ICIMOD

Mountain Population and Employment

Discussion Paper Series

OFF-FARM EMPLOYMENT IN NEPAL
A CASE STUDY OF MARPHA - JOMSOM VDCs
MUSTANG DISTRICT

Janardan Khatri-Chhetri
Ishwori Neupane
Bimal Sharma

MPE Series No. 18

International Centre for Integrated Mountain Development

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Foreword

The present discussion paper by Janardan Khatri-Chhetri, and Colleagues, entitled "Off-farm Employment in Nepal: A Case Study of Marpha-Jomsom VDCs, Mustang District", constitutes one of six location-specific case studies of prominent/potential off-farm activities in mountain regions in Hindu Kush-Himalayas. These case studies include horticulture, livestock, and small-scale enterprises in the townships of Wenchuan County, Sichuan Province (China), tourism and vegetable farming in Mustang and Dhading districts (Nepal), and natural resource-based activities in Shangla Par Sub-division, Swat District (Pakistan).

A major issue in mountain development is to create conditions that would help enhance the carrying capacity of the mountain resources and open opportunities for sustainable improvements in the living standards of mountain communities without degrading or depleting the resource base. This is where the promotion of off-farm employment based on comparative advantages assumes such crucial significance in strategies for the development of the mountains. The critical issues, interlinkages, and options in off-farm employment in the Hindu Kush-Himalayan (HKH) Region have, therefore, been given primary importance in ICIMOD's programme on Mountain Population and Employment. As part of the programme ICIMOD collaborated with institutions and professionals from China, Nepal, and Pakistan to undertake the regional overview studies on the current state of off-farm employment This was followed by area-specific case studies on prominent and potential off-farm activities. The regional overview studies are available as part of the Discussion Paper Series of the Mountain Population and Employment Division (MPE Series 12-14).

The case studies analyse and assess the current state of off-farm employment in the respective socioeconomic and resource contexts, identify factors that have inhibited or enhanced off-farm employment and income opportunities, trace the linkages of off-farm activities with agriculture and other sectors, and present guidelines for the future development of potential off-farm opportunities

These studies were made possible by a grant from the International Development Research Centre (IDRC), Canada, for which I am extremely grateful ICIMOD was also fortunate to have, working on these studies, professionals from national institutions in China, Nepal, and Pakistan. The methodological framework and the structure of the studies were mutually agreed upon by participating researchers From ICIMOD's side the programme was coordinated and executed by Dr Pitamber Sharma and Dr Deepak Bajracharya (now with UNICEF).

Readers might be interested to know that all of the six case studies (including the present one) are published under the Discussion Paper Series of the Mountain Population and Employment Division Also, the Report of the International Workshop on Mountain Off-farm Employment, held in Kathmandu in February 1992, in which these case studies were presented, discussed, and synthesised, has also been published by ICIMOD. ICIMOD is hopeful that these studies will contribute to a better understanding of the problems and prospects of off-farm employment in the mountains.

E. F. Tacke
Director General

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INTRODUCTION

Background to the Study

The importance of employment in the off-farm sector has emerged from a recognition of the limitation of the farm sector to fully and productively employ the growing labour force. Studies have shown the technical possibility of employing more labour by more intensive cultivation than that currently practised in crop production in many developing countries (Ishikawa 1978, Berry and Cline 1979). Nevertheless, even if such technical possibilities are achieved, the per capita cultivated land in the hills and mountains of Nepal is too low (0.11 ha) to allow full absorption of the labour force, which is increasing by about 100,000 annually. Moreover, the seasonal variation in the intensity of agricultural work is quite pronounced in Nepal, thus giving rise to seasonal unemployment.

This study on mountain off-farm employment is an attempt to analyse the underlying factors inducing or inhibiting the growth of remunerative off-farm employment (OFE). The first phase of the study reviewed available information at the macro-level. The study identified some prominent and potential off-farm activities, in terms of employment generation, and explored their linkages. One of the potential and prominent activities identified was mountain tourism.

The present investigation comprises the second phase of the study. It is basically a case study of the impact and implications of mountain tourism in the Jomsom and Marpha Village Development Committees (VDCs) of Mustang District.

The objective of this study is to examine the employment and income potentials of trekking tourism and to analyse the factors that help or hinder the long-term sustainability of activities associated with tourism. More specifically, the objectives are to assess the critical issues and options concerning tourism-related, off-farm employment in the study area and to develop guidelines for the promotion of environmentally-sound and sustainable OFE activities associated with mountain tourism.

Selection of Study Area

The Marpha-Jomsom VDCs in Mustang District were selected for the case study because of several reasons. The area is the major destination of trekking tourists in Nepal. It is not accessible by motorable road. The growth in tourism has brought about visible economic changes in the area. Tourism has brought about a series of activities that have provided new and novel off-farm employment opportunities. At the same time, the effects of trekking tourism, particularly on environmental resources, are emerging as an important concern.

Approach and Methodology

Both primary and secondary information have been used in the case study. Primary information was collected from household and enterprise level surveys of the study area. A field survey was conducted during November-December of 1991, and the reference period of the study was November 1990 to October 1991.

The purpose of the household survey was to prepare a socioeconomic profile and to estimate the proportion of the work force employed in various off-farm employment activities and the contribution of these activities to the household economy.

The purpose of the enterprise level survey was to investigate the major off-farm activities of the study area in terms of their linkages, potentials, problems, and prospects. Detailed discussions and interviews with key informants provided many insights. The key informants included community leaders, village chiefs (*Mukhiya*) and elders, local school teachers, entrepreneurs, business men, government officials, and tourists visiting the study area. Community leaders, village chiefs, and local school teachers were interviewed to collect information on off-farm activities, their resource base, issues of environmental degradation, farming systems, cropping calendars, and community programmes. Government officials were consulted on the government's programme and policies and assessments of community opinions. Entrepreneurs and business men were interviewed, mostly to identify the problems and prospects of off-farm activities at the farm level. Tourists were also interviewed in Marpha-Jomsom VDC to share their experiences, and their perceptions on the problems and potentials of the area.

Household Selection

The households were selected by using two stage selection procedures. Four villages; Jomsom, Thini, Marpha, and Syang were selected purposively as the first stage sampling units from the Marpha-Jomsom VDCs on the basis of information collected from local informants.

In the second stage, a list of household heads was prepared within the selected villages, together with the estimated size of their landholdings. The households were grouped into marginal, small, medium, and large categories according to the size of landholdings. Finally, a total of 55 households were selected randomly, so that the proportion of the sample to the population in each group remained more or less equal. One household was dropped from the final analysis because of incomplete information on some key variables.

Enterprise Selection

In selecting the enterprises, an inventory of existing enterprises in the study area was prepared, and these enterprises were grouped by type of industry. Twenty per cent of the enterprises in each group were selected and the owners/managers of the selected enterprises interviewed. In cases where the number of enterprises in a given industry was less than 10 but more than one, then two enterprises were interviewed.

Organisation of the Study

The study is organised into four substantive chapters. The following chapter presents the regional setting and the socioeconomic as well as the resource profile of the study area. Chapter Three presents an inventory of existing off-farm activities and provides an analysis of the labour demand situation, as well as the contribution of off-farm employment to household income. Chapter Four provides an investigation of major off-farm activities in terms of the specifics of their management, technology, marketing, and extension and support services. The final chapter summarises the critical issues and options with respect to the development of mountain tourism in the Jomsom-Marpha area in the form of guidelines for future development.

REGIONAL SETTING AND SOCIOECONOMIC PROFILE OF THE STUDY AREA

Physical Setting

The study area covers two VDCs located in the south central part of Mustang District (Map 2.1). Mustang borders the Tibetan region of China to the North. The geographical area of the district is 366,958 hectares of which about two thirds lie in the Himalayan Range and only 3,946 hectares (1.1%) are under cultivation.

Mustang is one of the most sparsely populated districts of Nepal. Density on agricultural land is 3.7 persons per hectare. The total population of the district was 14,319 according to the 1991 Census. The main crops grown are *ooa* (naked barley), buckwheat, mustard, potatoes, and wheat. Mustang is a food deficit district. Sheep, mountain goats, *yak*[1], *chauri*[2] bullocks, cows, *jhopa*[3], and mules are the main livestock in the district. In recent years, the cultivation of vegetables and temperate fruits (mainly apples and apricots) has been increasing.

Mustang can be divided into two distinct physiographical regions, namely, the southern and northern regions. The northern region covers 10 of the total 16 VDCs of the district. This region lies in the rain shadow area and is characterised by very low precipitation, low temperature, bare rocky mountains, and almost no natural forest. The southern region covers six VDCs, mostly inhabited by the *Thakali* ethnic group. This region has a cool to warm temperate climate.

The Kali Gandaki River flows through this district in a north-south direction and passes through the Marpha-Jomsom VDCs. Jomsom, which is also the district headquarters, is situated on the banks of the Kali Gandaki. The study area holds about 20 per cent of the district population and is largely dominated by *Thakalis* (55%). Strong winds are characteristic of the area. They commence in the early afternoon and continue for most of the day. Most houses are single-storeyed with mud walls and mud roofs. There is a custom of piling fuelwood on the roofs, and the quantity of wood piled is considered to be a sign of prosperity.

Tourism-related trade and businesses are the major sources of off-farm income and employment for the people of this area.

Demographic Characteristics

Household and Population

Small and marginal categories of farm households dominate the Jomsom-Marpha VDCs. Subsistence farming is typical of the area (Table 2.1).

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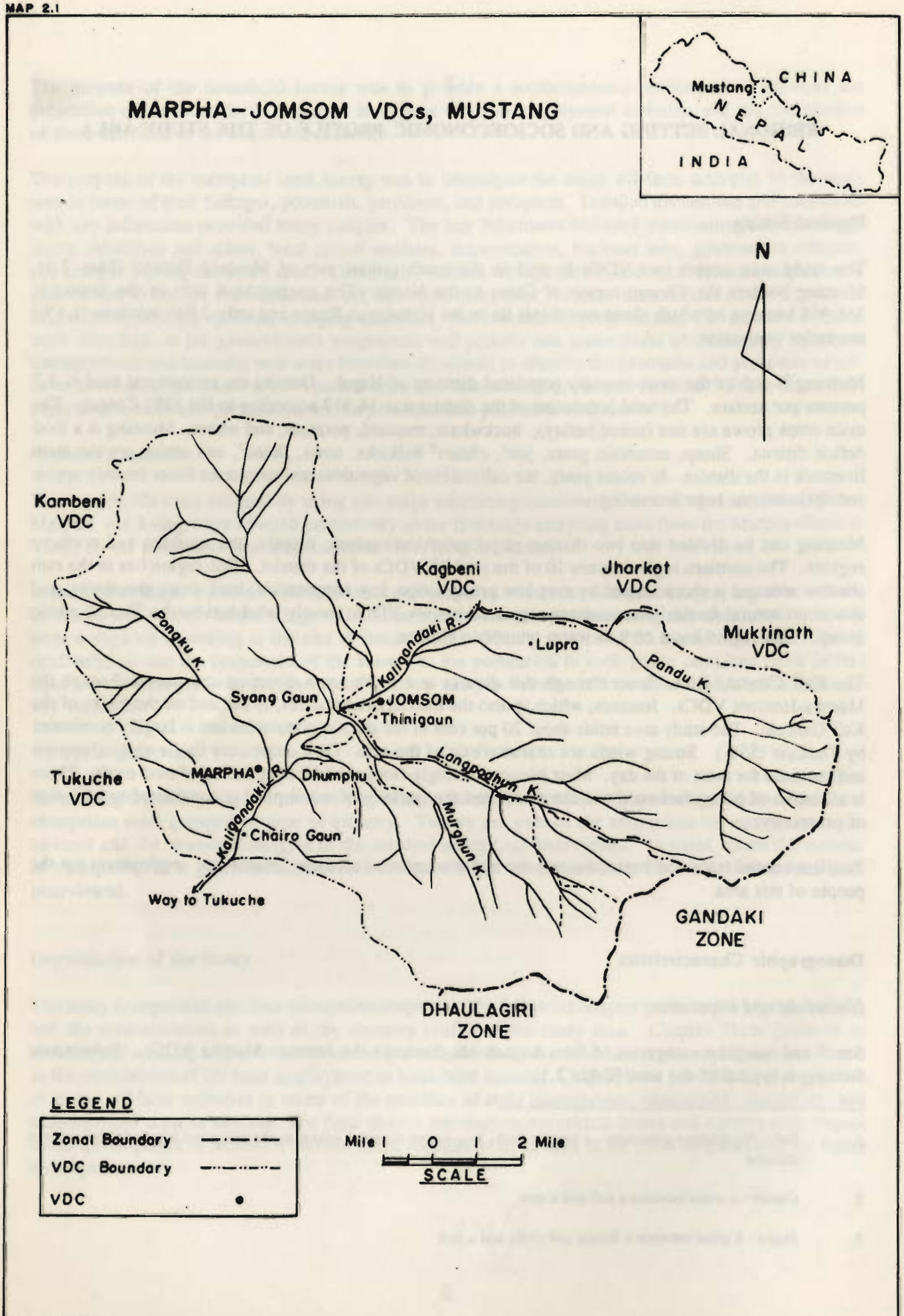
1. *Yak* - *Phoephagus grunniens* - a heavily built, long-haired mammal related to the bison and adapted to life at high altitudes

2. *Chauri* - a cross between a *yak* and a cow

3. *Jhopa* - a cross between a female *yak* (*nak*) and a bull

MAP 2.1



Source: National Census map 036—037

Table 2.1: Distribution of Sample Households by Farm Strata

Ethnicity	Farm Strata*			Total	
	Marginal	Small	Medium & Large	No.	%
Thakali	11	19	10	40	74.07
Gurung	2	2	5	9	16.67
Others (*Bhotia, Kami, Damai*, etc.)	3	2	-	5	9.26

* For analytical purposes, the households have been classified into marginal, small, medium, and large groups, based on operated landholdings (a proxy for income) as follows:
marginal-up to 0.2095 ha;
small - 0.2096 to 0.5230 ha;
and medium and large - above 0.5230 ha.

The *Thakali*, the native people of this area (Thak Khola), account for the majority of sample households, although they are not the dominant group in the MustangDistrict. *Gurungs*, who are a major ethnic group in the district, constitute a minority in the study area. There is a great deal of cultural and social interaction.

Age and Sex Distribution and Dependency Ratio

The sample households had a population of 271, about 16 per cent were below the age of 10, and the dependency ratio was 40, i.e., there were 40 persons dependent on every 100 adults in the working population. The sex ratio was almost even. It may be noted that the dependency ratio for Nepal as a whole is higher than that found in the study area and the sex ratio until 1981 was in favour of males (Table 2.2)

Average Family Size by Ethnicity and Farm Strata

The average household size (5.2 persons) in the study area was found to be slightly higher than the district average (4.8) (Table 2.3). Although the usual trend of a positive relationship between the household size and the farm groups was found, it was also observed that the *Gurungs* have the highest (9.2) average household size, followed by the *Thakalis* (5.0) and other occupational castes (4.8).

Migration Patterns

Migration, as in other mountain areas, plays an important role in the economy of the study area. Three types of migration; seasonal, temporary, and permanent; have been noted.

Seasonal Migration. Seasonal migration in Mustang is motivated by trade and business. According to key informants, the active earning members of about 30 per cent of the households of the study area were reported to have been migrating each year from December to March in search of trade and business opportunities.

Table 2.2: Distribution of Sample Population by Broad Age Groups and Dependency Ratio

Age Groups	< 10			10-59			> 59			Total			Child Depend-ency	Age Depend-ency	Total Depen-dency
Farm Groups	M	F	T	M	F	T	M	F	T	M	F	T			
Marginal	9	7	16	26	21	47	2	3	5	37	31	68	37	12	49
Small	6	8	14	41	37	78	4	4	2	51	49	100	22	13	35
Medium and Large	11	8	19	34	46	80	3	1	4	48	55	103	32	07	39
Total	26	23	44	101	104	205	9	8	17	136	135	271	30	10	40

Table 2.3: Average Family Size by Ethnic Group and by Farm Strata

Ethnic Group	Farm Strata			Average
	Marginal	Small	Medium & Large	
Thakali	4.36	4.21	7.20	5.00
Gurung	3.00	5.00	6.20	5.22
Others	4.67	5.00	-	4.80
Total	4.25	4.35	6.87	5.02

However, within the sample households, about 10 per cent of the household members were found to be migrating seasonally. The main reason for migration was reported to be the lack of off-farm employment opportunities in the region in winter. The major destinations of migrating households were the urban areas of Pokhara and the market centres of Baglung, Parbat, Syangja, Chitwan, Rupandehi, Tanahu, Kathmandu (within the country), and some Indian cities.

The percentage distribution of seasonally migrating population among the sample households by ethnicity and by purpose is presented in Table 2.4.

Ethnicity and occupation play an important role in determining seasonal migration. Whereas more than one third of the people from occupational groups migrated seasonally (mainly to find a market for their metal utensil products), relatively few *Thakalis* moved out. *Thakalis* were mainly occupied in trade and business activities (like hotels/lodges and retail trade in foreign goods) in their home towns. *Gurungs* migrated for carpet-weaving and wage-earning activities. The percentage of female migrants was found to be higher (11.1%) than males (8.1%), probably due to the higher participation of women in catering and carpet-weaving activities.

A seasonal in-migration trend was also observed in the study area. This has a bearing on farm as well as off-farm activities in the study area. The in-migrants mostly consist of trekking porters and vendors from other districts. The vendors from Pokhara, Baglung, Dhading, Beni, and Kusma bring with them consumable goods (clothes, shoes, utensils, and food items) and sell these items in the Marpha and Jomsom areas by visiting door to door.

Table 2.4: Percentage Distribution of Seasonally Migrating Household Members by Sex, Ethnicity, and Purpose

Ethnicity	*Thakali*			*Gurung*			Others			Total		
Purpose	Male	Female	Total	Male	Female	Total	Male	Fema -le	Total	Male	Fema-le	Total
For Trade/Business												
- Metal Utensil Business	-	-	-	-	-	-	33.33	25.00	29.41	4.41	2.96	3.69
- Foreign Goods' Business	0.97	1.04	1.00	-	-	-	-	-	-	0.74	0.74	0.74
- Hotel Business	0.97	3.13	2.01	-	-	-	-	-	-	2.22	2.22	1.47
For Wage-earning												
- Carpet-weaving	-	-	-	6.67	8.70	7.89	-	12.50	5.88	2.96	2.96	1.84
- Wage-earning	-	-	-	6.67	4.35	5.26	-	-	-	0.74	0.74	0.74
Others												
- To Meet Relatives	-	2.08	1.00	-	-	-	-	-	-	-	1.48	0.74
- For Medical Treatment	0.97	-	0.50	-	-	-	-	-	-	0.74	-	0.37
Total	2.91	6.25	4.51	13.34	13.05	13.15	33.33	37.50	35.29	8.11	11.10	9.59

While returning they carry apples from Marpha and Jomsom for sale in Pokhara. Thus, the vendors conduct a "two-way business system". This business has been increasing in the area in the last decade or so. Most of the low income groups were found to be involved in this business. A survey conducted by Marpha Farm in the FY 1989/90 reveals that, in a period of nine months, almost 2,204 persons were involved in this activity and about 123 mt of apples were exported during that period. This activity has helped in the marketing of apples and contributed positively to apple production in the study area.

Temporary Migration. Persons who resided outside the study area for more than 6 months were considered to be temporary migrants. About 10 per cent of the family members were found to be in this category (Table 2.5). Females migrated for trade/business purposes, whereas male migration was associated mostly with study.

Permanent Migration. For obvious reasons, it was not possible to determine the number of households moving away permanently from the study area. However, key informants were not aware of any households or members moving away permanently in the last five years. They said that some entrepreneurs had moved into the study area in the last ten years to start hotel/lodge businesses by marrying local *Thakali* women. The household survey shows that two *Gurung* households moved into the area in the last ten years and one *Thakali* household in the last five years. It was noted that the local community was generally not cooperative with any outsider trying to settle permanently in the area for trade and business purposes.

Educational Status

Educational status very often tends to be related to the economic status of the population. In Nepal, ethnicity also influences the level of educational attainment. People with higher educational attainment also tend to be involved in more gainful off-farm activities.

Literacy Status. The literacy rate has been derived as the ratio of literate members to the corresponding population aged six years and above. The literacy rate in the study area was found to be quite high

Table 2.5: Percentage Distribution of the Members of Sample Households Who Migrate Temporarily from the Household by Years of Migration, Sex, and Purpose

Purpose	6 Months to 1 Year	1 - 5 Years	5 - 10 Years	10 Years Above	Total		
					Male	Female	Total
Trade/Business							
Hotel	1.85	0.37	0.74	1.48	3.68	5.19	4.43
Services	-	0.37	0.74	-	1.47	0.74	1.11
Study	1.11	1.85	1.48	-	5.88	2.96	4.43
Total	2.96	2.59	2.96	1.48	11.03	8.89	9.97

compared to the national average (23.5 per cent) reported by the Population Census of 1981 (Table 2.6). A household survey conducted in this study area in 1980 had also reported a high literacy rate: 62.4 per cent for males and 28.3 per cent for females (APROSC 1981).

Table 2.6: Percentage Distribution of Literate Population by Sex and Farm Strata

Farm Groups	Male	Female	Total
Marginal	51.72	33.33	42.86
Small	70.83	40.00	55.91
Medium and Large	80.95	52.94	65.59
Total	69.75	43.90	56.61

Furthermore, both male and female literacy rates appear to have a direct relationship to the farm strata. The total literacy rate for marginal, small, and medium and large farm groups is 42.86, 55.91, and 65.59 per cent respectively.

Similarly, the literacy rates calculated on the basis of ethnic group (Table 2.7) show a higher percentage for *Thakalis* (61.36%), followed by *Gurungs* (46.51%), and other occupational castes (39.13%). The ethnic bias in literacy rate also holds true by sex. It may be noted that, unlike other mountain areas in Nepal, the Jomsom-Marpha VDCs have a pretty high literacy rate - a rate that is at par or better than the literacy rate in most urban areas in Nepal.

Educational Attainment

The level of formal educational attainment has been grouped into three categories; viz, primary level (up to class five), secondary level (class six to ten), and above secondary level. The percentage distribution of sample population by levels of educational attainment and ethnicity is presented in Table 2.8.

Table 2.7: Percentage Distribution of Literate Population by Sex and Ethnicity

Ethnicity	Male	Female	Total
Thakalis	73.33	48.83	61.36
Gurungs	61.11	36.00	46.51
Others (*Bhotia* & other occupational castes)	54.55	25.00	39.13
Total	69.75	43.90	56.61

Table 2.8: Percentage Distribution of Sample Population by Levels of Educational Attainment by Sex and Ethnicity

Ethnicity	Primary Level (Up to Class 5)			Secondary Level (Class 6 to 10)			Above Secondary			Total		
	M	F	T	M	F	T	M	F	T	M	F	T
Thakalis	22.22	24.42	23.30	31.11	17.44	24.43	8.89	2.33	5.68	62.22	44.19	53.41
Gurungs	18.67	8.00	11.63	38.89	24.00	30.23	-	-	-	55.56	32.00	41.86
Others	45.45	16.67	30.43	9.09	-	4.35	-	-	-	54.55	16.67	34.78
Total	23.53	20.32	21.90	30.25	17.07	23.55	6.72	1.63	4.13	60.50	39.02	49.59

It is quite evident from the above table that about 50 per cent of the total sample population aged six and above had formal education. The corresponding figure was reported to be 26 per cent for rural Nepal by the Nepal Rastra Bank (NRB) Survey (NRB 1988). The percentage of males having some formal education was found to be 60.5 per cent while the female percentage for the same was only 39.0. Formal education by ethnicity shows a higher percentage for *Thakalis* (53%), followed by *Gurungs* (42%), and other occupational castes (35%). About six per cent of *Thakalis* had college level education. There were no *Gurungs* and other ethnic groups in this category.

Economic Characteristics

Labour Force and Main Occupations

The economically-active population is defined as those persons who are ten years or over and who have worked in one or more of the principal occupations during the survey year. The total number of the economically-active population in the sample households was found to be 166 which is 75 per cent of the total population aged 10 or over. The refined activity rate (RAR), therefore, is lower (75.8) than the 83.1 reported by the NRB survey (NRB 1988).

The female activity rate was found to be higher than the male activity rate (Table 2.9). This was also shown in the case of the mountains and hills in the NRB Survey.

Table 2.9: Distribution of Economically Active Population and Its Refined Activity Rate by Sex and Farm Groups

Farm Groups	Economically Active Population			Refined Activity Rate		
	Male	Female	Total	Male	Female	Total
Marginal	23	20	43	82.14	83.33	82.69
Small	28	35	63	62.22	85.37	73.26
Medium and Large	22	38	60	59.46	80.85	71.43
Total	73	93	166	66.36	83.04	74.77

The percentage of economically active population engaged in agriculture as the main occupation was 77.1 per cent in the sample households, which is lower than that for rural Nepal (82.2 per cent) as reported by the NRB Survey. Non-agricultural activities (viz., trade/business, services, and cottage industries) engage 22.9 per cent of the economically-active population (Table 2.10). The proportion of females was found to be higher in agriculture and trade/business occupations, whereas the proportion of males was higher in service-related occupations.

Table 2.10: Percentage Distribution of the Members of Sample Households by Major Occupations and by Farm Strata

Farm Strata	Agriculture			Non-agriculture						Total		
				Services		Trade/ Business		Cottage Industry				
	M	F	T	M	F	M	F	M	F	M	F	T
Marginal	65.2	85.0	74.4	13.0	-	4.3	5.0	17.4	10.0	34.0	15.0	25.0
Small	75.0	88.5	82.5	14.2	-	7.1	8.6	3.1	2.6	25.0	11.4	17.5
Medium and Large	81.8	68.4	73.3	13.6	10.5	4.5	13.1	-	7.1	18.2	31.1	26.7
Total	73.97	79.57	77.11	13.70	4.30	5.48	9.68	6.85	6.45	26.03	20.43	22.89

Note:Services include employment as government servants or as school teachers.
Trade/Business includes Hotels/Shops/*Jhopa* Transportation.
Cottage Industries include Metal Utensil Making/Tailoring/Carpet-weaving/Liquor production.

Land Ownership Patterns

The medium and large farm group accounted for 28 per cent of the sample households but owned 53 per cent of the total land. The average landholding in the sample households was found to be 0.38 ha. Land distribution by type of land shows that 72.5 per cent of the land owned by the households is under crop cultivation. Horticulture was found to be the second dominant land use among the households (Table 2.11).

Table 2.11: Percentage Distribution of Average Landholdings by Land Use and Farm Strata

(in ha)

Farm Groups	Residential Area (1)	Area Under Horticulture (2)	Cultivated Land by Irrigational Status		Total Land (1+2+3+4)	Average Land-holding
			Irrigated (3)	Non-irrigated (4)		
Marginal	18.7	16.7	60.4	4.2	100.0	0.15
Small	8.0	14.2	74.8	3.0	100.0	0.32
Medium and Large	7.3	22.1	68.8	1.8	100.0	0.72
Average % of Total Land	8.9	18.6	70.0	2.5	100.0	0.38

Operational Landholdings and Land Tenure

The average operational landholding within the sample households in the study area has been computed as 0.3 ha. The distribution of operational land by farm strata reveals that on an average a marginal farmer cultivates a little less than one third of the land cultivated by an average medium and large farmer (Table 2.12). Most of the land operated was owned by the farmer and only a small portion was rented in and rented out. Some of the small and medium farmers rented out some of their land while, at the same time, they also rented in other's land. The main reason for this arrangement was reported to be the convenience of cultivation due to locational factors.

It was also found that the small farm group category had a higher percentage of owner-cultivators, while the medium and large farm group constituted a higher percentage of owner-cum-tenants. Only the marginal farm group (18.8 per cent) had pure tenants (Table 2.13).

Tenurial Arrangements . The tenurial arrangements in the study area are characterised by the payment of a predetermined amount of crops or cash instead of sharing the crop output. About 84 per cent of the tenants reported paying a predetermined amount of crops. The amount of payment varied by crops and tenants. The average annual payment in kind of naked barley was 45 kg for 0.05 ha of land. Tenants involved in cash-paying arrangements were paying Rs 1,000.00 on an average as yearly rent for 0.05 ha of land.

Area, Production, and Yields of Major Crops

The yields of most crops in the study area are better than district and national average yields. In spite of the limited agricultural area, most of the land is irrigated and fertile.

The major crops grown in the study area are naked barley, buckwheat, barley, potatoes, maize, and wheat. All crops except wheat are of local varieties. The use of pesticides and chemical fertilizers was also minimal. The yield levels of naked barley (2,660 kg/ha), maize (2,587 kg/ha), barley (2,069 kg/ha), wheat (1,900 kg/ha), and buckwheat (1,572 kg/ha) in the study area are higher than the district average of 1,500 kg/ha, 1,070 kg/ha, 1,090 kg/ha, 1,550 kg/ha, and 1,010 kg/ha (Table 2.14). In the total cropped area, buckwheat and naked barley occupy 40 per cent and 38 per cent respectively of the cropped area.

Table 2.12: Distribution of Average Operational Land by Land Tenure and Farm Strata

(in ha)

Farm Groups	Own Land (1)	Rented In (2)	Rented Out (3)	Average Operational Land (1) + (2) - (3)
Marginal	0.10	0.06	0.0	0.16
Small	0.25	0.04	0.03	0.26
Medium and Large	0.51	0.03	0.02	0.52
Total	0.28	0.04	0.02	0.32

Table 2.13: Percentage Distribution of Sample Households by Owner-Cultivator and Tenurial Status

Farm Strata	Percentage of Households		
	Owner-Cultivators	Owner-cum-Tenants	Pure Tenants
Marginal	50.00	31.25	18.75
Small	56.52	43.48	-
Medium and Large	53.33	46.67	-
Total	53.70	40.70	5.56

Crop productivity shows a negative relationship to farm size. This may be due to the fact that marginal and small farmers have a more intensive farming system than medium and large farmers.

Cropping Patterns and Cropping Intensity

The cropping patterns in the study area are determined by climatic conditions. Naked barley, which is the main crop in the area, takes nine months to mature and buckwheat, the other major crop of the area, takes about three months. There are few alternative crop combinations. The cropping patterns are potatoes/wheat/buckwheat, naked barley/maize, naked barley/potatoes/wheat, and naked barley/ buckwheat. In general two major crops are grown in a year. The average cropping intensity is computed to be 180 per cent. According to the farm strata, the highest cropping intensity is found to be 183 per cent in the case of the marginal farm group. It is 172 per cent in the case of the medium and large farm groups.

Input Use Pattern

Almost all the sample households reported using local varieties of home-stocked grain seeds. In the case of vegetables, some households reported using improved seeds obtained from Marpha Horticultural Farm.

The use of pesticides/insecticides on cereal crops was insignificant among the sample households. Compost manure was the major fertilizer used in the study area. Only about 31.5 per cent of the households reported using chemical fertilizer; mostly on naked barley, buckwheat, and potatoes (Table 2.15).

Horticulture and Vegetables

Horticulture. Commercial fruit farming in the study area began after the establishment of the Horticultural Farm at Marpha. At present, most farmers in the study area are involved in fruit farming on a commercial basis. Out of the total land owned by the sample households, about 19 per cent was use for fruit farming. About 40 per cent of the medium and large farmers were involved in fruit farming on an organised basis, i.e., had an orchard. The percentage distribution of total reporting households having fruit trees, by type and average holding per reporting household, has been presented in Table 2.16.

From the table, it is evident that the principal fruits grown in the study area are apples, apricots, and peaches. Walnuts, grapes, and almonds are also grown by small and medium and large farmers.

The average annual income of households from fruit sales was estimated to be Rs 5,250 in the survey year. The percentage of households reporting the sale of fruits (and average income from sale of fruits) increases with the size of landholding.

Vegetables. The growth in the number of tourists visiting the area has brought about an increase in vegetable farming in the study area. This has been more noticeable in the last six years. The gradual increase in the number of hotels and lodges has changed the traditional cropping pattern. The principal vegetables grown in this area are potatoes, carrots, cabbages, radishes, cauliflowers, tomatoes, and garlic. Nearly 67 per cent of the sample households were vegetable growers and 58.3 per cent were commercial producers (irrespective of their scale of production).

About 40 per cent of the households reported the sale of vegetables (Table 2.18). The average annual income from vegetable sales was estimated to be Rs 1,936 in the survey year. As many as 73 per cent of the households in the medium and large landholding category reported selling their vegetables, whereas only 30 per cent of the small and 19 per cent of the marginal farmers reported the same. The average annual income from vegetables also significantly increases with the size of landholding.

It therefore appears that the farmers give priority to growing basic cereals as a food security measure. Vegetables are grown basically for cash income. It is also possible that farmers with small landholdings cannot grow enough vegetables to be sold after home consumption.

Table 2.14: Area, Production and Yield of Major Crops by Farm Strata

Area in ha
Production in mt
Yield in kg/ha

Farm Strata	Naked Barley	Buckwheat	Barley	Wheat	Maize	Potatoes
Marginal						
Area	1.60	1.73	0.62	0.05	0.15	0.26
Production	4.81	2.91	0.82	0.14	0.29	1.00
Yield	3006	1682	1323	2800	1933	3846
Small						
Area	4.12	4.12	0.92	0.10	0.57	0.59
Production	10.75	6.91	1.90	0.27	1.20	2.33
Yield	2609	1677	2065	2700	2105	3949
Medium and Large						
Area	5.29	5.80	1.22	0.25	1.00	0.72
Production	13.73	8.50	2.99	0.35	2.96	2.67
Yield	2595	1466	2451	1400	2960	3708
Total						
Area	11.01	11.65	2.76	0.40	1.72	1.57
Production	29.29	18.32	5.71	0.76	4.45	6.00
Yield	2660	1572	2069	1900	2587	3822

Table 2.15: Number of Sample Households Using Chemical Fertilizers by Farm Strata

Farm Group	Households Reporting Use of Chemical Fertilizers	
	No.	%
Marginal	3	18.75
Small	9	39.13
Medium and Large	5	33.33
Total	17	31.48

Table 2.16: Percentage Distribution of Total Reporting Households and Average Holdings by Type of Fruit Trees and by Farm Strata

Farm Strata	Marginal		Small		Medium and Large		Total	
Types of Fruit Trees	% of Reporting HHs	No. of Trees per HH	% of Reporting HHs	No. of Trees per HH	% of Reporting HHs	No. of Trees per HH	% of Reporting HHs	No. of Trees per HH
Apples	50.00	18.63	73.91	21.59	93.33	58.64	72.22	34.28
Apricots	43.75	2.86	65.22	4.80	80.00	5.00	62.96	4.47
Peaches	31.25	3.80	56.52	1.46	66.67	2.60	51.85	2.29
Walnuts	-	-	4.35	1.00	26.67	3.25	9.26	2.80
Grapes	-	-	4.35	2.00	13.33	4.00	5.56	3.33
Almonds	-	-	-	-	6.67	2.00	1.85	2.00
Pears	6.25	1.00	-	-	-	-	1.85	1.00

Table 2.17: Households Reporting Sale of Fruits and Annual Income Per Reporting Household by Farm Strata

Farm Strata	Household Reporting Fruit Sales (NRs)		Average Annual Income from Fruit Sales (NRs)
	No.	%	
Marginal	5	31.3	3,745.00
Small	10	43.5	4,538.00
Medium and Large	12	80.0	6,913.00
Total	28	51.8	5,252.00

Table 2.18: Households Reporting Sales of Vegetables and Average Annual Income from Vegetable Sales Per Reporting Household by Farm Strata

Farm Strata	Households		Average Annual Income from Vegetable Sales (NRs)
	No.	%	
Marginal	3	18.7	648.00
Small	7	30.4	1,400.00
Medium and Large	11	73.3	2,628.00
Total	12	38.90	1,936.00

Livestock and Livestock Products

Livestock rearing is found to be an important activity in the study area. While *jhopa* and *bullocks* are extensively used for agricultural operations, such as ploughing and transporting compost manure, other livestock, such has cows, goats, and poultry, are kept for milk and meat. Since the use of chemical fertilizers is almost insignificant in the study area, livestock-rearing is also important to provide manure for agricultural production. Similarly, livestock, such as mules and *jhopa,* are used for transporting goods and are seen as a major source of cash income. The percentage distribution of total reporting households and average holdings per reporting household by types of livestock are presented in Table 2.19.

The livestock-holding pattern is guided by climatic conditions and tourism activities in the study area. Since poultry is in great demand by the hotels/lodges, most households (87%) reported having some chickens. The average holding of goats per household was found to be the highest (39). This also has implications on the overgrazing of pastures.

Furthermore, except for mules, which are primarily kept for transportation, the other livestock holdings are positively correlated to the farm strata. The highest percentage of households keeping mules is, however, found in the small farm group (30.4%). About one third of the sample households had milch cows. None of the households reported income from the sale of milk.

Rural Small-scale and Cottage Industries

Small-scale cottage industries are important rural household activities in the study area. The major cottage industries found within the study area are production of dried apple slices, liquor (home-made), woollen goods, and metal utensils. Most of the cottage industries are seasonal in nature and are linked to tourism activities. Improvements in cottage industries are important, especially in the context of gainful employment of the female labour force.

The lack of infrastructural development in the region seems to be a major hindrance to the development of different cottage industries. Proper training, extension, and other technical support also seem inadequate. The development of existing and potential cottage industries can curtail the growing trend towards seasonal out-migration in search of employment opportunities.

Cash Income and Expenditure

Income. The average household annual cash income (Rs 31,805) estimated for the study area is relatively higher than in other mountain areas (Table 2.20). The average annual income increases with the size of landholding from Rs. 24,498 in the case of marginal farmers to Rs 42,822 in the case of medium and large farmers. About 90 per cent of the cash income is generated from off-farm activities, including the commercial production of fruit and vegetables. The percentage share of the total cash income from the sale of foodgrains is only seven per cent for an average farmer.

For all categories of household, wages outside agriculture and salaries accounted for the largest source of cash income (almost 40 per cent). Cottage industries and liquor sales were important sources of income for the marginal farm category of households. Trade/business, liquor sales, and fruits together were important cash income sources for the small farm-sized category of household. For the medium and large farm-sized households, sales of fruit and foodgrains and trade and business accounted for almost 30 per cent of the cash income.

Table 2.19: Percentage Distribution of Reporting Households and Average Holdings by Type of Livestock and by Farm Strata

Types of Livestock	Marginal		Small		Medium and Large		Total	
	% of Reporting HHs	Average Holdings per HH	% of Reporting HHs	Average Holdings per HH	% of Reporting HHs	Average Holdings per HH	% of Reporting HHs	Average Holdings per HH
Cows	37.50	1.00	60.87	1.29	80.00	2.08	59.26	1.53
Jhopa	56.25	2.33	73.91	2.76	73.33	3.18	68.52	2.78
Bullock	-	-	26.09	1.17	13.33	3.00	12.96	1.86
Mules	18.75	8.00	30.43	7.57	26.67	7.25	25.93	7.57
Donkeys	-	-	-	-	6.67	9.00	1.85	9.00
Goat	31.25	18.40	21.74	41.20	26.67	61.25	25.93	38.79
Calves	12.50	1.00	26.09	1.00	20.00	1.67	20.37	1.18
Kids	6.25	5.00	17.39	6.50	20.00	15.00	14.81	9.50
Horses	12.50	1.00	26.09	1.00	13.33	2.00	18.52	1.20
Chicken	100.0	2.31	86.96	4.25	86.67	5.08	87.04	4.00

Expenditure. The average annual expenditure of the sample households is found to be slightly lower than the average annual income in all farm groups. However, if we exclude loans, the annual expenditure exceeded annual income, apart from in the case of the medium and large farm groups. The first three expendable items, accounting for more than forty per cent of the total expenditure, were the purchase of food grains, livestock products, and clothing. It may be noted that the average household in the medium and large farm groups generates 11.3 per cent of all cash income from sale of food grains but also spends 16.4 per cent of its total expenditure on food grain purchases. The reason is that the main cereal grain produced in the area is naked barley which is consumed less by medium and large farmers as a staple food. They consume rice and other food grains imported from Pokhara and other areas. It appears that the share of expenditure, on items such as animal feed, health, transport and communications, and cigarettes and alcohol, to the total expenditure decreases with the increase in farm size. In most items, the share of expenditure increases with farm household size.

Table 2.20: Average Annual Cash Income of Sample Households by Different Sources

Sources	Marginal		Small		Medium and Large		Total/Average	
	Amount (Rs)	% of Total	Amount (Rs)	% of Total	Amount (Rs)	% of Total	Amount (Rs)	% of Total
1. Foodgrains	361	1.47	1757	5.92	4846	11.32	2201	6.92
2. Livestock and Livestock	244	1.00	326	1.10	1533	3.58	637	2.00
Products	121	0.49	426	1.43	1913	4.47	749	2.35
3. Vegetables	1064	4.34	1747	5.88	4891	11.42	2418	7.60
4. Fruit	2506	10.23	1323	4.45	780	1.82	1523	4.79
5. Cottage Industries	994	4.06	814	2.74	133	0.32	678	2.13
6. Wages within Agriculture	2958	12.07	6130	20.64	6433	15.02	5274	16.59
7. Wages outside Agriculture	6525	26.63	4579	15.42	12827	29.95	7447	23.41
8. Salary (Services)	2356	9.63	3597	12.11	3333	7.78	3156	9.92
9. Trade and Business	4944	20.18	5797	19.32	3633	8.48	4918	15.46
10. Loans	1612	6.58	2004	6.75	2200	5.14	1943	6.11
11. Liquor Production	750	3.06	1000	3.37	-	-	648	2.04
12. Fuelwood Sales	63	0.26	261	0.87	300	0.70	213	0.68
13. Rent								
Total/Average	24498	100.00	29703	100.00	42822	100.00	31805	100.00

Table 2.21: Average Annual Expenditure of Sample Households by Major Headings

Sources	Marginal		Small		Medium and Large		Total/Average	
1. Food and Beverage	3342	15.31	4291	15.29	6380	16.44	45.90	15.72
2. Ghee and Oil	1409	6.45	1576	5.61	2780	7.16	1861	6.37
3. Salt and Spices	434	1.99	549	1.96	873	2.25	605	2.07
4. Meat and Fish	2384	10.92	2435	9.03	4533	11.68	3045	10.43
5. Milk, Tea, and Sugar	948	4.34	1157	4.12	1640	4.23	1229	4.21
6. Vegetables	170	0.78	148	0.53	107	0.28	143	0.49
7. Clothing and Shoes	3575	16.37	4965	17.69	7133	18.38	5156	17.66
8. Modern Inputs	128	0.59	215	0.77	417	1.07	245	0.84
9. Animal Feed	2061	9.44	2565	9.14	2641	6.81	2437	8.34
10. Education	1649	7.55	2126	5.75	3546	9.14	2379	8.15
11. Health	712	3.26	591	2.11	580	1.49	624	2.14
12. Fuel	504	2.31	659	2.35	703	1.81	625	2.14
13. Transport and Communications	981	4.49	1039	3.70	1407	3.63	1124	3.85
14. Cigarettes and Alcohol	719	3.29	691	2.46	607	1.56	676	2.31
15. House Maintenance and Donations	800	3.66	1200	4.28	1700	4.38	1220	4.18
16. Social Ceremonies	831	3.81	1239	4.40	2760	7.11	1541	5.28
17. Loan Repayment	1188	5.44	2522	8.99	1000	2.58	1704	5.82
Total/Average	21835	100.00	28068	100.00	38807	100.00	29204	100.00

Natural Resources and Infrastructural Development

The geographical area of the study area (Marpha-Jomsom VDCs) covers 31,005 ha (estimated from the LRMP map). The total cultivated land is estimated to be only 369 ha. The household survey shows that most of the cultivated land is irrigated. The major crops are naked barley, buckwheat, wheat, potatoes, and mustard. Different kinds of vegetables and temperate fruits, especially apples, apricots, and peaches are grown in the area. A special breed of cows (locally known as the *lulu* cow), *jhopa*, mules, and sheep are the main livestock in the area.

The forest and pasture/grazing lands are estimated to be 1,120 ha and 414 ha respectively or less than four per cent of the total land area (Agricultural Development Section, Jomsom). Forests are a major source of fuelwood for cooking and heating, construction timber, fodder for livestock, and compost for farms. However, forests close to the villages are already depleted. The rapid increase in tourism activity is accelerating forest depletion in the area. The number of tourists now exceed the total native population during the tourist season.

Deforestation and soil erosion, especially around Jomsom itself, are distinctly noticeable. There is enough potential for generating alternative sources of energy to meet local demands. The strong southern winds during summer and northerly winds during winter can be exploited for generating power. This was tried in Kagbeni VDC, was not operating well due to faulty design, but is being repaired. Because of the strong winds, the area receives enough sunlight with no clouds most days and is suitable for solar energy. There is also scope for generating hydropower in the vicinity of the study area. At present a micro-hydro project at Tukuche generates 240 kW of hydro-energy and provides electricity to the study area and its vicinity.

The Kali Gandaki River and a number of streams and rivulets pass through the study area. The latter are used for irrigation and drinking water purposes. The average annual rainfall is about 160 mm. The winters are very cold but summers are mild, due especially to the wind. No mineral resources have yet been discovered in this area.

The study area has no motorable road. The nearest major urban centre is Pokhara, six to eight days' walk to the south-east. There is a postal service and some government offices have a wireless service system. Jomsom is the district headquarters, and there are about 25 district level development offices. The major institutions functioning in this area are the Agricultural Development Bank, a commercial bank, a District Hospital, a District Agricultural Development Section, Marpha Horticultural Farm, a

District Livestock Development Section (including a Veterinary Hospital), a District Forestry Office, a District Soil Conservation Office, and a NGO (Care/Nepal). Seven schools operate in the study area and four are primary level schools.

OFF-FARM ACTIVITIES AND CONTRIBUTIONS TO INCOME AND EMPLOYMENT

Most of the off-farm employment activities (OFEAs) in Jomsom-Marpha are characterised by small-scale operations and transactions, use of traditional indigenous skills and technology, and household level entrepreneurship and employment. Most off-farm activities are also seasonal in nature. Farming is traditionally the predominant activity of the community. Most of the OFEAs documented here are linked with farming and are operated as part of the household's total activity.

Inventory of Existing Off-farm Employment Activities

The following lists the major OFEAs in the Jomsom-Marpha area, and the current status of these activities.

Major OFEAs	Current Status	Remarks
A) Service		
i) Hotels/Lodges	- A total of 66 hotels/lodges operate in Mustang: 27 in Marpha and Jomsom VDCS, according to THAM the categories are: Grade, A-6, Grade, B-38, Grade, C-22.	- Considered to be the most lucrative business. One or two such establishments added each year.
ii) Shopkeeping	- About 20 grocery shops are being run by local people of which a few are of tourist standard.	- Each year about two to three new shops are opened.
iii) Teaching and goverment services	- Out of the total employees in the district headquarters the local people account for about 5% only.	- The Civil Service is not the major employment sector of the local people. Those who are employed in this sector are mostly in lower level positions.
B) Transportation		
i) Mule transport	- An estimated 3,000 plus mules are in the district for goods and commodity transportation. The two VDCs alone have about 800 mules that are used for transportation.	- The number of mules for transporting goods is estimated to be rising each year in keeping with the rising demand.

ii) Porterage/Vending	- Portering is growing rapidly and an estimated 2,000 to 3,000 persons are involved in porterage. Most porters are from outside the district.	- Portering activities are mainly of two types: (i) tourist porters and (ii)vendors or hawkers (*Doke*). With the increased demand for groceries in the area, the number of hawkers is rising each year.
C) <u>Environment/Forest</u>		
i) Fuelwood/Timber	- Every household procures fuelwood, timber for almost all purposes, i.e., heating, cooking, construction. About 15 households depend entirely on the sale of forest products as their main source of earning and employment.	- Deforestation reported to be rapid in an already fragile area.
ii) Wood-based Enterprises	- Two wood-based enterprises have been set up by outsiders.	- Understood to be facing a growing shortage of wood.
D) <u>Construction</u>		
Construction of Private and Public Buildings	- Gradual growth in construction activity is apparent. New hotels/lodges and office buildings account for most of the construction work undertaken. A rough estimate shows that some 400-500 construction workers currently being employed in the district are predominantly outsiders.	- Contractors and workers (skilled, semi-skilled, & unskilled are outsiders who come mostly from neighbouring districts).
E) <u>Cottage Industries</u>		
i) Bakery and Sweet-making	- One each are operating in the Jomsom bazaar.	- Are operating smoothly. But lack of skilled manpower locally has an adverse impact on the quality and production.
ii) Milling	- One oil plus flour mill with 2 employees is operating well in Jomsom .	- Procuring spare parts often becomes a problem because of distant markets.
iii) Utensil Industries	- About 8-10 blacksmith households are involved in making metal utensils of a wide variety.	- Operate for about half a year from June/July to Nov-Dec.
iv) Carpet-weaving	- Mostly to meet household needs.	- Very few are opened on a commercial basis.

F. Agro/Forest-based Enterprises		
i) Distilleries	- Four registered distillery plants are operating in two VDCs.	- Further potential exists to promote these industries. More distilleries are anticipated in future.
ii) Apple-peeling, Drying, Marketing	- About 45-50 households in Jomsom and Marpha are doing this business- but very few have access to modern technology like peeler machines and electric driers.	- Each year a few households are taking up this business.
iii) Fruit and Vegetable Storage/Marketing/Liquor Making	- Increased production of fruits and vegetables has led to increased demand for storage and marketing. About 20 households have started commercial vegetable farming and a number of households have fruit orchards.	- Vegetable and fruit production is becoming increasingly popular. Both home consumption and sales are reported to be going up each year.
iv) Incense Industry	- A family owned and managed industry in Marpha is one of the thriving economic enterprises. Technical innovation is needed for its promotion. Enough scope for product diversification, packaging, marketing, exists.	- Availability of raw materials offers further scope for introducing new industries in the area.

Off-farm economic activities in Jomsom-Marpha exhibit both diversity and unique linkages. While tourism has strong links for the growth and expansion of off-farm activities, other specific conditions such as geography, remoteness, limited agricultural base, climatic factors (which do not permit flexibility in crop production), and diversification have also prompted the local people to take new initiatives in the off-farm sector. These activities, however, are not at all separate or independent in themselves. In many cases they are secondary to the main occupation, which is farming.

Contribution of Off-farm Activities in Terms of Income and Employment

Among the total sample households, about 96 per cent were found to be involved in at least one off-farm activity. Most of the sample households were found to be involved simultaneously in two to three off-farm activities. It should be noted that involvement in some of the activities may be very small in terms of labour days. The household involvement in different off-farm activities and the average annual cash income generated from the activities are shown in Table 3.1.

Table 3.1 : Household Involvement in OFEAs and Average Annual Income from Each Activity by Farm Strata

Existing Off-farm Activities	Marginal		Small		Medium and Large		Total	
	No. of HHs involved	Annual income per involved HH (Rs)	No. of Hills involved	Annual income per involved HH (Rs)	No. of HHs involved	Annual income per involved HH (Rs)	No. of HHs involved	Average income per involved HH (Rs)
· Transportation (Pack Animals)	5	9,620	11	14,844	4	17,500	20	14,069
· Fruit and Vegetable Production, Processing and Marketing	7	11,279	23	4,095	13	3,474	43	5,077
· Liquor Making (Home-made Wine)	6	2,800	9	2,000	3	5,000	18	2,767
· Tea Stalls/Hotels/Retail Shops	5	4,240	13	5,654	4	9,500	22	6,032
· Services	4	26,100	5	27,064	5	32,480	14	28,723
· Wage Earnings	9	1,403	5	1,300	-	-	14	1,366
· Woollen Goods' Production	2	2,500	3	2,033	5	2,440	10	2,330
· Metal Utensil Making	1	18,000	1	24,000	-	-	2	21,000
· Fuelwood Sales	4	3,000	4	5,750	-	-	8	4,375
· Baking	1	12,400	-	-	-	-	1	12,400
· Others (Tailoring, Blacksmithing, and Carpentry)	3	3,367	1	500	-	-	4	2,650
Total/Average	16	21,223	23	23,672	15	22,850	54	22,718
OFE income as a % of total income		(86.6%)		(79.7%)				(71.4%)

Note: The number of households involved in the activities does not add up to the total because some households are engaged in more than one activity.

Source: Field Survey.

The table shows that fruit and vegetable production involves the largest (almost 80 per cent) proportion of total sample households. There are some differences in the involvement of households in off-farm activities by farm category. Wage earnings, fruit/vegetable-related activities, liquor-making, the transport/retail trade, and fuelwood sales (in that order) are important activities for marginal farm households. The activities in order of importance for small farm households are fruit/vegetable-related activities, retail trade, transport, and liquor-making. In medium to large farm households, fruit and vegetable-related activities, service, transport, and retail trade were found to be the major activities. However, in terms of cash income, services, metal utensils, transport, and baking contributed higher shares in reporting households. It may be noted that metal utensils and baking are activities found in only a few households.

Role of Off-farm Employment in the Utilisation of Labour Days

Table 3.2 shows the percentage distribution of labour days in different activities. It shows that about 17 per cent of the total labour days are devoted to non-agricultural activities that tend to be remunerative. It may be noted that the proportion of labour days spent in remunerative non-agricultural activities is higher than that spent in agricultural activities in all farm household categories. It is also worth noting that over 60 per cent of labour days in all farm household categories remain unutilised. This highlights both the problem of seasonal unemployment and underemployment in the area as well as the contribution of off-farm employment activities in the utilisation of labour days. Household work takes up about 11 per cent of the labour time of women, while it takes up only about two per cent of the labour time of men.

Table 3.3 provides details of the involvement of members of sample households in off-farm activities. The gender differences in the use of time in different activities show that the involvement of females is particularly pronounced in fruit and vegetable production, processing and marketing, retail trades, liquor-making, and the production of woollen goods. In each of these activities, women contribute more labour time (and therefore presumably earn more income) than their male counterparts.

Table 3.2: Percentage Distribution of Labour Time Allocation among Various Activities by Farm Strata

Activity Categories	Marginal	Small	Medium and Large	Total	Male	Female
a. Agricultural	11.37	10.00	14.34	11.94	12.1	11.2
b. Non-Agricultural	14.70	18.37	15.22	16.29	19.1	14.6
c. Household Work	7.04	7.59	5.42	6.67	2.4	10.2
d. Other	4.05	3.91	4.21	4.06	4.0	4.2
e. Unutilised	62.84	60.05	60.80	61.04	62.4	59.8
Total	100	100	100	100	100	100

Table 3.3: Off-farm Employment by Farm Group and Sex

Off-farm Activities	No. of Persons Engaged in Activities in Sample Activities											
	Marginal		Small		Medium and Large		Total		Male		Female	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
- Transportation (Pack Animals)	5	11.6	11	17.5	4	6.2	19	11.4	19	26.0	0	0
- Fruit and Vegetable Production	10	23.2	23	36.5	11	17.2	44	26.5	19	26.0	25	26.9
- Liquor making (Home made wine)	11	25.6	11	17.5	2	3.1	24	14.4	11	15.1	13	14.0
- Tea stalls/Hotels/Retail shops	6	14.0	17	27.0	4	6.2	27	16.3	11	15.1	16	17.2
- Services (salaried jobs)	4	9.3	5	7.9	6	9.3	15	9.0	11	15.1	16	17.2
- Wage-earning	9	10.9	6	9.5	0	0	15	9.0	15	20.5	0	0
- Woollen goods' production	3	7.0	4	6.3	10.9	10.9	14	8.4	4	5.5	10	10.7
- Metal Utensils	6	14.0	2	3.2	0	0	8	4.8	8	11.0	0	0
- Fuelwood Sales	6	14.0	5	9.4	0	0	11	6.6	11	15.1	0	0
- Baking	3	7.0	0	0	0	0	3	1.8	2	2.7	1	1.1
- Others, Tailoring, Blacksmithing, Carpentry	9.3	1	1.6	0	0	5	3.0	4	5.5	1	1.1	

Note: The number of persons involved in the activities does not add up to the total because some are engaged in more than one activity.

Seasonality of Labour Demand

The analysis of the seasonal variations on labour use in agricultural and non-agricultural activities is important to promote off-farm employment activities. Seasonality is an important factor in determining labour use in traditional agricultural practices. The labour demand in traditional agriculture is relatively high at the time of land preparation, sowing, transplanting, and harvesting periods and is low at other times. Because of the cold climate and snow cover in the fields during winter, farm activities in the study area are limited to the snow-free months.

Table 3.4 and Figure 3.1 show that the highest demand in agriculture is in the month of July and on an average 27 per cent of the total labour days available are used in this month, followed by labour utilisation in August (22.3%) and in November (18.4). The relatively higher demand for agricultural labour in July and August is mainly for harvesting naked barley and sowing buckwheat. Similarly, the relatively higher agricultural labour demand in November and December is for harvesting summer crops and sowing winter crops respectively. The labour demand in non-agricultural activities is found to be less variable by season. However, relatively higher labour demand in non-agricultural activities is seen during May to July and October to December (Table 3.4).

On the whole, the highest labour utilisation appears to be in July (45.4%) and the lowest in February (14.1%). It should be noted that employment in non-agricultural activities has helped to smoothen the seasonality of agricultural labour demand. However, labour utilisation is low even in peak months, resulting in high underemployment in both agricultural and non-agricultural activities. Thus it appears that labour input is not a constraint for the promotion of non-agricultural employment activities in the study area.

Table 3.4: Percentage Distribution of Labour Utilisation in Agricultural and Non-Agricultural Activities in Sample Households

Month	Labour Utilisation in Agricultural Activities	Labour Utilisation in Non-Agricultural Activities	Total Labour Utilisation	Labour Days Demanded	Labour Days Supplied
January	5.3	12.1	17.4	1279	4675
February	5.0	9.1	14.1	1620	4675
March	4.4	11.5	15.9	2122	4575
April	4.3	11.2	15.5	1725	4675
May	7.1	20.2	27.3	1253	4675
June	14.8	19.9	34.7	1286	4575
July	27.0	18.4	45.4	1854	4675
August	22.3	14.6	36.9	1750	4675
September	10.8	16.9	26.8	813	4575
October	8.5	19.2	27.7	658	4675
November	18.4	21.2	39.6	743	4675
December	15.5	21.9	37.4	723	
Average/Total	11.9	16.3	28.2	15836	569108

LABOUR DEMAND PROFILE

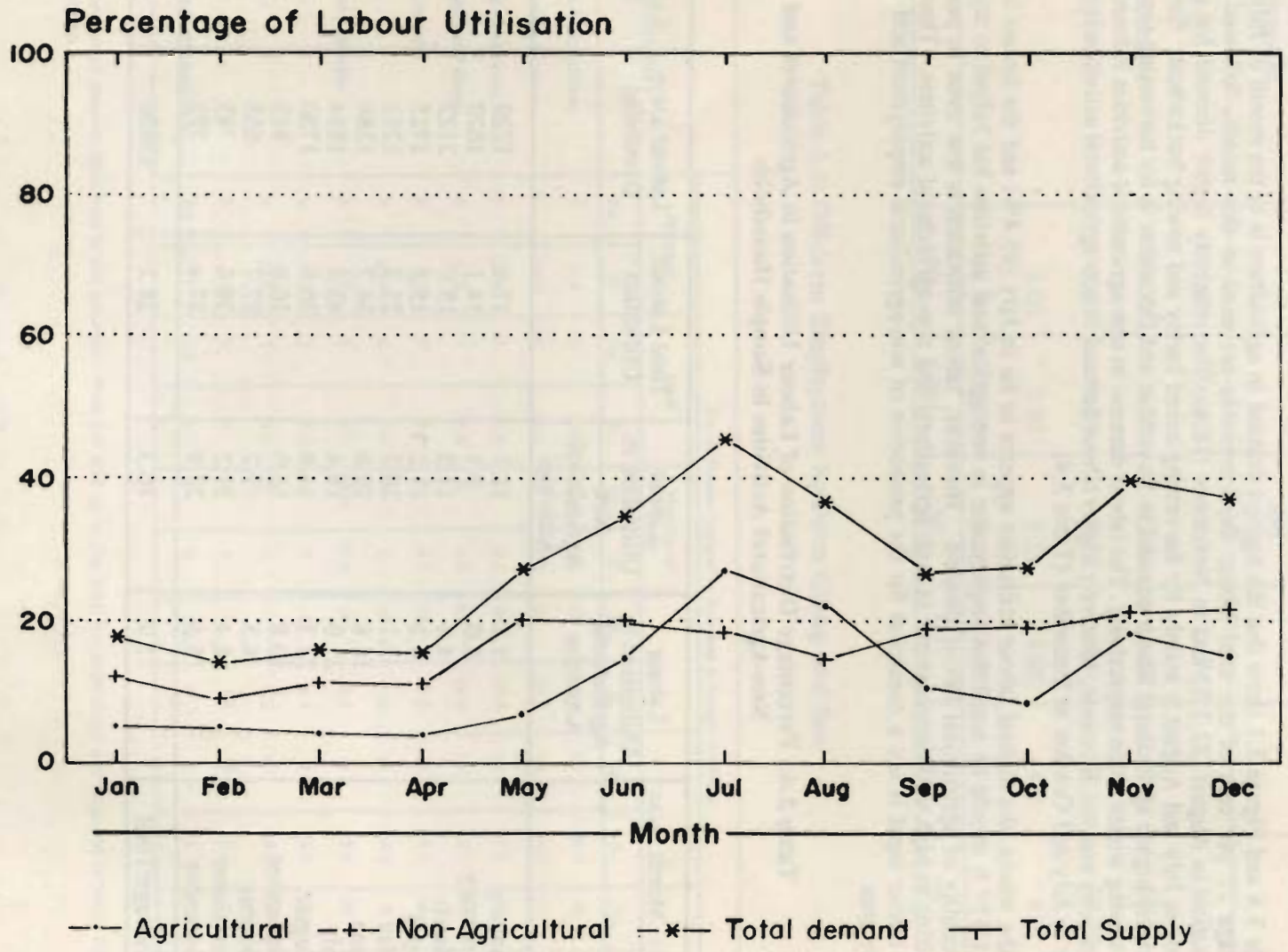


Fig. 3.1

4

ASSESSMENT OF EXISTING AND POTENTIAL OFF-FARM EMPLOYMENT ACTIVITIES

Tourism Development and Off-farm Employment Activities

In the last one and a half decades, trekking tourism has emerged as a major form of tourism in certain hill and mountain regions of Nepal. Annapurna, Sagarmatha, and Langtang are some of the prominent destinations for trekking tourists. The Annapurna trek is by far the most popular trek and receives about two-thirds of the total trekking tourists (Table 4.1). It should be noted that not all of the trekkers with permits to the Annapurna Region reach Jomsom.

Jomsom-Marpha is one of the most popular tourist destinations along the Annapurna trekking route. The chief attractions are natural beauty and the unique culture, society, and lifestyle of the people. The topography, which provides immense natural diversity in rapid succession, the monastries (*ghomba*), holy shrines, and temples like Muktinath are other attractions. Interestingly, many of the tourists interviewed along the trek were found to be second or third time trekkers.

Tourism and off-farm employment activities in Marpha-Jomsom have been developing in an integrated fashion. The growth in tourism has provided the impetus for the local people to invest in new economic activities. With the opening of new activities, the area has witnessed a notable change in its occupational and employment structure as well as in income over the years.

Table: 4.1 Tourist Arrivals in Nepal and the Number of Trekking Permits Issued 1986-1990

Years	Total Number of Tourists	No. of Trekking Permits Issued	No. of Trekking Permits Issued for the Annapurna Area	No. of Trekking Tourists Recorded in Jomsom
1986	223,331	49,579 (22)	33,629 (67.8)	NA
1987	248,080	47,275 (19)	30,914 (65.4)	NA
1988	265,943	61,273 (23)	37,902 (61.9)	9,649
1989	239,945	60,858 (23)	36,484 (59.9)	11,179
1990	254,885	NA	NA	9,548

Note: Figures in parentheses in column three are percentages of the total tourist arrivals in the country and those in column four denote the per cent of trekkers with permits for the Annapurna Region.

Source: APROSC (1991) and the District Police Office, Mustang.

Tourism: Implications and Linkages

Tourism as an activity influences and is influenced by a number of factors: the quality of the environment, nature of the resource base, land use and farming system, mobility of the population, opportunities for employment, and so on.

The environmental implications of tourism, particularly on forest resources, are important in the Marpha-Jomsom area. The forest ecosystem of the area has been severely damaged to meet the fuelwood demands of hotels and lodges. Construction of government buildings and hotels/lodges also contribute to the depletion of nearby forests. As a result, all kinds of forest products are becoming scarce. The effects of deforestation are: (i) increased amount of time for fetching fuelwood and fodder; (ii) decline in the practice of compost-making and its use in the fields; (iii) low yields and productivity of crops due to loss in soil fertility; increased incidences of gully formation; (iv) and soil erosion along village slopes and on farmland.

About two decades ago, villagers in Jomsom had no problem in getting forest products. These were easily obtained from the forest above Thini village which is within an hour's walk. Reaching a forest now takes up to a day. About 25 years' back there was only one buffalo shed in Ghodepani (en route to Jomsom). Today, there are more than 35 lodges in Ghodepani, a ridge that was once covered by dense rhododendron forests (TRN Jan. 24, 1992). Between Tukuche and Jomsom there were forests with a variety of tree species such as juniper, cypress, and pine (Randhawa and Singh 1964). At present one can hardly believe that these areas were once green.

Another important change brought about by tourism is in land use practices. Key informants reported that changes have been manifest in the conversion of agricultural lands into orchards for fruit and vegetable production and in a decline in forest land, agricultural land, and pastureland. In Marpha and Jomsom VDCs about 70 per cent of the households use part of their agricultural lands for fruit and vegetable production. In Thini village of Jomsom VDC some households with tourism-related occupations have rented out their land.

The employment effects of tourism in Marpha-Jomsom are both directly and indirectly manifest. The benefits of direct employment are enjoyed by all the households operating hotels/lodges and small enterprises that produce woollen goods such as scarves, caps, and carpets and households engaged in retail trade and shopkeeping. The benefits of indirect employment are manifest in fruit and vegetable production and marketing, *jhopa* and mule transportation, construction, repair and maintenance work, as well as regular/seasonal jobs in hotels/lodges. However, local employment for porters, cooks, kitchen boys, guides, and support staff employed by tourist agencies is almost non-existent as these are hired either from Kathmandu or Pokhara.

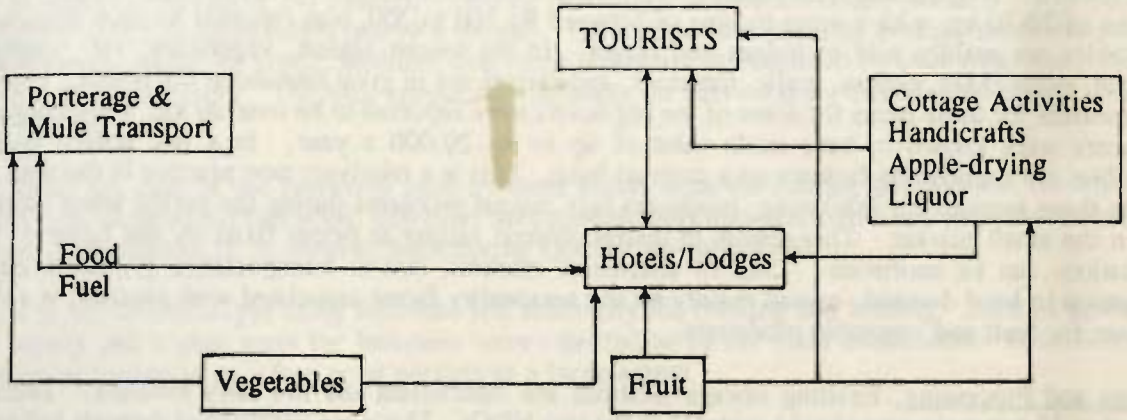
The income effects of tourism are also direct and indirect. Direct income is accrued mostly by hotel owners, shopkeepers, and fruit and vegetable sellers. Indirectly, the local producers/farmers are benefitted because of the opportunity of disposing of all kinds of farm produce in the local market; not possible until about two decades ago. In the absence of tourism, these people, particularly the entrepreneur class, would have migrated to the urban areas. Although seasonal migration is a traditional phenomenon for the rural communities, it is uncommon among entrepreneurs and businessmen who are operating tourism-related OFEAs. In fact, anecdotal evidence suggests that some entrepreneurs who had migrated out of the region in the past are now returning.

Major Off-farm Activities in Jomsom-Marpha

Almost all off-farm activities that have developed in the Jomsom-Marpha area have come about as a result of the growth in tourism in the area. The figure below provides a simplified picture of the major link between off-farm activities and tourism in the Jomsom-Marpha area. With this in mind, some of the major off-farm activities namely, fruit and vegetable production, hotel/lodge businesses, cottage industries, and transportation will be analysed.

Most of the OFEAs in Jomsom-Marpha are run in a closed system because of the constraints imposed by lack of transport, remoteness, little interregional trade and links with major market centres, and almost no investment from outside entrepreneurs.

Link Between Off-farm Activities and Tourism



Important and common features of OFEAs in Jomsom-Marpha are their informal nature and seasonality. The informal nature of activities is manifest in terms of voluntary work contributed by family members, an undefined scope of production and employment of the household members, traditional entrepreneurship, and single-owner operations. Similarly, resources such as family labour, fuelwood, and forest products, which are used heavily in operating off-farm activities, are hardly accounted for as costs in economic terms. This conceals the real economic picture in terms of the contribution of off-farm activities to household income vis-a-vis employment. Because of these inherent features most of the OFEAs do not expand to the extent of their full potential, and the scales of investment and operation are not always determined by their economic viability.

Fruit and Vegetable Production

The total production of fruits in Mustang was estimated at over 1,000 mt in the year 1990/91. Apples alone accounted for about 70 per cent of this figure. Similarly, about 700 mt of vegetables were produced of which cabbage accounted for nearly 60 per cent. Fruit and vegetables are mainly produced along the trekking route and at market centres, viz., Kagbeni, Jomsom, Marpha, Tukuche, and Ghodepani, where lodges/hotels operate.

Marpha and Jomsom VDCs have developed as major pockets of fruit and vegetable production in Mustang over the last two decades. The establishment of Marpha Horticultural Farm in 1966 has been instrumental in encouraging the local people to grow fruit and vegetables. The farm, since its inception, has been involved in the extension of horticulture, processing of fruit and vegetables, and conducting refresher training courses for farmers. Further impetus to the farm's activities has been provided by increasing tourism and the operation of hotels/lodges locally.

A wide variety of fruit and vegetables is produced in Marpha and Jomsom. Fruits grown include apples, apricots, peaches, walnuts, grapes, and almonds. Important vegetables are potatoes, carrots, cabbages, radishes, cauliflowers, garlic, and tomatoes, and these are in great demand from local hotels/lodges. In the two VDCs, 70 per cent of the sample households had fruit orchards. Nearly two-thirds of these households sold some of the fruit. About 58 per cent of those growing vegetable reported variable sales. The reported average annual earnings from fruit and vegetables by these sample household were Rs 5,252 and Rs 1,936 respectively. Medium and large farm households categories make the largest sales.

Employment Implications. Fruit orchards and vegetable farms are managed by household members themselves. This generates additional employment. Weeding, manuring, compost-making, irrigation, pruning, harvesting, storage, and marketing of products are the major activities. Apples are the fruits which generate extended periods of employment because of the labour needed for storage and marketing. All these activities are undertaken by family members and the costs incurred are nominal.

As many as 15 to 20 households in Jomsom VDC were found to be engaged in the sale of apples at the airport and along the main trails. Such sales last until the stocks are finished and may even extend up to six months. Tourists and local passengers flying to Pokhara and beyond are the main buyers. A daily average of 20-30 kg, with a gross income of between Rs 200 to 300, was reported by such households. Vegetables are mainly sold to lodges and hotels. In the tourist season, vegetables, viz., cabbages, potatoes, swiss chard, onions, garlic, tomatoes, and carrots are in great demand at the hotels. The daily requirements for these items for some of the big hotels were reported to be over 20 kg. Large vegetable producers were known to have made sales of up to Rs 20,000 a year. In a few hotels, seasonal vegetables are supplied by farmers on a contract basis. This is a relatively new practice in the area. But despite these avenues for marketing, producers face crucial problems during the period when there is a glut in the small market. This results in distress/forced selling at prices fixed by the buyers. Price fluctuations can be enormous. Lack of alternative markets, due to transportation problems and the fluctuation in local demand, caused mainly by the seasonality factor associated with tourism, is a major problem for fruit and vegetable producers.

Storage and Processing. Existing storage facilities are insufficient and not fully efficient. There are altogether 16 privately-owned cold storages in the two VDCs. These are constructed through indigenous technology and have an average capacity of 5 to 10 mt. The total storage capacity is 85 mt. A flow of running cold water is maintained in the storage through numerous open channels along a slightly sloping floor. Apples are stacked in wooden cases above the floor. Such storage facilities are difficult to construct, and producers who do not have enough quantity to store, or who have no permanent water supply, hardly can afford to build such storage facilities. In the absence of storage facilities, either in one's own house or on rent, the small producers have no option but to go for quick sales. Oftentimes this results in heavy losses due to rotting of the unsold stock.

Appropriate storage and processing technology could have a significant impact in encouraging farmers to increase production. Apple peeling and drying is relatively a recent phenomenon which provides the farmers several advantages over fresh selling.

Institutional Support. In 1990/91, the local ADB/N, and Nepal Bank Ltd. extended credit to about 15 fruit and vegetable growers in Jomsom and Marpha VDCs, amounting to about Rs 300,000. However, credit facilities to farmers are far from adequate. Also, most farmers are hardly contacted by extension workers. Consequently, farmers, in general, lack the minimum skills and knowhow in weeding, irrigation, manuring, pruning, thinning, harvesting, and storing. Such ignorance, in turn, adversely affects the quality and quantity of their produce. Better packaging and appropriate storage technology are also lacking.

Hotel/Lodge Businesses

In Jomsom and Marpha villages, the hotel business has been expanding rapidly, with about two to three new establishments coming into operation each year. The number of hotels/lodges operated under THAM's (Trekking and Hotel Association of Mustang) registration is now 14 in Marpha and 13 in Jomsom. It was learned that an equal number of hotels are also run without signboards and registration.

Hotels and lodges play a crucial role in enhancing local production, consumption, transportation, income, and employment of the people in Marpha and Jomsom. Hotel and lodge operations have enhanced women's role and involvement as decision-makers in the household.

Hotel Capacity and Facilities. There is a wide range in the capacity as well as the facilities of hotels in Jomsom and Marpha. The capacity ranges from two rooms to 10 rooms, with four to over 15 beds. Although hotel facilities, such as beds, showers, and toilets, are known to be relatively better in Jomsom and Marpha, tourists felt the need for improvement.

A number of hotels in Marpha and Jomsom are not officially registered. Non-registration of these hotels has encouraged hotel owners to evade tax payment to the Government. According to the Tourism Office in Jomsom, the hotels in the area do not meet minimum requirements for registration as tourist standard hotels, although some of them are fairly good.

Energy Requirements and Availability. Firewood is the major source of energy in the hotels and lodges. Hotel owners in Jomsom and Marpha estimate the average fuelwood requirements as follows: 600 kg per month in small hotels (about 2-4 rooms); 1,050 kg per month in medium hotels (about 5-7 rooms); and 1,800 kg per month in large hotels (above 8 rooms). Taking this quantity as an average norm, the annual fuelwood requirements for small, medium, and large hotels are estimated to be over five, nine, and 16 mt per month respectively. The total annual requirements for fuelwood by these hotels alone comes to around 260 mt.

About 30-40 per cent of the fuelwood used by these hotels went for heating and the rest for cooking. The daily requirements for fuelwood, however, vary considerably between tourist and non-tourist seasons. Fuelwood consumption is, in general, high during October through April.

It is rare to see hotels/lodges using kerosene and electricity for cooking and heating. Lack of sufficient power supply and higher costs for kerosene were reported to be the main constraints. Moreover, the perception of fuelwood as a free good persists to a large extent.

Use of substitute energy at an increased cost may, however, not be a serious problem. These costs can be easily transferred to the tourists who seemed to show serious concern for environmental protection (based on the opinions of some tourists interviewed) of the area. Use of kerosene and electric heaters, both for cooking and heating, could easily lessen the use of fuelwood by hotels/lodges to a considerable extent.

Organisation and Management. Hotels/lodges in Jomsom-Marpha are exclusively owned and run by the *Thakalis*, an ethnic group native to the area who are traditionally known for their skills in entrepreneurship. All those who are in the hotel/lodge business are from the area and have taken up this occupation after assessing opportunities arising from the growth of tourism.

Hotel management here is still traditional in style, irrespective of the scale of operations. Hotel owners, male or female - usually the latter-are active in day to day management, cooking, and cash handling. Men usually work both in the hotel and outside and travel frequently for the procurement of goods. Sons/daughters and in-laws also are usually involved fully or partially in the business. The extent of involvement depends upon the intensity of the business and on an individual's profession. For instance, many school-going sons/daughters of hotel owners work partially in the hotel in their free time. A few hotels employ one to two persons, preferably teenagers, for work such as dishwashing, sweeping, cleaning, laundry, and fetching water. Employing outsiders in managerial positions is virtually unknown. Very few hotels employ outsiders for cooking and services. There were only three such hotels in Jomsom.

In spite of traditional organisation and management practices, the level of efficiency in the hotels was reported by tourists to be relatively satisfactory. The hotels' efficiency, measured in terms of tourist satisfaction with regard to the prices they paid, the quality of food and services, and the sanitation and hygiene in the hotels, was considered to be fair, although scope existed for improvement.

Trekking Hotel Association Mustang (THAM). The establishment of THAM in 1987 by the hotel owners of the Mustang District is a significant milestone in the hotel business in the area. Ever since its establishment, THAM has made efforts to promote and standardise the services and facilities of hotels. Some achievements have been in the areas described below.

Training and Skill Development: Two training programmes, one in 1989 and the other in 1991 were organised with the support of the Hotel Association of Nepal (HAN) and the ILO respectively at the request of THAM. Both training programmes, conducted locally, were concentrated on food preparation, hygiene and sanitation, and better service to the tourists. Over 60 persons were trained.

Quality Control and Pricing: THAM has also made efforts to ensure quality standardisation and maintenance of the hotels' facilities, including food. Rates for all kinds of food and services have also been fixed. The hotel owners are also required to have the minimum facilities stated, although many of them are not able to comply fully with the stated norms.

Availability of Support Services. The development of the hotel business in Jomsom-Marpha has been the response of the private sector to growing tourism in the area. Hotel owners suggested that institutional support is needed in the following areas:

- institutional credit/loans for the improvement of hotel conditions;
- institutional support for skill development to the local people for hotel management, as well as for repair and maintenance of water and bathroom systems, solar heating systems, and also for the installation of new facilities;
- registration of hotels by the tourism office, allowing time for the owners to institute improvements; and
- installation of effective communication systems such as telephones, faxes, and telexes.

Employment Benefits. Unlike most other places, local people in Mustang control the hotel business. The hotels and lodges are run mostly by household members. The investment, size, and scale of operations are therefore determined by the family. On an average, a tourist hotel employs four to six family members and one to two outsiders, mostly from the area. While family members are responsible for internal operations and management, the outsiders assist the family in chores such as fetching water and fuelwood and cleaning. The indirect employment opportunities result from the following:

- the production and marketing of fruits and vegetables-vegetable requirements are purchased from local producers;
- labour demand for portering, construction, repair, and maintenance in the hotels- this provides frequent employment to local carpenters, blacksmiths, and skilled and semi-skilled labourers; an
- hotels/lodges contribute to increased demands for the transportation of goods and commodities, giving rise to the increased operations of mule and other pack animal transport systems- over 90 per cent of the foodstuff required by the hotels is transported by mules.

The lodge and hotel business is important in terms of earning and value-added. Food constitutes one of the major items of tourist expenditure. Local produce, mainly potatoes, garlic, onions, and apples account for a significant proportion of food items.

Interviews in some hotels revealed the following:

i)	monthly seasonal earnings (Oct,Nov/March, April)	Rs 10,250
ii)	monthly off- seasonal earnings	Rs 2,875, and
iii)	average annual earnings	Rs 63,000.

Note: Figures represent gross earnings and are believed to be underestimated. Also the cost of family labour and management, as well as of fuelwood used for operating the business, are not taken into account.

Cottage Industries

A list from the office of District Cottage Industries shows 39 different industries registered in the district. Jomsom and Marpha VDCs have 27 cottage enterprises. Broadly these industries are classified as:

- woollen weaving (carpets and woollen blankets - *radi* and *pakhi*),
- distilling,
- milling,

- bakeries,
- carpentry,
- smithing/utensil-making,
- apple peeling, drying, and marketing,
- sewing and knitting, and
- others (incense sticks, liquor-making, etc).

Discussions with local informants and some industry owners revealed that less than half of the registered industries were in operation. The others have either closed down or never existed, although they are shown in official records. In some cases, new industries had come into operation and the traditional ones; viz, carpet and *radi/ pakhi* weaving had closed down. Distilleries, apple peeling, and drying, milling, and baking are new activities. Only a limited number of cottage industries are operating in the study area. A few of these are discussed below.

Carpet Weaving. The study area has traditionally been known for woollen handicrafts. However, in recent years these enterprises, have not been able to evolve as viable commercial ventures, although at the national level commercial production of carpets for export has grown significantly. The woollen goods here are meant for domestic use and have virtually no share in the export market. Enquiries with local informants and entrepreneurs revealed a number of bottlenecks in the carpet and woollen weaving sector.

i) Opening of Competitive Markets: The development of other markets, such as Kathmandu and Pokhara, as major carpet production centres in the country has contributed to a depression in the production of carpets in the hills and mountains. Village-level enterprises are not integrated with the country's major carpet production centre, and the Government has no plans to develop a link between village-based carpet producers and the urban centres.

   Specific problems faced by carpet and other weaving enterprises are: i) lack of quality raw materials and ready markets; ii) low quality of finished products compared to those in urban areas such as Kathmandu and Pokhara; iii) high cost of skilled labour as well as a high opportunity cost for family members; and iv) lack of institutional support for the promotion of these enterprises (loans, technology, and knowhow).

ii) Costs of Production: Costs of production for all kinds of woollen goods are higher in the study area for various reasons: a) higher cost of employing skilled manpower; b) higher transport costs for marketing the produce; and c) higher investment costs for large-sized looms.

iii) Technology and Skills: Production of woollen goods in the area is based on traditional technology and skills. The old weaving technology results in low quality finished products which are less appealing and attractive to buyers. It was observed that the best quality carpets that were used by some local people were brought from outside.

Woollen-Shawl Industry (Pashmina Udyog): An Attempt that Failed. Mr. Chhatra Bahadur Thakali, a middle-aged entrepreneur, first set up a weaving loom in his house in Jomsom. The investment cost incurred was Rs 15,000, both for loom and raw materials, and this was supported by the Small Area Development Project (SADP). Thinking that he would employ local weavers, he installed a loom which could also be used for cotton weaving. The industry, however, failed to operate satisfactorily and was shut down within three years. During the three years, his recorded production was: cotton sarees - 70 pieces, bed sheets - 35 pieces, coarse cloth - 200 metres, pashmina-65 pieces. Mr. Thakali mentioned three basic problems: i) the lack of skilled manpower (weavers) locally; ii) low domestic demand for the products; and iii) high costs of transport and marketing. Mr. Thakali, however, asserts that this kind of industry could flourish if institutional support (training in skill development, loans, and marketing arrangements) were provided.

Most of the woollen goods produced in the area are for domestic use. Out of the 54 households surveyed in two VDCs, more than 50 per cent had traditional looms. About 20 per cent of the households surveyed were operating the looms. On an average, each household produced 10 small carpets in one year (an average household earning of about Rs 2,330). About 154 persons were reported to be employed (part-time) in the production of woollen carpets in the sample households.

Employment and income from carpets and other woollen goods were not found to be significant in the surveyed villages. All activities such as spinning, dyeing, designing, and weaving are performed by women. Weaving is considered to be a secondary occupation and is carried out during the non-agricultural season.

Unless institutional support is provided cottage industries like carpet weaving will gradually disappear from areas such as Jomsom.

Apple Peeling and Drying It was only after the establishment of the Mustang Agricultural Farm in 1966 that apples were introduced into the area. By the year 1978, the farm had distributed 82,299 fruit grafts and 35,000 fruit trees which were in good condition (JADP 1979). Apple plantations in Marpha and Jomsom are now a common feature. There are hardly any households that do not have some fruit-bearing apple trees.

Out of an estimated production of 743 mt of apples in 1989/90 (Bagbani News 1990) in the district, nearly 70 per cent were consumed or sold in outside markets in various forms such as brandy, apple juice, dried apples, and fresh sales. Dried apples, which are an innovation in the area, accounted for a mere two per cent of the total apple production. However, farmers are being encouraged to expand the production of dried apples. At present 35-40 households in Marpha and seven to 10 households in Jomsom are engaged in the production of dried apples.

Apple drying is based on a simple technology which offers definite advantages to the farmers, especially to those apple producers who have no storage facilities and who are forced to sell their produce at very low prices. Farmers are now relieved of these problems because of the possibility of drying apples. The apparent benefits are outlined in the following points.

i) Drying apples reduces their weight by 90 per cent, but adds to their value (10 kg of fresh apples cost Rs 80, while the same apples when dried would fetch between Rs 140 to 160).

ii) Storage is easy and long lasting.

iii) Employment is generated for an extended period of time to farm families, particularly to women.

The skills and technology needed for drying apples are simple. They are i) apple peeling machines, ii) simple solar or electric driers, and iii) plastic materials for packaging. A more modern peeling machine (now available to five households in Jomsom-Marpha) is more efficient than the local peeling machines.

Dried Apple Production: A Successful Venture. Mr. C.B. Thakali, after failing to run a woollen shawl (pashmina) industry, switched over to the production of dried apples some three years ago. With 84 fruit-bearing plants, his apple production was estimated to be nearly four tons in the survey year. He plans to sell about two to three tons fresh and one to one and half tons dry. He seems to be a better innovator than others in adopting new technologies. He has an imported peeling machine, a solar drier (made locally by bringing materials and a technician from Butwal), and also a local drier and in-house hanging trays. He has employed one local person especially to handle his apple business and pays a monthly salary plus food. Some of his dried apples are sold loose locally. The price is Rs 140 per kg loose and Rs 160 per kg in packets. His profit (excluding the cash expenses) alone was estimated at Rs 11,000 from a total investment of Rs 12,000. In addition to this profit, the wastages (inner part of the apple and the skin) are used either to feed animals or brew beer. He suggests the need for institutional efforts to provide apple-peeling machines and simple training to farmers, particularly in the Jomsom-Marpha outreach where apple sales are a crucial problem.

Prospects of increasing the production of dried apples appear promising from the point of view of its basic advantages such as simple technology, high value-added, long storage possibilities, employment generation, easy transportation, and marketing in distant markets. Until now, production of dried apples has been confined to limited households and marketing opportunities have not been explored in potential distant markets.

Institutional Support. At present there is no institutional support provided to entrepreneurs for this activity. Institutional support is particularly important in areas north of Jomsom village where the marketing of fresh apples has been a problem. According to local farmers, institutional support packages should consist of: i) providing apple-peeler machines to each interested household on loan; ii) short training programmes on processing and packing; and iii) marketing arrangements for the sale of produce.

Metal Utensils

The metal utensil industry (MUI) is emerging as a commercial enterprise, particularly in Marpha VDC of Mustang District. All the registered utensil industries are located in Marpha. There are a few which are not registered. The growth in metal utensil industries is basically a result of three factors: (i) the increased income level of local people leading to a greater demand for metal utensils; (ii) the *Thakali* culture in which utensils are collected for decoration; and (iii) tourism development.

Types of Metal Product. Metal work is, by tradition, the profession of the blacksmith caste. Traditionally they make all kinds of household and farm implements and tools such as *khukuris*, axes, sickles, and spades. In addition to these tools and implements, these caste groups have been increasingly involved in making different kinds of metal utensil. These include a wide range of gift and decoration items; viz, copper buckets, bronze vases, and plates.

Metal Utensil Industry: A Typical Case. Mr. Ratna B. Bishwakarma of Marpha village is involved in making traditional iron tools and implements. About eight years ago he started running his enterprise in an organised manner. To expand production, he borrowed Rs 20,000 from the local ADB/N in 1988/89 which he repaid within a short period of about two years. His annual production record is given below.

	Items		
i)	Copper Baskets/Buckets	100 pieces-price per piece Rs	350-500
ii)	Copper-*Makal*[1]	50 pieces- " " "	600-800
iii)	Copper flower vessels	60 pieces- " " "	600-900
iv)	Almunium utensils	25 pieces- " " "	60-130
v)	Copper/Bronze Jars-*Gagro*[2]	60 pieces- " " "	400-800

Making these utensils is a recent development. Mr. Ratna Bahadur employs three to six persons daily for about six months depending upon the volume of demand. Marketing was not reported to be a problem, as his products are in demand locally. He also exports some of his products to outside markets, including Kathmandu. He estimated his annual profit at about Rs 40,000.

Employment Patterns. The manufacturing of metal utensils is a household enterprise, particularly for the blacksmiths engaged in it. This household level enterprise employs all the skilled and semi-skilled family members and a few outsiders from the same profession. The daily wage rate for outsiders is Rs 100 without meals and some 75 persons make their living out of such employment. This group of people also has a migratory tradition. For about half a year, beginning from December to June, these people migrate to the middle hills; viz., Pokhara, Butwal, and Syangja; where they settle temporarily and travel to different markets to dispose of their unsold goods.

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1. *makal* - brazier
2. *gagro* - pitchers

The following details were obtained regarding the raw materials needed for a typical metal utensil industry.

Raw Materials/Inputs Requirements	Annual (Kg)	Price	Source of Procurement
i) Copper	200	200	Pokhara, Kathmandu, Butwal
ii) Bronze	100	190	Butwal
iii) Aluminium	100	160	Birgunj
iv) Charcoal	2000	-	Locally
v) Electricity (Rs)	800		Locally

Transportation and Marketing. Transportation, of both raw materials and finished products, is often a problem. Transport costs were reported to be Rs 12/ kg by aeroplane and Rs 10 kg by mule. Higher transport costs raise the price of finished goods. Procuring raw materials in the desired quantities and qualities is a problem for most entrepreneurs. This may involve travel to Indian markets which is even more time-consuming and expensive. An important input which is increasingly difficult to procure is charcoal which has to be prepared by burning firewood. Charcoal contributes to forest depletion and the loss of forests, in turn, makes charcoal expensive.

Since domestic demand is difficult to forecast there is always some stock that has to be marketed in distant markets which sometimes take 1 to 2 weeks to reach. An interview with a metal utensil industrialist showed the market for finished goods as follows:

i) local market 60%,
ii) tourist/officials 20%, and
iii) outside markets 20%.

A simple analysis of the metal utensil industry shows a relatively small share of value-added. The main raw materials have to be procured from outside and incur high transport costs. It is only local inputs which really add to the value of the final product. A rough estimate indicates that some 20 to 30 per cent of value-added in the metal utensil industry is comprised of the price of skills, organisational efficiency, and the normal profit margin of the entrepreneurs.

Mule Transportation

Lack of a motorable road has made the study area dependable on other means of transport; mainly mules, donkeys, and porters. Air transport is prohibitive in terms of cost. *Jhopa* and horses are also used for local transportation.

Official records put the number of mules at 1,863 head in Mustang District (District Veterinary Office 1991); but the local mule operators estimate the figure to be over 3,000. In Jomsom and Marpha VDCs the official record puts this figure at 31 and 790 respectively; but the actual number in Jomsom is believed to be at least more than double this figure.

All kinds of goods and commodities are transported by mule. They operate in herds of about 20-30. Each herd is jointly owned and operated by three to four different owners. Because of the economy of scale, mule operation requires a minimum of seven to eight head for commercial transportation. The average number per owner is therefore between seven to 10 head. Broadly, mule transportation is of two types; i) keeper-operated mules, and ii) owner-operated mules. In the first case, the owner hires a keeper to look after and operate the mules. In the second case, operation is directed by the owners. Mule caravans operate between Pokhara and the interior parts of Mustang District all year round except on rainy days. In other cases mules are used for local transport for about half a year (June/July - Nov/Dec). In other months the mules are used to transport goods in to the interior areas of neighbouring districts; viz., Baglung, Lamjung, Tanahu, and Syangja.

Mule Operations: Implications and Linkages. The main porter trail in Mustang District runs south from the border with Tibet via-Mustang, Kagbeni, Jomsom, Dana, and then either to Pokhara or south via Beni to Baglung and then to the *Terai* (Wolf 1968). However, the condition of trails at present is much better than was the case one or two decades back, and this is largely because of tourism. These developments within the district have made mule transport an indispensable operation and it is unlikely that any transport system (with the exception of a road) would completely replace it in the foreseeable future.

The implications of mule transportation are diverse in the local economy and environment. The study area is a food deficit area and food imports will continue to rise to meet the demand. Similarly, demand for agricultural inputs (chemical fertilizer, seeds, etc) and consumption items, both for tourists and local people, is increasing each year. Also mule transportation plays a role in the marketing of local produce. The other equally important effect of mule transportation is on the environment, particularly in terms of the overgrazing of pasturelands.

The operation of mule caravans between Mustang and Pokhara can contribute to the marketing of apples and other local products. Recently transportation of apples by mule was tested as a new transport technology by using different packing materials; viz, jute bags, wooden boxes, and card boxes fitted in a frame of high density polythene pipe. The findings pertaining to the damage of apples in different packing systems were: 7.5 per cent in polythene pipe-framed wooden boxes, 30.5 per cent in plain wooden boxes, and a high of 90.2 per cent in jute bags (Bagbani Sandesh 1990).

Employment and Income. The operation of mules is taken purely as an economic activity in the region. Mule owners estimated that over 400 persons are presently directly employed in mule transportation. The employees are usually the salaried keepers whose main work is driving the mules and taking care of them. The keepers are all local people because the work demands special skills and knowhow with which outsiders are not familiar. The entire process of mule transportation needs specialised skills at every stage of packaging, weight balancing, saddling, feeding, driving, loading, and unloading.

The indirect benefits of mule operating can be assessed in terms of market centres that have developed along the mule transport route. They have contributed to the operation of a number of hotels/lodge in as many as eight to 10 centres on a 150 km long trail from Pokhara to Muktinath. Besides, the equipment for mule transport; viz., frame sacks, are made by local people from locally available materials.

Mule Transportation: A Typical Case. Income from the operation of mule caravans is lucrative. Mr. Raju Bhattachan with seven mules compared mule caravan operation to a lottery saying that the business yields a net profit of Rs 30,000 to 50,000 per year and thus recovers the investment over a two to three year period. But if a mule dies, which at present costs Rs 20,000 to 25,000, the owner might lose the profit and, if more than one dies, the business would go bankrupt. An average-sized mule caravan incurs about Rs 1,40,000 as investment and Rs 30,000 as operational costs. The average annual earnings are about Rs 40,000.

Institutional Support for Mule Operations. The major form of institutional support to this activity is the provision of loans. In the year 1990/91 alone, the local Nepal Bank Ltd. provided loans of Rs 1,447,000 to 22 households in five VDCs to purchase mules. Of this amount, over two-thirds went to 15 families in Jomsom and Marpha. The average amount of each loan extended for mule purchases was Rs 70,000 and it was learned that demand is rising annually.

Other Potential Off-farm Activities

Tourism and off-farm activities in Jomsom-Marpha are interrelated in such a way that neither can be promoted in isolation. Most of the off-farm activities that have emerged in Jomsom and Marpha are

either directly tourism-induced, such as hotels/lodges, and businesses, or have indirect links with tourism such as mule transportation, utensil making, fruit and vegetable production, processing, and marketing. In addition to the expansion of these activities a few other activities show definite potential for development in the Jomsom-Marpha area. These are described in the following passages.

Seed Multiplication

A potential area for development is the multiplication of flower and vegetable seeds for sale in the national and international markets. Recent initiatives introduced by a Japanese expert in this direction show a great deal of promise. The prospects in this area can be better evaluated in the next few years when the results of ongoing experiments become known.

Poultry and Pig Raising

Development of poultry and piggeries as an integral part of the village farming system holds considerable promise in the area. Lack of these activities has meant that livestock and poultry products such as chickens, eggs, and meat have to be procured from Pokhara, by incurring heavy transport costs. CARE/Nepal's experience in poultry development in the area shows a survival rate of 81 per cent for the 306 one-day chickens distributed. There is also overwhelming demand for poultry on the part of farmers, and CARE has plans to distribute same 5,000 layers this year and install an incubating plant (of a 2,500 to 5,000 chicken-hatching capacity) locally. Pig-raising is not commonly practised but there have been some endeavours in this direction. Pig-raising currently being carried out on an experimental basis by a Japanese expert can be a guide to future development potentials.

Renting Facilities

Shops for renting equipment and providing logistics for trekkers and mountaineers (including laundry and repair facilities) are other economic activities that have definite prospects in the area.

Cheese Production

In view of the demand for cheese and other milk products by tourists, a potential activity could be the processing of yak milk into cheese. However, the environmental implications of this activity need to be assessed. Local informants also indicated that there was scope for collecting, processing, and trading in hides and skins of animals.

CRITICAL ISSUES AND OPTIONS

Tourism and other off-farm employment activities in Marpha-Jomsom have evolved in an integrated fashion. Because of the critical interlinkages between different off-farm activities and tourism we have attempted in this chapter to identify the critical issues and options with respect to the economic and environmental sustainability of tourism and other off-farm activities.

Environmental Degradation

Mustang District is characterised by an arid to semi-arid climate and meagre plant cover. R.W. Brown noted in 1982 that forest management was essentially unknown in Mustang and that forest resources were depleting at an alarming rate. In addition to fuelwood, timber forest areas are important for fodder, especially in the southern region of the district. As a result of forest depletion, accelerated soil erosion, often culminating in massive landslides, is a common occurrence.

The forest cover of the district was reported to be only 3.38 per cent of the total land area. Deforestation is particularly rapid along the main trekking routes and near the settlements. Jones (1988) estimates that approximately one hectare of forest area around Ghodepani (about 65km south of Jomsom) is disappearing annually, mainly to cater for tourist needs. Other studies (CEDA 1989, Sharma 1989) also note that the fuelwood requirements of hotels and lodges on the trekking route are much higher than normal household requirements. This appears to be true for the Jomsom and Marpha areas also. The critical issues pertaining to environmental degradation in Marpha-Jomsom are:

- excessive use of fuelwood, particularly by hotels/lodges for cooking and heating;
- no effective enforcement and regulation of laws pertaining to the use of alternative sources to fuelwood, particularly in hotels/lodges;
- extraction and lopping of tree twigs/branches by local people;
- free-range grazing practices which contribute to loss of regenerative capacity of the plants;
- increasing demand for timber for the construction of hotels, office buildings, and industries; and
- problems of garbage disposal and littering along trail and camp sites.

Some options to deal with the issue of environmental degradation are given in the following passages.

Restriction on Uncontrolled Felling and Free Use of Fuelwood

Seemingly, uncontrolled felling and free use of fuelwood and timber, particularly for hotel/lodge businesses, call for stiff restrictive measures. The hotels/lodges should therefore be required to use substitute energy such as kerosene, and electricity (by charging tourists) for running their businesses. This could be achieved by a system of monitoring the use of kerosene and electric heaters for cooking and heating purposes in all tourist hotels/lodges.

Promoting Alternative Sources of Energy

The installation of a mini-hydropower plant (240kW) at Tukuche near Marpha-Jomsom and the use of solar heating systems are alternatives that should be explored further by: a) construction of other mini-hydropower plants to meet local energy requirements; b) encouragement to local people, particularly the hotel/lodge owners, to have solar heating systems installed; c) institutional support, such as credit and technology, to act as an incentive for the widespread use of such systems; d) propagation of fuelwood efficient heating/cooking stoves; and iv) e) development and propagation of building designs that require less timber.

Controlled Grazing Practices

While awareness has to be created regarding the sustainable use of pastures, an institutional mechanism based on the participation of grazing households also needs to be developed. Local pasture development and veterinary offices could play the role of catalysts in this effort.

Reforestation/Afforestation

Reforestation programmes through the participation of the local community have to be launched seriously and at a faster rate. Effective coordination of the activities of various NGO and government agencies, such as CARE/Nepal, the DFO Office, and the Soil and Water Conservation Office, could lead to meaningful achievement.

Provision of Camp Sites

Camp sites with appropriate provision for the disposal of garbage and litter need to be developed. Local bodies need to be provided with incentives for monitoring the sanitation and environmental condition of camp sites.

Code of Conduct for Tourists

Tourists are also greatly accountable for environmental degradation and pollution problems such as littering, garbage disposal, and burning excessive firewood. These problems could be overcome through issuing and monitoring a code of conduct for tourists and the involvement of local community organisations in such efforts.

Lodge/Hotel Operations

Although the conditions and facilities of the hotels/lodges in Jomsom and Marpha are known to be relatively better than other places on the route, there is a need for new hotels/lodges of better quality. To some tourists the present facilities are not up to their needs and expectations. They also felt that the present hotel/lodge rates could be raised if improved facilities were provided. So opportunities exist, both for opening new standard hotels/lodges and improving/expanding the facilities and capacities of the existing ones. Priorities in the provision of loans and other facilities would help to improve the quality of the hotels/lodges.

Overcrowding is also a frequent problem during peak tourist season in Jomsom and Marpha bazaars where tourists spend relatively more days (2-4) to rest and also to wait for flights to Pokhara. The total number of lodges is now 27 with a capacity of 300 beds. During the peak season the number of tourists arriving daily exceeds 500. This implies that the carrying capacity of the existing facilities is insufficient and needs to be expanded if tourism is to be further promoted.

The major issues in the operation of hotels/lodges are:

i) informal household-level management,
ii) lack of adherence to THAM regulations, and
iii) sanitation.

Because of the informal nature of operations, the cost accounting in most hotels/lodges does not take into account such things as the cost of household labour, depreciation of assets and returns against labour, fuelwood, and home-grown agricultural and livestock products. Oftentimes there is cost-undercutting as a result of competition between formal and informal (unregistered) lodges. Also, in spite of the fact that the hotel/lodge owners are required to abide by THAM regulations, there is a great deal of variation in physical facilities and service standards vis-a-vis prices charged. Often sanitary conditions with respect to the handling of food are poor. Contamination of locally procured food is a major health hazard to trekkers.

In view of these issues, the options are:

i) training and orientation for hotel/lodge managers in such areas as accounting, basics of lodge management, and provision of services;

ii) institutional support for strengthening the activities of THAM and enabling it to maintain the service standards of different grade hotels/lodges so that tourists are assured of at least minimum standards of service vis-a-vis prices; and

iii) training of cooks and others on aspects of food sanitation.

Some of these activities have already been introduced. However they need to be coordinated through a local organisation like THAM.

Technology and Innovations

Technology and innovations appropriate in the context of off-farm activities have not been as widely adopted as expected. The problem is pronounced particularly in hotel/lodge businesses, fruit storage and processing, woollen goods' production, and transportation. In Jomsom and Marpha only a few motivated entrepreneurs have installed solar heating systems. Similarly, the use of fuelwood, which all hotel owners consider to be a free good, is barely substituted by other types of energy. Almost no hotels/lodges use kerosene or electric heaters. It is not that these owners are not aware of the new technologies and innovations or that they cannot afford to install them. Awareness and a system of monitoring and implementing regulations are lacking.

Options

Widespread adoption of new technologies needs to be stressed through awareness campaigns regarding appropriate technologies and their advantages in terms of income, employment, and sustainability.

- Development and promotion of technology packages suitable to the area in heating/cooking systems, woollen weaving, transport technology, construction, fruit preservation, storage processing, and packaging.

- Provision of incentives (preference in loans) to the users of new technologies.

Transportation and Marketing

Transportation and marketing continues to be a perpetual problem in the area. The existing pack animal transport system is not only traditional but also expensive, time-consuming, and more prone to losses and leakages. All of these have significant cost implications. Because of transport problems, the area is completely isolated from major markets and shows a greater degree of fragmentation.

Options

- Improvements in mule transport technology (i.e. packing, loading, and unloading) which is efficient and less prone to damage, losses, and leakages.

- Operation of local markets (*hat-bazaar*) on a regular basis. This will encourage local trading and help promote the market economy.

- Search for potential markets outside for local produce such as dried apples and light woollen goods which can possibly be transported by air cargo.

Institutional Support and Incentives

Critical issues with regard to the institutional support system in the area include the following:

- inadequate institutional loans/credit to local entrepreneurs for OFEAs which force them to borrow from informal markets where interest rates are as high as 60 per cent per year;

- lack of an integrated "package" service to entrepreneurs, i.e., credit, technology, training, skill development, raw materials, and marketing; and

- unclear government policies regarding taxes, subsidies, and other economic incentives to entrepreneurs. At present loans are not extended to expand/improve the hotel/lodge business. This policy has to be reconsidered if the quality of hotels is to increase. Also an "integrated" approach for institutional support to tourism-related activities has to be evolved through consultation with local entrepreneurs, financial institutions, and other relevant organisations.

Preservation of Cultural and Historic Heritage

Preserving the traditional culture, values, and practices often becomes a problem whenever a place is opened up for all to see. During the field survey, some tourists and local informants raised this as a major issue. The potential problems were reported to be:

- theft and burglary of valuable antiques (idols, inscriptions, and books) from the monastries (*ghomba*).

- possible negative influence on the social order and value system of the area, and

- loss of original culture/character in new markets like Jomsom.

Increased awareness on these issues can be brought about through institutional support to local organisations.

Improvement and Expansion of Infrastructure

Some basic infrastructural facilities need to be improved to provide services to the growing number of tourists and enhance the carrying capacity of the area. This is an important consideration for the area where the annual tourist inflow exceeds 10,000 at present and is anticipated to rise steadily each year. Construction/improvement of trails leading to some potential tourist areas like Tilicho lake (about 24 km from Jomsom), Dhaulagiri ice fall (about 2 days' walk from Jomsom), and the construction of viewing towers would help promote and diversify tourism in the area.

Improvements are critical in the following areas:

- improvement in trail and bridge conditions and maintenance of sufficient signposts showing distance, direction, elevation, and altitude along trekking routes;

- improvement in the management of air transportation to and from Pokhara-Jomsom providing for greater frequency and a more reliable service; and

- installation of communication facilities such as telex, fax, and phone for emergency purposes-in this context the facilities in the recently established office of the Department of Tourism in Jomsom have to be strengthened.

Wider Distribution of the Gains from Tourism

The gains from tourism should also accrue to interior villages so that potential income-generating activities can be established in these areas. In the cases of Jomsom and Marpha, these may include a number of farm and off-farm activities, viz., fruit and vegetable production and marketing, dried apple preparation, carpets and woollen goods' production, distilleries, and forest resource-based industries such as incense-making.

Growth of tourism has generally been noticed to widen the disparities between people living in the growth points and those living in the interior. Promotion of off-farm activities linked with tourism in the outlying villages and settlements could effectively narrow such gaps.

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