

## LAND HOLDING AND LIVELIHOODS: A SYNTHESIS FROM MODI KHOLA WATERSHED, NEPAL

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### Abstract

*This paper is an attempt to analyze land holding pattern and its consequences in rural livelihoods especially of Modi Khola watershed located in Western Development Region, Nepal. The study is mainly based on primary data collected from 360 households selected randomly from Modi Khola watershed during September-October, 2002. Land is an important natural asset, has greater implications on people's livelihoods. The distribution of land among households is uneven in this area. The implications of unequal distribution and access of land can clearly be seen on household income as well as level of food sufficiency. The average household income increases with the increase in land holding size. Likewise, the percentage of household reporting sufficient food production for household consumption increases with land holding size. Thus, the well-being of local people is largely tied-up with amount of land owned by the household.*

**Key words:** Livelihoods, land holding, land tenure, strategies, food sufficiency, capabilities, assets, well-being.

### INTRODUCTION

Livelihoods are the means people use to support themselves, to survive and to prosper. In other words it comprises the capabilities, assets and activities for a means of living (Chambers and Conway, 1991:4). Access to different levels and combination of asset has probably the major influence on choice of livelihood options (Chambers and Conway, 1991; Scoones, 1998; DFID, 1999). However, the importance of the other factors such as capabilities of people exploiting assets and the nature of the environment can not be undermined (Pain and Lautze, 2002). The diversities in livelihoods exist by locality (Bishop, 1990; Zoomers, 1999; Subedi and Pandey, 2002; Sullivan et al., 2004; Rijal, 2006a) as a result of variation in factors mentioned above.

Land is one of the important natural assets. Efficient and wise use of land is the prerequisite for the development and prosperity of the nation. It has greater significance in livelihoods especially of backward and poor communities particularly in agrarian countries like Nepal (Sharma, 1985). In Nepal, people's livelihoods is extremely dependent on agriculture. More than 80 percent people are involved on agriculture and about 40 percent of the country's gross domestic product (GDP) depends on it (Subedi et al, 2007a: 22).

Land holding is generally an enterprise concept which involves operating of land for the purpose of producing agricultural goods ( Subedi et al.,

2007a). Distribution as well as ownership of land have greater significance in determining income level. According to Subedi (1999) the economic well-being of majority of Nepali people is tied-up with amount of land owned by the household. Land is regarded as the means of piling of wealth and therefore any household having saving invests it in land anywhere when it is available (HLRC, 1995; Subedi et al., 2007a). Land also symbolizes social status and political power (Subedi et al, 2007a:2).

The issue of land distribution and/or land reform has remained a major concern for many decades with a view of improvement in livelihoods through agricultural development. However, the studies on livelihoods linking land is very limited. Identifying land as a basic and primary resource, Subedi et al. (2007b) realized that the poor livelihoods is due to poor status of arable land. National Planning Commission (2003) realized land fragmentation as the major hindrance for Nepalese agricultural development. Likewise, HLRC (1995) accepted land fragmentation is the major problem for modernization, commercialization and improvement in land productivity and stressed on land consolidation. In this context, the present study land holding and livelihood is timely and relevant. The purpose of this paper is to analyze landholding pattern and its consequences in rural livelihoods. The paper is organized into three sections. The first section presents general introduction along with description of the study area and the methods of the study. The subsequent second section presents discussion and findings of the study and the final section presents concluding remarks.

## THE STUDY AREA

The study area is Modi Khola watershed. It is located in the Western Development Region (Figure 1) and extends from 28° 10' North to 28° 40' North latitude and 83° 32' East to 84° 21' 30" East longitudes. It is bordered in the east by Mardi and Seti river basins, in the north by Marshyangdi basin and in the west and south by Kaligandaki basin. The total area of the watershed is 676.8 square kilometers. The elevation ranges from below 500 m in the south to above 8000 meters in the north within a short physical distance of about 51 km (Rijal, 2006b). Climate varies from warm temperate to alpine types. The area is rich in biodiversity. The upper part is important in aesthetic resources where tourism is flourished while lower part is endowed with extensive agricultural lands.

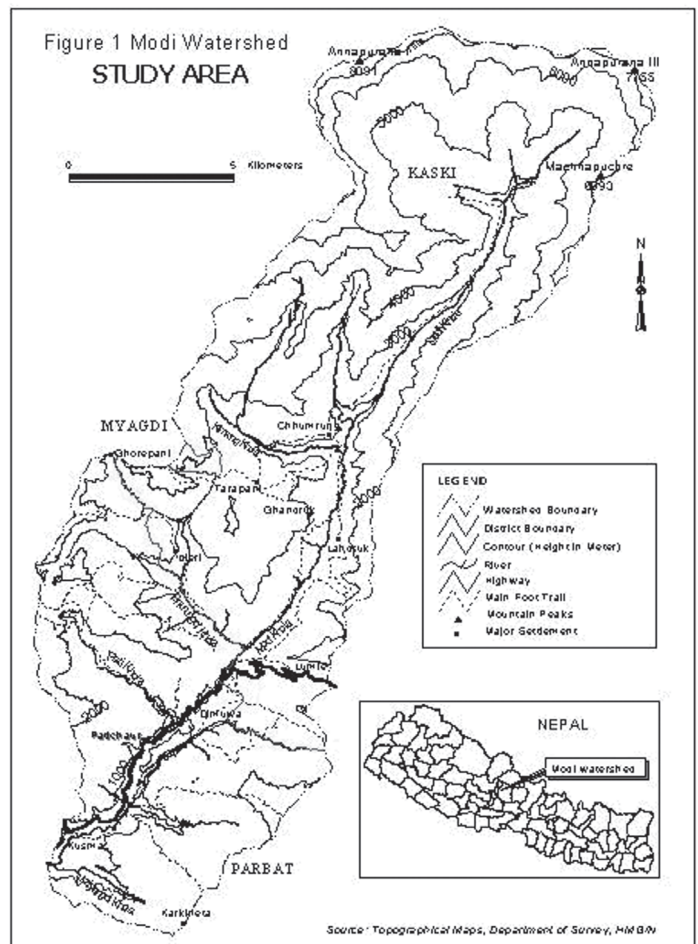
Altogether 28 Village Development Committees of three districts of Myagdi, Kaski and Parbat fall (18 entirely and 10 partially) in the Modi Khola watershed. The population within the watershed is estimated to be about 75,000 (17,000 households) in 2001 (CBS, 2002). The average family size of the watershed is 4.6 and literacy is 64.8 percent. The area is composed of different ethnic groups. The Gurung is the dominant ethnic group of the upstream part while Brahmin and Chhetri are the dominant ethnic groups in the downstream parts.

## STUDY METHODS

The study is based on both primary and secondary data. The primary data was collected through household survey and group discussions with extensive field observation during September-October, 2002. For the purpose of primary data collection, the Modi Khola watershed has been divided into two sub-regions- the upstream sub-region and downstream sub-region on the basis of water regime considering the diverse environmental as well as socio-economic conditions of the study area. For this, a number of socio-economic indicators such as literacy status, family size, distribution of land and livestock etc. were chosen and tried individually or in combination to determine the sampling units. But the basis of water regime seemed relevant and adopted for defining spatial sampling units. The dam site of the Modi Hydropower Project was

considered as the dividing line for this division. All the areas lying below this limit were considered as part of the downstream sub-region and those lying upstream from this point as part of the upstream sub-region.

Altogether 12 settlements (six settlements from each sub-region) were determined for adequate coverage of the study area. A total of 360 households-180 households from each sub-region were covered for household survey. Structured questionnaire was applied for household survey. In addition 12 formal and a number of informal group discussions were organized with extensive field observation. Relevant secondary data/information were obtained by reviewing literature and publications. The analyses is based on quantitative assessment by sub-region. Both statistical and non statistical tools are applied for data analysis. Simple correlation and Gini coefficient are applied along with some common statistical notions as statistical tools



## LAND DISTRIBUTION

The distribution of land among household is uneven in the Modi Khola watershed (Table 1). Out of the total 360 surveyed households, 2.2 percent

distribution i.e. large proportion of land is concentrated to few households.

The average size of land holding in the study area both cropped and other lands is 1.05 ha. This is

Table 1  
Percentage of households and area owned by land size categories

Size of land (ha)	Households (n = 360)	Area owned (Total = 378 )	Average size (ha)
No land	2.2	0.0	0.00
Below 0.5	31.9	9.1	0.30
0.5 to 3.0	60.6	67.5	1.17
3.0 to 5.0	3.1	10.8	3.71
Above 5	2.2	12.6	5.94
Total	100.0	100.0	1.05

Source: Field survey, 2002/03

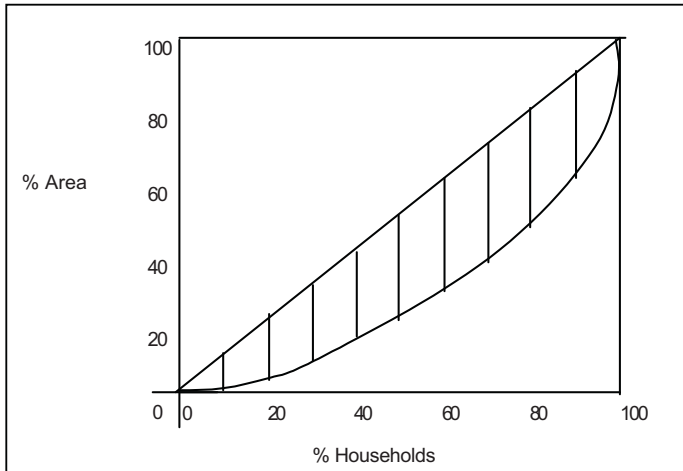


Figure 2: Land distribution between holders

households do not own lands and nearly 32 percent of the households own below 0.5 hectares of land. Majority of the households (60.6 percent) own 0.5 to 3.0 hectares of land. The proportion of households owning above 5 hectares of land is 2.2 percent. More than 23 percent of land area is occupied by 5.3 percent of households and 34 percent of households occupied only 9 percent of land. The extent of inequalities in land distribution can be shown using Lorenz curve (Figure 2) and calculating the Gini coefficient. The Gini coefficient (index) shows the degree of inequalities. The coefficient (index) varies from zero to unity- zero represents that the all households have the same area while the unity indicates the total area is concentrated to one household. The calculated Gini coefficient in this case is 0.36. This clearly indicates the skewed

bigger than that of the average national land holding size (0.83 ha), mountain (0.9 ha) and hill (0.7 ha) (CBS, 2004).

The distribution of land is uneven by sub-regions (Table 2). The proportion of households owning no land is high in the upstream sub-region (1.9 percent) as compared to the downstream sub-region (0.3 percent). But the proportion of households owning above 5 hectares of land is high in the downstream sub-region. The proportion of households owning below 0.5 hectares, 0.5 to 3 hectares and 3 to 5 hectares of land is nearly the same in both the sub-regions.

Table 2  
Percentage of household by holding size and sub-region

Size of land (ha)	Downstream	Upstream	Total
0.5 to 3.0	29.7	30.8	60.6
3.0 to 5.0	1.9	1.1	3.1

Source: Field survey, 2002/03

Out of the total land area of the watershed 19.7 percent is used for agricultural purposes. The distribution of agricultural land across sub-region is also uneven and mainly concentrated in the downstream sub-region due to favourable climate and topography. The farmland owned by households is divided into four different categories. These are *khet* (wet terraced land), *bari* (non-irrigated lands), grassland and others. The distribution of farmland by type and sub-region is given in Table 3.

sub-region. More than eight percent agricultural land is abandoned in the watershed. The proportion of abandoned land is high in upstream sub-region. Low productivity, destruction of crops by wildlife and shortage of agricultural labour are reportedly the main causes for the abandonment of farmland. Another reason for abandonment is due to shift of local people from farming to tourism and related activities.

Table 3  
Types of land and its area owned by household

Land types	Downstream		Upstream		Total	
	Area (ha)	Percent	Area (ha)	Percent	Area (ha)	percent
Khet	98.2	46.8	57.7	34.3	159.9	41.3
Bari	60.6	28.9	72.0	42.9	132.6	35.0
Grassland	34.1	16.2	23.8	14.2	57.9	15.3
Others (abandoned)	17.1	8.1	14.5	8.6	31.6	8.4
Total	210	100.0	168	100.0	378.0	100.0

Source: Field survey, 2002/03

Out of the total land, *khet* constitutes 41.3 percent followed by *bari* (35.1 percent), grassland (15.3 percent), and abandoned land (3.0 percent). The distribution of these lands varies by sub-region. The percentage of *khet* land is high in the downstream sub-region as compared to the upstream sub-region. Out of total land owned by surveyed households, *khet* land constitutes 46 percent in the downstream sub-region while it is 34.3 percent in the upstream sub-region. The excessive concentration of paddy land in the downstream sub-region as noted above is largely due to favorable agricultural land as controlled by climate and topography. The downstream part of the watershed is relatively flat as compared to the upstream part. The *bari* land is more extensive in the upstream sub-region. About 43 percent of land is under *bari* category in the upstream sub-region while it is nearly 29 percent in the downstream

## LAND OWNERSHIP

Table 4 provides information about land ownership pattern of the study area. Nearly 98 percent (352 households) of the households own some agricultural lands. Out of the total 352 households owning land, 18.2 percent rented-out some or all of their lands to others on different contractual basis i.e. proportionate as well as fixed sharing of production (*thekka*). Nearly 19 percent of the total 360 households rented-in some lands from others on contract and operated together with their own lands. It is clear that some of the households having own lands also rented-in lands from others. Eight out of total 360 households do not own any lands and some of them operate others' land and some are involved only in tourism business hiring other's house. This can be seen particularly in the upstream sub-region where tourism activities are flourished. The proportion of household owning land is higher

in the downstream sub-region as compared to the upstream sub-region. In the upstream part as a result of development of tourism activity some households are in-migrated. These households do not own any land and are involved only in tourism business.

The proportion of households both that renting-in and renting-out land is high in the upstream sub-region as compared to the downstream sub-region. In this sub-region a remarkable proportion of the population are involved in tourism activities as well as different governmental and non-governmental services elsewhere. It is to be noted

cities. And a significant proportion of working age population from this zone has temporarily out migrated for job to India and abroad. Thus, their lands have been rented-out to others on contractual basis of *adhiya* (proportionate sharing of outputs) or *thekka* (fixed sharing).

### Land holding and livelihoods

It has three aspects namely land as occupation base, land as a base of household income and land holding and food sufficiency. The details are discussed below.

Table 4  
Household's land ownership by sub-region (in percent)

Sub-region	Owned land (n = 352)	Rented-in (n = 68)	Rented-out (n = 64)
Downstream	99.4	11.7	12.8
Upstream	96.1	26.1	23.7

Source: Field survey, 2002/03

Note: Some of the households owning land also rented-in lands from others

that most of the agricultural lands of the upstream sub-region belong to the people of the upper zone. And a significant proportion of these people out-migrated from Modi Khola area to Pokhara, Kathmandu and other city areas.

Table 5 shows the land tenure status of the study area. Nearly 92 percent of agricultural land is owner operated and 8 percent is rented-in from others on different contractual basis mentioned above. The proportion of land rented-out to others is significant. More than 12 percent of the total owned

### Land as occupation base

The contribution of land on livelihood is significant in determining household income as well as livelihood strategies. The people in the Modi watershed undertake a range and combination of activities in order to achieve their livelihood goals. They earn cash, food and other goods to satisfy wide variety of their needs performing different activities (Rijal, 2006b). Among activities, agriculture rank first in terms of proportion of population employed and contribution in

Table 5  
Percentage of owner operated, rented-in and rented-out land

Sub-region	Owner operated land as % of total operated land	Rented-in land as % of total operated land	Owner operated land as % of total owned land	Rented out as % of total owned land
Downstream	96.6	3.4	93.1	6.9
Upstream	86.0	14.0	80.7	19.3
Total	91.9	8.1	87.6	12.4

Source: Field survey, 2002/03

land have been rented-out to others. The proportion of rented-in land is higher in the upstream sub-region. The main reason as noted above is the high concentration of absentee landlords in the upstream sub-region. Some people who possessed lands in this area live in Pokhara, Kathmandu and other

household economy. An overwhelming majority of the population (71 percent) is involved in agriculture i.e. crop farming and livestock raising. Service in government and non-governmental agencies (within country and abroad), business,

tourism, industrial activities, fishing and others are other occupations employed by local people. Household members adopt one or more activities to meet their needs

The importance of different activities is not similar across the watershed and varies by places as a result of variation in natural as well as socio-cultural environment, which have direct implications on choices of livelihood options. Service, business and wage labor rank second, third and fourth involving 18.9 percent, 2.8 percent and 1.6 percent population respectively. A significant proportion of population (5.6 percent) adopts other livelihood options. The

community. Modi watershed is not an exception since population of this area is largely dependent on agriculture. The contribution of agriculture (including livestock) in household income is 18.0 percent. Service in governmental and non-governmental organization, tourism, income from pension and remittances, business, and wage labor are other major sources of household income of the people of this area. Per household annual average income from different sources for the surveyed household is given in Table 7.

The average total annual income of the surveyed household is Rs 130,354 and per capita income

Table 6  
Major occupations of people of 10 years and above by sub-region (in percent)

Types	Downstream (n = 650)	Upstream (n = 626)	Total (n= 1276)
Agriculture	70.8	71.2	71.0
Service	21.5	16.1	18.9
Business	3.1	2.6	2.8
Labour	0.8	1.4	1.1
Sikarmi/Dakarmi	0.2	1.0	0.5
Tailoring	0.5	0.0	0.2
Other	3.2	7.7	5.4
Total	100.0	100.0	100.0

Source: Field survey, 2002/03

other category includes tourism, different industrial activities (weaving and knitting, tailoring, brewing etc.), transport activities, fishing and collection of wild products.

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#### Land as a base of household income

Household income is largely controlled by agriculture especially of farming

(family size 6.5 persons) Rs 20,054. Considering the per capita income of the hill region of Nepal for the year 2003/04 as reported in Nepal Living Standard Survey (Rs 19,823), the area shows slightly

Table 7  
Contribution of different sources to household income

Sources	Amount (NRs)	Percent
Remittance	40679	31.2
Agriculture	23408	18.0
Service	20918	16.0
Tourism	13646	10.5
Pension	10820	8.3
Business	10557	8.1
Wage labor	5799	4.4
Others	4527	3.5
Total	130354	100.0

Source: Field survey, 2002/03

better condition. The contribution of remittances to the total household income is 31.2 percent followed by agriculture (18.0 percent), service (16 percent), tourism (10.5 percent), and business (8.1 percent). The share of the other activities in the household income is 3.5 percent.

The average annual income of the household varies by land holding size and sub-region (Table 8). The table shows that the direct relationship between the size of holding and household income. The annual income of household owning no land is nearly Rs 69,000 while it is more than Rs 400,000 for households owning above 5 hectares of land. The correlation coefficient between land holding

## LAND HOLDING AND FOOD SUFFICIENCY

As noted above agriculture is the main source of livelihoods of the people. More than 70 percent people of this area adopted agriculture as main occupation. Food sufficiency is the principle livelihood outcome to the households that dependent on farming. In other words, the availability of food is an indication of level of well-being of livelihoods especially of poor communities who depends on farming. Producing enough food for consumption is still a principle determinant of economic, social and decent livelihood status of rural households (Subedi et al.,

Table 8  
Average income and percentage share of agriculture on household income (in NRs)

Size of land (ha)	Downstream	Upstream	Total
No land	54900	70500	68550
Below 0.5	90149	107054	99998
0.5 to 3.0	131989	131601	131757
3.0 to 5.0	230043	301250	255936
Above 5	378133	536000	417600
Total household income	132508	128815	130354
Income from agriculture	29749	17066	23407
% share on household income	22.4	13.4	18.0

Source: Field survey, 2002/03

size and household income is positive ( $r = 0.32$ ). Correlation test ( $t$ , at  $df = 258$  and  $0.01 \infty$  level) is significant. Which clearly indicates that the average annual household income increases with the increase in land holding size. The share of agriculture on total household income is 18 percent

(2007). Food sufficiency status of surveyed household is shown in Table 9. Not all the households in the study area produce sufficient food for household consumption. About 44 percent of the households produce enough foods. Majority of the households (56 percent) do not produce sufficient food to meet their household annual food

Table 9  
Percentage of households by food sufficiency status

	Downstream	Upstream	Total
Sufficient	48.3	39.4	43.9
Insufficient	51.7	60.6	56.1
Total	100.0	100	100.0

Source: Field survey, 2002/03

which varies by sub-region. The contribution of agriculture to total household income is 22.4 percent in the upstream sub-region while it is 13.4 percent in the upstream sub-region.

requirements. They produce food for three to nine months only. Nearly half of them those who produce sufficient food products save and sale to others to fulfill other household requirements.

Disparity in food sufficient is evident by sub-region in the study area. The proportion of households having sufficient food is high in the downstream sub-region as compared to that of the upstream sub-region. The proportion of households with sufficient food production is low in the higher altitudinal parts. It is mainly due to low productivity as well as low intensity of crops that controlled by environmental factors. The local people adapt a number of food deficit management practices in order to meet food deficiency. The households either manage their food deficiency through purchase of food items in local markets using earned income or borrowing of food items as well as use of wage receiving directly in terms of food items.

Size of land has greater implications in food production and food sufficiency level. No doubt, both quantity and quality of land together with use of inputs and environmental factors are equally important in food production. Size of family and

hectares, 60.6 percent own 0.5 to 3.0 hectares and 2.2 percent households own above 5 hectares of land. More than 23 percent of land area is occupied by 5.3 percent of households and 34 percent of households occupied only 9 percent of land. This clearly indicates the skewed distribution and access of land. The average size of the land holding both cropped and other lands is 1.05 ha.

People of Modi Khola watershed perform diverse activities for livelihood security. The importance of these activities is not similar across the watershed and varies by places as a result of variation in natural as well as socio-cultural environment and access to assets. Among activities, agriculture rank first in terms of proportion of people employed (71 percent) and second in terms of contribution on household income (18 percent).

Livelihoods of people of this area are largely controlled by land holding size. Food sufficiency, a principle livelihood outcome and one of the

Table 10  
Food sufficiency as percent of households of respected land size category

Land size (ha)	Downstream	Upstream	Total
No land	0.0	0.0	0.0
Below 0.5	45.8	37.5.1	41.7
0.5 to 3.0	38.3	51.4	45.4
3.0 to 5.0	57.1	75.0	63.6
Above 5	66.7	-	50.0

Source: Field survey, 2002/03

food habits are other components that determine level of food sufficiency. However, in this study only size of land is considered. Percentage of households that reported sufficient food by land size category and sub-region of the study area is given in Table 10. Nearly 42 percent of households owning below 0.5 hectares of land produce sufficient food for their household requirements. Table 10 also shows the general trend that the percentage of household reporting sufficient food increases with land holding size with few exceptions. These exceptions might be due to other factors discussed above.

## CONCLUSION

Land, an important natural asset, has greater implications on livelihoods. The economic well-being of people in the Modi Khola watershed is tied-up with amount of land owned by the household. The distribution of land among household in the Modi Khola watershed is uneven. Nearly 32 percent of the households own below 0.5

indicators of level of well-being of household especially of poor communities who depends on farming is largely guided by size of farmland. The study clearly indicates that the percentage of household reporting sufficient food increases with land holding size. The implications of land size can clearly be seen in household income too. The size of holding and household income have positive correlation. The average household income increases with the increase in land holding size.

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