklung Cluster	Sahid Lakhana RM-2,3,4
6	Tanglichowk Makaisingh Cluster	Gandaki RM-1,2
7	Bhumlichowk Cluster	Gandaki RM-6
8	Darbung Cluster	Gandaki RM-5,7,8

**Field Survey:**

Field surveys were undertaken in February 15 to May 12, 2022. Key informant surveys, focus groups, checklists, and field observations were the primary survey tools used for data collection. On the basis of an open-ended questionnaire, 478 houses were surveyed out of a total of 2359 households. Yamane's Taro Yamane Formula (1973) was used to determine the sample size.

Sample size,  $n = z^2 * p (1-p) / e^2 / 1 + (z^2 * p (1-p) / e^2) N$

- Where, n = Sample size
- Z = Value of variance at 95 % (1.96)
- P = 0.5
- e = Margin of error at 4% (0.04)
- N = Total number of Households

The secondary data was gathered using the records of the relevant line agencies, including Division Forest Office annual reports, LHFUG records, and published and unpublished literature.

The gathered data were examined using a variety of descriptive statistical methods.



Fig1: Study Area Map (Gorkha, Nepal)

**Assessment of Livelihoods Using a Sustainable Livelihood Framework**

The contribution of leasehold forestry to the livelihoods of forest user communities was evaluated using the sustainable livelihood paradigm, which was developed by the Institute of Development Studies (IDS) and later modified by DFID in 1999. Table 2 shows several indicators that have been used to measure livelihood capital. The evaluation was conducted on judgmental scoring systems. Three scores were given to each of the five capitals' indicators to determine whether their conditions improved, declined, or remained unchanged: +1, -1, and 0 in turns. (Table 2)

**Table 2:** Indicators used for the assessment of livelihood capital

Livelihood Capitals	Indicators Used
Natural Capital	a) Ease in accessing the forest product collection after the handover of LHF b) Incidences of Forest fire, Grazing, Drying up of water resources, Encroachment c) Improvement in greenery and landscape beauty
Physical Capital	a) Construction and access to physical capital b) Effectiveness of construction c) Enhancement of knowledge regarding community development activities
Social Capital	a) Relation among user groups after the handover of LHF b) Decision-making capacity about resources management and use d) The major role played in decision making
Financial Capital	a) Increment in employment opportunities b) Income from forest products collection c) Provisions of loans for IGAs
Human Capital	a) Condition of awareness regarding responsibilities among user groups b) State of skills and knowledge on forest management c) Changes in leadership capacity

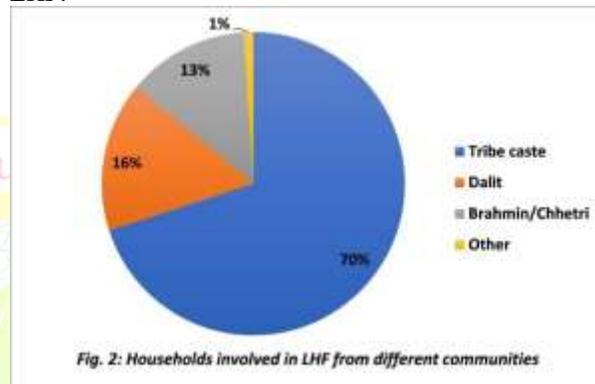
Each capital's changes were examined using three different indicators. After that, the average scores of each indicator of each capital were added and divided by three as three indicators were used for each capital. It was depicted as a web in a diagram with the form of the pentagon indicating the variation in access to each capital (Chapagain, 2007). Accessibility to capitals is

based on the idea that the outer edge of the Pentagon has the most access while the center of the Pentagon has no access to any of the capitals. (Poudel, 2004).

**RESULTS AND DISCUSSION**

**Communities involved in LHFUG**

Among 2359 households involved in the Leasehold Forest, the households of Indigenous people, Dalit communities, Brahmin and Chettri, and other communities were 1645, 388, 296, and 30 respectively (fig. 2). Chepang, Gurung, and Magar are the predominant Indigenous peoples who benefited from LHF.



**Status of Leasehold Forest Management**

The forest was handed over to the LHFUGs with members of 5 to 15 households. Each household received an equal share of the LHF to manage and execute a wide range of activities in its own way. LHFUGs were given assistance in developing ten-year forest management plans, as well as technical guidance and training from the Division Forest Offices, Gorkha to aid them in restoring the forest on their plots. The groups were also given basic inputs such as tools, seeds, seedlings of multi-purpose tree species (MPTs), and goats as a livelihood upliftment program, as well as microcredit chances to start income-generating businesses. Some of the major forest management and income-generating activities (IGAs) in the LHF are listed below in Table 3:

**Status of Livelihood Capitals in LHFUGs of 8 Clusters**

The average value of Physical capital ranged between 1 to 0.833, being a maximum 1 of Chyangli-Gaikhur, Masel-Baguwa, and Simjung-Muchchowk clusters followed by 0.98 for the Darbung cluster, 0.949 for Manakamana and Taklung cluster, 0.892 of Tanglichowk-Makaisingh cluster and 0.833, a minimum of Bhumlichowk cluster. The average value of natural capital ranged between 0.858 to -0.395, being a maximum 0.858 of Chyangli cluster followed by 0.854 of Simjung-Muchchowk cluster, 0.838 of Manakamana and Taklung cluster, 0.833 of Tanglichowk-makaisingh cluster, 0.656 of Masel-Baguwa cluster, 0.549 of Darbung cluster and a minimum -0.395 of Bhumlichowk

cluster whereas the average value of human capital ranged between 1 to -0.083, being a maximum 1 of Chyangli-Gaikhur, Masel-Baguwa and Simjung-Muchchowk cluster followed by 0.941 of Darbung cluster, 0.608 of Tanglichowk-Makaisingh cluster, 0.607 of Manakamana and Taklung cluster and a minimum -0.083 of Bhumlichowk cluster. The Bhumlichowk cluster was found much poorer (negative) in the case of natural and human capital than other clusters.

**Table 3:** Major Forest Management and IGAs in LHF of Gorkha, Nepal

S.N.	Major Activities	Income Generating Activities
1	Plantation	Trees and various grass species plantation were carried out (Grass: Stylo, Napier, molasses) Trees: Katus, Badahar, Uttis, Chilaune, Sindure and Tanki
2	Livestock and Poultry Farming	Goat, Cattles, Hen
3	Fruits and Vegetable Farming	Fruits: Papaya, Banana, Pineapple, Bayer, Lemon Vegetables: Cauliflower, Cabbage, Cucumber, Tomato, Potato
4	NTFPs Farming	Amriso, Tejpat, Cardamom, Timur
5	Nursery Management	Nursery beds preparation, planting procedures, use of fertilizers, soil management, irrigation, control of seedling density and pest control
6	Training and workshop	Knitting, Handicraft, Farming, Plantation, Accounting, Women Empowerment, Micro-enterprises, etc.
7	Others	REDD programs Implementation, loan provision, fund mobilization, Saving credit program

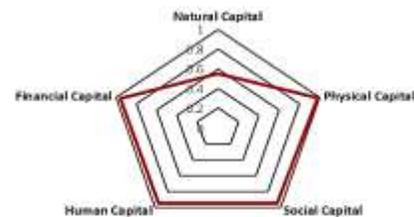
This was due to frequent soil erosion and forest fire mainly and grazing, encroachment to some extent. The average value of social capital ranged between 1 to 0.083, being a maximum 1 of Chyangli-Gaikhur, Masel-Baguwa, and Simjung-Muchchowk clusters followed by 0.941 of Darbung cluster, 0.821 of Manakamana and Taklung cluster, 0.717 of Tanglichowk-Makaisingh

cluster and a minimum 0.809 of Bhumichowk cluster. Similarly, the average value of financial capital ranged between 1 to 0.094, being a maximum 1 of Chyangli-Gaikhur, Masel-Baguwa and Simjung-Muchchowk cluster followed by 0.961 of Darbung cluster, 0.667 of Manakamana and Taklung cluster, 0.65 of Tanglichowk-Makaisingh cluster and a minimum 0.094 of Bhumlichowk cluster. All these results show relatively less contribution of the leasehold forestry program in the Bhumlichowk cluster in improving the status of those livelihood capitals.

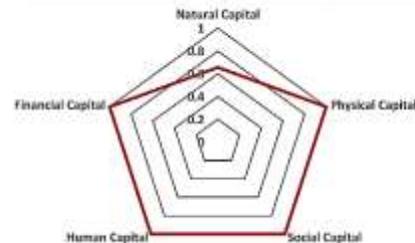
**Table 4:** Livelihood Capital Status in 8 Clusters of LHFUGs in Gorkha, Nepal

Cluster Name	Natural Capital	Physical Capital	Social Capital	Human Capital	Financial Capital
Bhumlichowk	-0.395	0.833	0.083	-0.083	0.094
Tanglichowk Makaisingh	0.833	0.892	0.717	0.608	0.65
Darbung	0.549	0.98	0.941	0.941	0.961
Manakamana	0.838	0.949	0.821	0.607	0.667
Chyangli Gaikhur	0.858	1	1	1	1
Taklung	0.838	0.949	0.821	0.607	0.667
Masel Bagawa	0.656	1	1	1	1
Simjung Muchchowk	0.854	1	1	1	1

**Status of Livelihood Capital of Darbung Cluster**

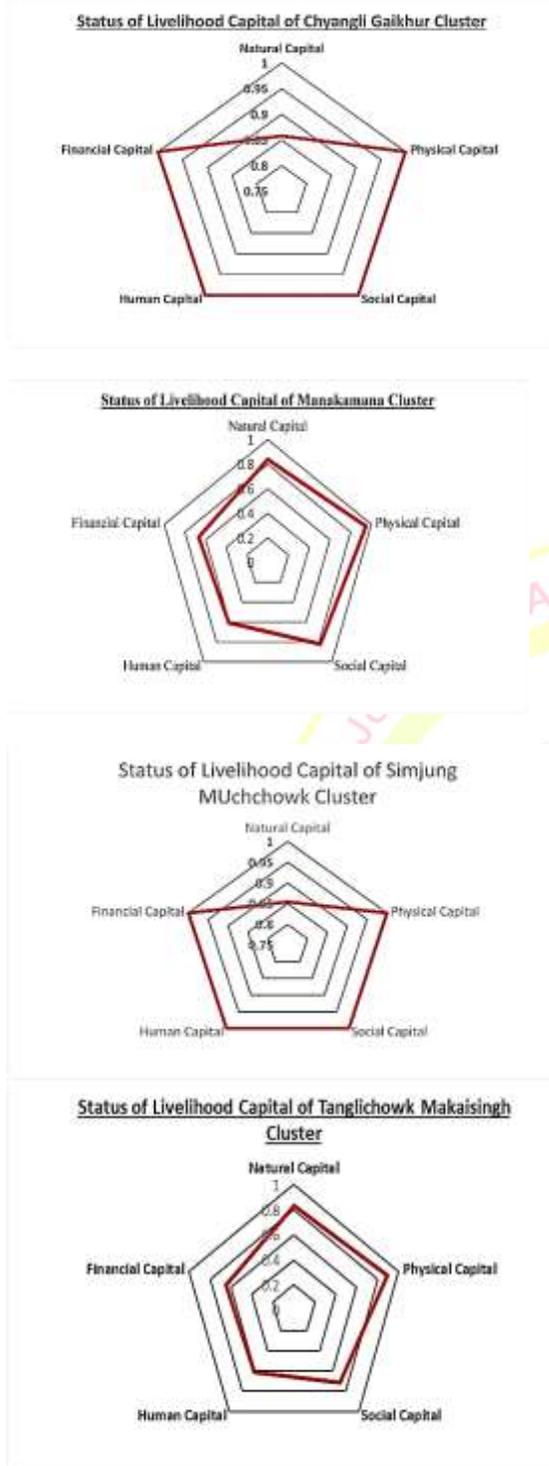


**Status of Livelihood Capital of Masel Baguwa Cluster**



**Status of Livelihood Capital of Taklung Cluster**



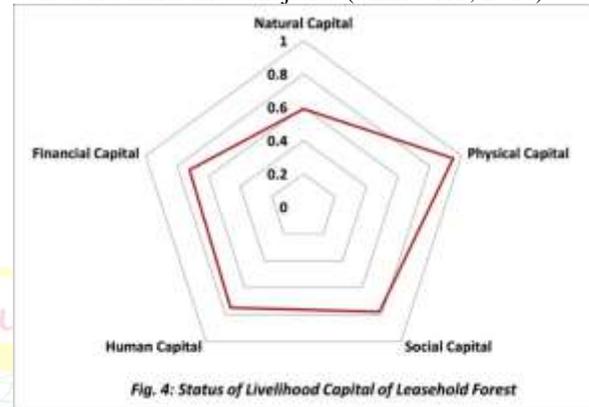


**Fig.3.** Showing the Individual Status of 8 Different LHF Clusters in Gorkha, Nepal

**Overall Status of Livelihood Capitals of LHFUGs in Gorkha**

The indicators used to assess social capital were meeting organization and group discussion, LHFUGs member's participation in the decision-making process about forest resource management, and the relationship between LHFUGs members and community members after the transfer of power of LHF, and the average score for each

of these indicators were 0.732, 0.774, and 0.923, respectively and hence the social capital received an average total score of 0.778. It evidences the constructive role of the leasehold forestry program in enhancing social assets. It is also supported by the findings of SEEPORT, 2014 which states that the Gorkha has a larger percentage of female decision-making households (37.5%), also the majority of the women that raise their voices are dalits and Janajatis (SEEPORT, 2014).



Our study shows the positive impacts of the leasehold program on physical capital in line with the findings by SEEPORT, 2014 which states that in Gorkha, thatch roofs were used by 17.5 percent of dwellings, and stone roofs were used by 60 percent. The physical capital was measured by changes in construction and access to physical capital, construction efficiency, and increased knowledge of community development activities. Each of these indicators had an average score of 0.961, 0.964, and 0.923, respectively. Physical capital received an average total score of 0.951. The variables chosen to evaluate human capital were user group awareness of roles, changes in leadership capability, and level of knowledge and skills in forest management, which received average scores of 0.832, 0.782, and 0.629, respectively. 0.748 was found to be the average total score for human capital.

According to Ohler, 2003, after seven years, Nepal's vegetation cover increased from 32% in new sites to 90% which is supported by this study in Gorkha. The enhancement in greenery and landscape beauty, ease in accessing forest resources, the incidence of forest fire, encroachment, and drying up of water resources were used as indicators to assess the status of natural capitals, which gained average scores of 0.456, 0.578, and 0.732 respectively. This capital received an average total score of 0.589. SEEPORT, 2014 also concludes to improve the land use and productive composition of leasehold plots significantly, and the time spent collecting fodder and forages has continuously decreased by 45 percent (SEEPORT, 2014).

As like the finding by Ohler, 2003, our study concludes the positive impact of LHF to increase income and strengthen the financial aspect of people. Financial capital received an overall score of 0.722 (Increase in employment opportunities: 0.702, income from

collection of forest products: 0.696, and Loan provisions for activities that generate income (IGAs):0.768). LFUGs have changed their subsistence farming to commercial agricultural production. According to Baral and Poudyal (2012), bananas and pineapples were the major sources of income in Gorkha but our study showed that the major income sources were from livestock rearing and vegetables. Livestock farming has become more popular in LHFUGs which showed a similar finding to Laudari, 2014. Micro saving and credits were found to be popular, and also participation in saving and credit activities has increased.

## CONCLUSIONS

The result has found the positive role of leasehold forestry programs targeting the pro-poor. In total, all five capitals have shown a positive value that indicates their progression due to the LHF program. Construction and access to physical capital, particularly improvements in construction efficiency and knowledge of community development, were the most important achievements. This study adds evidence to better-managed natural resources can help achieve both conservation and livelihood options. It supports the recommendation by CIFOR, 2019 that states integrating forestry into livestock programs based on a landscape approach promotes environmental sustainability with generation of initial income through a multidisciplinary and holistic approach to poverty alleviation. The role of extension services is also important in helping marginalized households to implement forest restoration and green income-generating activities in order to promote conservation and sustainable development. The challenge is to strengthen local governance and motivate the involvement of real backward people. Finally, we recommend the capacity building of frontline technicians and local people for better achievement of the goal.

## CONFLICT OF INTEREST

The author here declares that there is no conflict of interest in the publication of this article.

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