

Impact of Leasehold Forestry on Marginal Mountain Farms in Nepal

F. M. J. Ohler

FAO Technical Assistance to Hills Leasehold Forestry and Forage Development Project,
Kathmandu, Nepal

Introduction

The concept of community-based leasehold forestry was introduced to Nepal via the Forest Act of 1993, through the Hills Leasehold Forestry and Forage Development Project (HLFFDP). This project has two objectives: raising the incomes of hill families who are below the poverty line, and contributing to improving the ecological conditions of the hills.

Four line agencies are involved in the HLFFDP: (1) the Department of Forests is the lead agency, responsible for the leasing process; (2) the Department of Livestock Services is responsible for technical support to leasehold groups on fodder and livestock development; (3) the Agricultural Development Bank of Nepal (ADB) provides credit to leasehold farmers; and (4) the Fodder and Pasture Division of the Nepal Agricultural Research Council (NARC) carries out applied research. The project is financially supported by the International Fund for Agricultural Development (IFAD). The Government of the Netherlands funds technical assistance through the Food and Agricultural Organization (FAO) of the UN.

This paper presents a cohesive model for causal linkages from the leasehold forestry project intervention to its impact on marginal mountain farms of Nepal. There is substantial evidence to support this model.

- **Household survey data** – From 1994 to 1999, annual household surveys were conducted, ultimately reaching 256 project and 122 control households. In 2000 a data validation was undertaken, followed by a thorough statistical analysis (Thompson 2000).
- **Group and site information data** – The HLFFDP has systematically collected data from all leasehold groups and sites on an annual or bi-annual basis. The last round of data collection was in 2000, covered 1549 leasehold forestry groups, and was followed by a systematic analysis (Singh & Shrestha 2000).
- **Site-specific impact assessment on vegetation and social development** – In 1994 and 1995 a series of studies was undertaken in new leasehold sites using the International Forestry Resources and Institutions (IFRI) methodology. In 2000, follow-up studies were carried out in two sites to assess the impact of leasehold forestry on vegetation and social development (NFRI 2000 a, b).
- **Comparative studies of women with differing access to forest resources** – In 1999 and 2000 two studies were carried out in which 57 women were interviewed, 20 with access to leasehold forest, 19 with access to community forest, and 18 without access to community or leasehold forest (Douglas & Cameron 2000; Ghimire 2000).
- **Ongoing studies** – such as feeding values of fodder species, and vegetable production by leasehold farmers, HLFFDP annual reports, and staff reports.

Target Group: Marginal Mountain Farms

Subsistence farmers who do not produce sufficient food for their household consumption are defined as marginal farmers. By July 2000, 1549 leasehold forestry groups had been formed, with about 10,500 member households located in 10 districts of the central and western development regions of Nepal, at altitudes ranging from around 400-2000m. Subsistence farming is still the norm in these areas, and household food self-sufficiency is a criterion used by farmers themselves to define poverty or wealth. In the project area there is a clear correlation between the area of cultivated land and household food sufficiency. Households with about 0.25 ha of cultivated land are likely to have around 4 months of food sufficiency; households with about 0.5 ha of cultivated land have around 7 months food sufficiency; households with about 0.75 ha of cultivated land have around 10 months food sufficiency; and households with about 0.9 ha of cultivated land have around 12 months (i.e., year-round) food sufficiency.

The project included three main interventions.

1. **Leasehold group formation and forest handover** – On average about 0.6 ha of degraded forest per family was handed over as leasehold forest, usually for 40 years at no cost.
2. **Training and inputs** – Land-development training was provided to all new leasehold households, with both men and women participating. Standard inputs provided include seeds of grasses and legumes, tree saplings, and planting material. Both the District Forest Office and the District Livestock Office provided training and inputs.
3. **Access to credit** – A special credit facility was provided through the Small Farmers Development Centre of the Agricultural Development Bank of Nepal.

Effects and Impact

The interventions have two direct or primary effects, which lead to three secondary and four tertiary effects, each resulting in certain impacts improving the family welfare and livelihood of the leasehold farmers.

First primary effect: increased fodder availability

Converting a degraded forest into a leasehold forest in the care of a resource-poor farmer's family results in a quick and sustained increase in the vegetative cover of the forest. In newly formed leasehold groups, on average only 32% of the ground is covered by vegetation, this jumps to 50% after one to two years, and then gradually increases to 78% percent in 6-7 year old sites.

Second primary effect: increased quality and productivity of livestock

Access to credit enables farmers to purchase livestock, and they will often opt for an improved breed or more productive type of animal (e.g., milking buffalo instead of cow). A sample of 298 households indicated that the ownership of cows was progressively decreasing, while ownership of buffaloes was increasing, as was the ownership of goats.

First secondary effect: increased time available to women farmers

The first primary effect, increased fodder from leasehold and private land, reduces the time women need to collect fodder. Interviews with women indicate that five years after

the leasehold groups are formed, the average time needed to collect fodder is reduced from 3.9 to 1.4 hours per day, a difference of 2.5 hours per day.

Tertiary effect: opportunity to diversify income sources

When women gain 2.5 hours per day, they may take some rest from their heavy workloads, but there is evidence that especially women are more engaged in new income generating activities. According to the household survey, the numbers of household members earning cash income increased by 24% between 1996 and 1999 in leasehold households, compared to a decline of 4% in control households.

A widely observed trend shows that with increased availability of fodder and time, and diversification of income sources, increasing numbers of households start selling fodder, from none in the first year to 16.4% in 6-7 year-old groups.

Tertiary effect: opportunity to attend more meetings, training, and literacy classes

The increased availability of time should also make it easier for women to attend meetings, training, and literacy classes. The leasehold households are from the poorest section of society, with lower than average school attendance and high rates of illiteracy, especially among women. Many leasehold women also report that they got the opportunity to attend literacy classes through mediation of the project.

Second secondary effect: increased stall feeding

Increased availability of fodder makes it much easier for farmers to convert from free grazing to stall feeding. In the case of large livestock, we have observed an important increase in buffalo ownership and a decrease of cow ownership. According to the household survey, 47% of leasehold farmers reported an increased period of stall feeding of goats in 1999 as compared to 1996. However, control households showed a similar, but weaker trend, reporting a 32% increase in stall feeding of goats.

Tertiary effect: reduced pressure on forest vegetation

Increased stall feeding results in reduced grazing pressure on forest and other types of vegetation. Data from the Chitripani and Bhagwatisthan leasehold forests sites indeed show a big increase in diversity of plant species. In Chitripani, plant species diversity in 9 ha of leasehold forest increased from 37 species in 1994 to 58 species in 2000, an increase of 57%. In Bhagawatisthan, plant species diversity in 78 ha of leasehold forest increased from 70 species in 1995 to 130 species in 2000, an increase of 86%.

Tertiary effect: increased manure

Increased stall feeding results in increased availability of manure. However, the project has no precise information on the quantity and quality of manure produced. Increased availability of farm manure should result in increased food production and food sufficiency, and household food security has indeed improved. According to the household survey the period of food security between 1996 and 1999 increased from an average 7.8 months in 1996 to 8.4 months in 1999, while the household size increased from 6.6 to 7.1 persons.

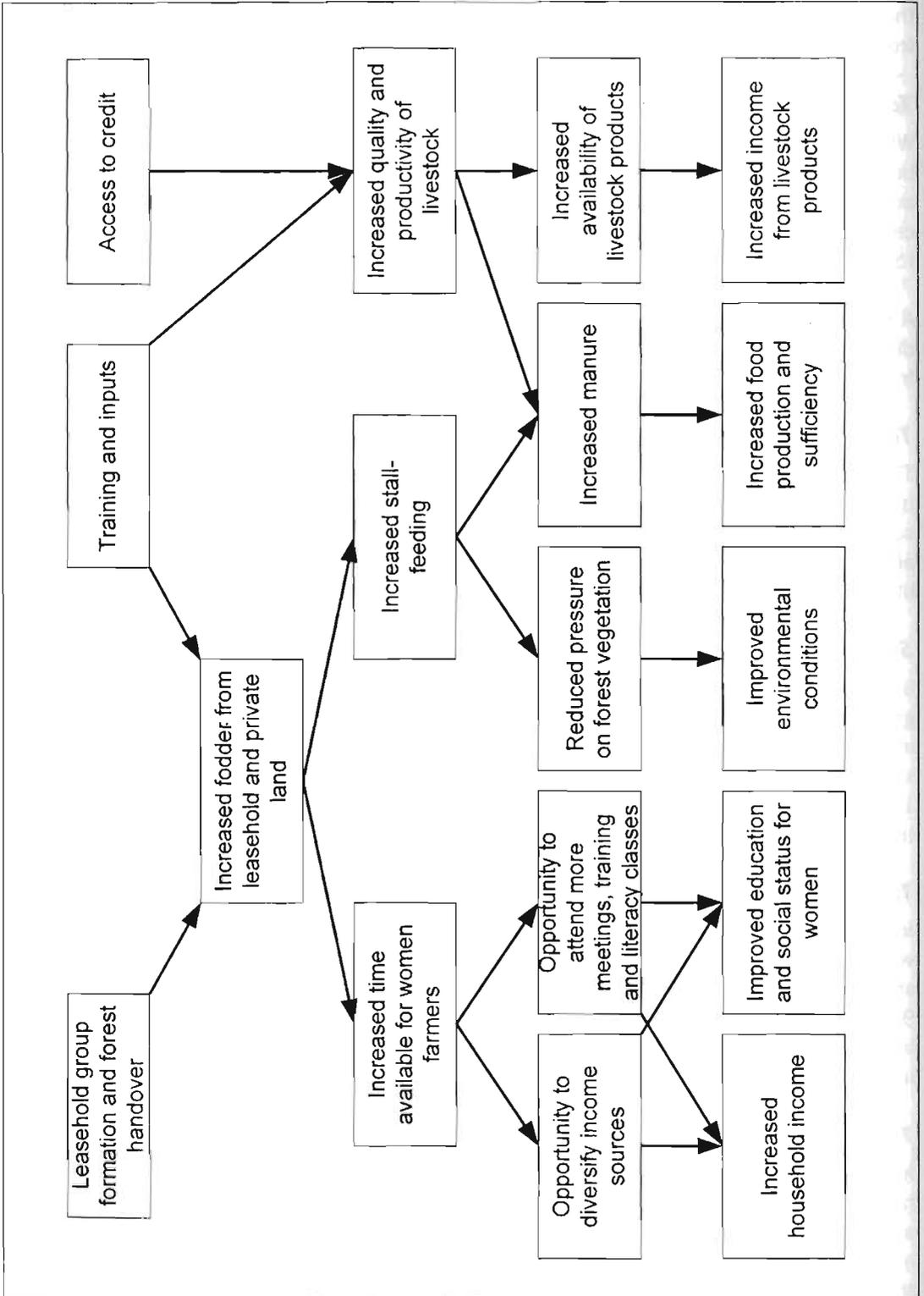


Figure 1: Model from intervention to impact of leasehold forestry on marginal mountain farms in Nepal (based on Ohler 2000 and Thompson 2000)

Third secondary effect: increased availability of livestock products

An increase in the quality and productivity of livestock leads to an increased availability of livestock products, which then should result in increased food sufficiency, and increased income from livestock products. There is strong evidence that the proportion of households generating income from livestock products is gradually increasing. In newly formed leasehold forestry groups, 53% of households earn cash from the sale of goats, as compared to 88% 6-7 years after group formation. Similarly, in newly formed leasehold forestry groups 20% of households earn cash from the sale of buffalo milk, as compared to 41% 6-7 years after group formation.

Model for Linkages from Intervention to Impact

We have seen how the different interventions interact and result in primary effects, and how these primary effects lead to secondary and tertiary effects, each leading to one or more final effects or impacts. With the evidence presented, we can draw up a model of the impact of leasehold forestry on marginal mountain farms in Nepal, based on causal linkages, starting from the projects' interventions (see Figure 1).

Discussion

Leasehold forestry provides forest resources to the poorest households. As a result, more households are able to engage in rearing livestock than before. Reduced grazing as a result of stall feeding leads to positive impacts on the forest and environment.

Leasehold forestry provides tenure security through leases of 40 years on degraded holdings, and motivates farmers to invest in land improvement with a long-term perspective. Leasehold forestry decreases poverty, but it is true that easy access to credit may result in increased dependency on credit institutions.

Leasehold forestry improves the condition of women, especially through saving time in the collection of fodder and forest products. However, this evidence is based on interviews with women who have been members of leasehold forestry groups for more than five years.

Potential of Leasehold Forestry and its Limitations

If leasehold forestry for the poor is limited to the handing over of degraded forest, then the actual area of degraded forest determines the maximum extent of leasehold forestry. However, there are other limiting factors too, in particular altitude and population.

HLFFDP experience shows that at altitudes over 1700m (about 5000 feet), leasehold forestry is problematic for several reasons, as the growth and regeneration of the vegetation is much slower and the production of harvestable fodder is much lower.

The population can be a limiting factor as well, if for example there are large areas of degraded forest without enough (poor) people living in them.

References

- Douglas, Z.; Cameron, J. (2000) *The Effects of Differing Access to Forest Resources on the Livelihoods and Capital Assets of Poor Women in Kavre District, Nepal*, Project Internal Document 7/2000. Kathmandu: FAO, Technical Assistance to the Hills Leasehold Forestry and Forage Development Project
- Ghimire, K. (2000) *The Effects of Differing Access to Forest Resource on the Livelihoods and Capital Assets of Poor Women in Makwanpur District, Nepal*, Project Internal Document 11/2000. Kathmandu: FAO, Technical Assistance to the Hills Leasehold Forestry and Forage Development Project
- NFRI (2000a) *Impact Assessment of the Hills Leasehold Forestry and Forage Development Project on Vegetation and Social Development in Bhagawatisthan Site. Bhagawatisthan (Kavrepalanchowk District), Nepal Forest Resources and Institutions – research program (NFRI)/ FAO - Project Internal Document 12/2000. Kathmandu: Technical Assistance to the Hills Leasehold Forestry and Forage Development Project*
- NFRI (2000b) *Impact Assessment of the Hills Leasehold Forestry and Forage Development Project on Vegetation and Social Development in Chitrepani Site. Churiamai VDC – Hetauda Municipality (Makwanpur District), Nepal Forest Resources and Institutions – research program (NFRI)/ FAO - Project Internal Document 13/2000. Kathmandu: Technical Assistance to the Hills Leasehold Forestry and Forage Development Project*
- Ohler, F.M.J. (2000) *The Impact of Leasehold Forestry on Livelihoods and Environment*, FAO – Field Document 3/2000. Kathmandu: Technical Assistance to the Hills Leasehold Forestry and Forage Development Project
- Thompson, R.H. (2000) *Assessment of the Impact of HLFFDP on Participating Households from the Household Survey Data 1994-99*, FAO - Project Internal Document 10/2000. Kathmandu: Technical Assistance to the Hills Leasehold Forestry and Forage Development Project
- Singh, B.K.; Shrestha, B.B. (2000) *Status of Leasehold Groups and Leasehold Sites*, FAO – Field Document 5/2000. Kathmandu: Technical Assistance to the Hills Leasehold Forestry and Forage Development Project