



# **Mountain Population and Employment**

**Discussion Paper Series**

## **OFF-FARM EMPLOYMENT IN THE HILL AND MOUNTAIN REGIONS OF NEPAL**

**Janardan Khatry-Chhetry  
Bhimendra Katwal**

*MPE Series No. 14*

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**International Centre for Integrated Mountain Development (ICIMOD)  
Kathmandu, Nepal**

## PREFACE

The necessity of alternative employment opportunities outside traditional agriculture has become an important issue for the mountain and hill economy of Nepal. Off-farm activities are a significant source of employment and income for the rural poor, particularly for those with limited access to land. However, experiences show that there has been an increasing displacement of traditional off-farm activities and many of these continue to provide only distress employment. The rising population and labour force, pervasive underemployment and migration, and an increasing pressure of population on the fragile resource base make it imperative to examine and identify the critical issues and options in off-farm employment in the context of mountain specific conditions.

With this realisation, ICIMOD, with the support of the IDRC, Canada, initiated the study on Mountain Off-farm Employment and APROSC was entrusted with the responsibility to undertake this study for Nepal. The project document prepared by ICIMOD provided the basic guidelines and analytical framework for conducting the study. This report represents the first phase of the study and is basically an overview of the state of mountain off-farm employment in Nepal based on secondary sources of information.

This study has greatly benefitted from the valuable discussions and suggestions made by the participants at the two workshops held in Chengdu, China, from November 18 to December 2, 1990, and in Peshawar, Pakistan, from May 18 to June 5, 1991. The comments and suggestions provided by Dr. Deepak Bajracharya and Dr. Pitamber Sharma of ICIMOD were especially helpful.

I would also like to thank Messrs Maheshwar Yadav, Surendra Pratap Singh, Prakash Tiwari, Bhudar Ram Joshi, Prakash Karki, and Badri Narayan Shah for their assistance at different stages of the study and to Mr. Indra Bahadur Thapa and Ms. Tshering Sherpa for the secretarial work.

Special thanks are also due to Mr. Binod Bhattarai for his work on activity level analysis and to Dr. Govind Koirala for his invaluable help in finalising the study.

Finally I would like to express my appreciation for the sincere efforts made by Dr. Janardhan Khattri-Chhetry and Mr. Bhimendra Katwal as the principal researchers.

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## FOREWORD

The present discussion paper by Janardan Khatry-Chhetry and Bhimendra Katwal, entitled "Off-farm Employment in the Hill and Mountain Regions of Nepal" constitutes one of the three studies on the current state of off-farm employment in selected mountain regions in the Hindu-Kush Himalayas. The studies were initiated by ICIMOD in conjunction with the Programme on Population and Off-farm Employment. The general objective of the programme is to identify viable off-farm alternatives and promote practical approaches to employment generation, income enhancement, and sustainability of mountain environments.

The programme is based on the premise that the promotion of off-farm employment and income opportunities in mountain communities is imperative in order to counteract the gradual breakdown of stable relationships between population, economy, and environment. In the absence of adequate employment and income opportunities, rural mountain communities are continually faced with increasing poverty which leads to migration from the hills and rapid environmental deterioration. Comparative advantages provided by mountain conditions and resources must therefore be used as the basis for promoting off-farm opportunities. Further, a systemic perspective is essential to analyse the constraints as well as the potentialities of off-farm employment.

A number of diverse off-farm activities are presently undertaken by mountain households in the Hindu Kush-Himalayas. While many such activities can be labelled "distress employment" because they are not remunerative enough, there are also areas where considerable opportunities exist. Further, off-farm employment in the mountains has been a matter of considerable policy concern and a number of programmes have been implemented in recent decades.

In this context the major purpose of the present study is

- (i) to apply a comprehensive analytical framework to assess critical issues and options in off-farm employment;
- (ii) to determine data and information requirements and identify gaps to facilitate the promotion of off-farm employment;
- (iii) to develop qualitative and quantitative criteria of "success" and identify "constraints" in the promotion of prominent and potential off-farm activities, based on the examination of experiences from different countries;
- (iv) to synthesise experiences from different mountain regions of the Hindu-Kush Himalayas and develop institutional and organizational guidelines, as well as investment and implementation options, for the promotion of environmentally sound off-farm employment activities.

The present study is basically a review and assessment of the off-farm employment situation in the Hill and Mountain Regions of Nepal. This study sets the stage for a more in-depth and location-specific analysis of prominent/potential off-farm activities that will be carried out in the second phase of the study and will be published in this series.

This study was 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 this study professionals from various national institutions in China, Nepal, and Pakistan. Mutual consultations and a review of on-going and completed work were held at workshops in Chengdu, Sichuan Province, China, and Peshawar, NWFP, 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. Deepak Bajracharya (now with UNICEF) and Dr. Pitamber Sharma.

Readers might be interested to know that all of the three case studies mentioned above, including the present one, are brought out in the Discussion Paper Series of the Mountain Population and Employment Division. 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

### The Importance of the Off-farm Sector

Promotion of off-farm activities to absorb a growing labour force and as a supplementary source of household income has received increasing attention from international cooperation agencies and the governments of developing countries. This growing attention has emerged from the concern for environmental protection, poverty alleviation, and issues of equity, unemployment, and underemployment.

The problem is severe, especially in mountain regions where inappropriate use of natural resources can lead to irreversible damage to the fragile resource base. Traditionally, mountain economies have remained subsistence economies because of inaccessibility and remoteness. However, increased population pressure and depletion of resources in recent years have threatened the sustainability of mountain economies. The traditional adaptation mechanisms of out-migration and the intensive use of traditional agriculture are inadequate to assure the sustainability of mountain economies.

Thus, promotion of appropriate off-farm activities has a much greater relevance in the mountains than in other areas. While off-farm employment and income help in relieving the pressure on fragile resources, in the mountain context there is also the need to look at off-farm opportunities that are not only environmentally unharmed but which also help in the regeneration of environmental resources. Moreover, even if off-farm employment is not as remunerative in terms of income, mountain people have no choice but to undertake them in view of economic distress and the absence of other alternatives.

In Nepal, a least-developed mountainous country, where the annual growth rate of population is over 2.6 per cent and the growth rate of the labour force is 3.5 per cent, the capacity of the traditional agricultural sector to absorb the existing and potential labour force and to satisfy even the minimum subsistence requirements of a majority of the rural population is severely limited. The problem is aggravated by decline in per capita cultivated land, decline in average productivity because of the increased cultivation of marginal land, and land degradation as a result of the cultivation of unsuitable land. The industrial sector is undeveloped. There is, therefore, an added burden on the agricultural sector to absorb the growing labour force. Consequently, the ever-increasing pressure of human population on the limited cultivated land, which constitutes only 20 per cent of the country's total area, has seriously eroded the stable relationships between population, economy, and environment. Relieving the excessive pressure on agriculture requires the development of other sectors that can absorb the growing labour force by providing increased opportunities for gainful employment. The growth of the labour force and the structure of employment, especially the high underemployment of the labour force, clearly bring out the case for increasing the opportunities for gainful employment in agriculture as well as in the non-agricultural sectors.

Empirical evidence from micro-studies in Nepal demonstrates the importance of off-farm activities as sources of income and employment. A study (APROSC 1990a) conducted in the hills of mid-western Nepal indicates that agriculture contributes only 23 per cent to the total income of farm households, while off-farm activities provide as much as 57 per cent of the total income. The study further reports that sub-marginal, marginal, and small farm households obtain a greater share of total income from off-farm

sources vis-a-vis the medium and large-scale farmers. Thus the income from off-farm activities tends to be more equally distributed. Another study shows that in the hills, off-farm work contributes 52.7 per cent in total employment and 32.5 per cent in total income, the contribution being much higher in the case of landless and small farm households (Bhattarai 1989). The Multipurpose Household Budget Survey of Nepal Rastra Bank shows that the major activities in terms of labour utilisation are crop production, animal husbandry, and off-farm work in the rural areas while non-agricultural family enterprises and off-farm work are major activities in the urban areas. Off-farm wage-earning work accounts for 30.5 per cent and 35.4 per cent of the total household labour allocation in the rural and urban areas respectively (NRB 1988). Available data on the self-employed underestimate the number of people employed in the informal sector as those employed in agriculture but engaged in non-agricultural activities (especially during the slack agricultural season) and, also, the self-employed petty traders and workers employed in the urban area are excluded.

Rural households generally have one or more non-agricultural sources to supplement their agricultural income. The limited job opportunities in the organised formal sector have induced the growth of various activities in the informal sector. Available information indicates that generally the high income households derive their non-agricultural income in the informal sector from business and trade, while the low income households (which usually consist of small and marginal farmers and occupational castes) depend heavily on wage earning (mostly in agriculture) and portering (New Era 1989).

An evaluation study of Rasuwa-Nuwakot IRD Project Area (DRCG 1982) showed that, in Rasuwa District, trade contributed 23 per cent and, in Nuwakot, 14.1 per cent of the non-agricultural income of the high income households. The corresponding figures for the low income households were 9.5 per cent in Rasuwa and 7.6 per cent in Nuwakot. Wages (mainly from agriculture) contributed 45.5 per cent and 53.6 per cent to the total non-agricultural income in Rasuwa and Nuwakot respectively. Similarly, portering was one of the major sources of non-agricultural income of the low income households contributing 32.4 per cent and 24.6 per cent of the total non-agricultural income in Rasuwa and Nuwakot districts respectively.

Cottage industry was observed to be an important contributor to the total non-agricultural income of the high income households in Rasuwa, contributing 21.2 per cent of the total non-agricultural income. Studies have shown that in the mountains, resources from the wild, such as medicinal herbs, wild edible fruits, tubers, rhizomes and vegetables, fibre plants, bamboo, etc are widely used by the local people, but the indigenous knowledge in collecting, processing, and producing various items has yet to be adequately evaluated and promoted (Shrestha 1989:82). While this evidence indicates the importance of the off-farm sector for the hill/mountain economies of Nepal, the comparative advantages afforded by the mountain context for off-farm employment remain largely unexploited.

There appears to be considerable potential for an accelerated growth of off-farm activities in the mountain areas. Their proper development is, however, impeded by several factors, including inaccessibility, which restrict the integration of off-farm income-generating activities with the wider market economy. Hence, the efforts directed towards the development of off-farm activities must take into consideration the interrelationships with the specificities of the mountain environment such as inaccessibility, fragility, marginality, and diversity. It is in this context that the present study seeks to critically look at the existing situation of off-farm employment in the mountains and hills of Nepal. A comprehensive understanding of the constraints and potentials of the off-farm sector is essential in order to develop strategies and guidelines for its promotion.

Off-farm employment in mountain areas can be seen from two perspectives: (a) enhancement of existing off-farm activities as part of the subsistence agricultural regime, and (b) introduction of viable off-farm

alternatives for transforming mountain economies and sustaining the mountain environment. The potential off-farm activities need to be explored and analysed in terms of a systematic perspective that encompasses environmental, spatial, economic, and demographic processes as well as distributional concerns. An objective assessment of the 'success' or 'failure' of prominent or potential off-farm activities using such a perspective would be of great value to the employment sector. Such an analysis is expected to contribute to the identification of practical approaches for investment in off-farm activities, giving due consideration to the sustainable growth of such activities in terms of the optimum utilization of mountain resources (physical and human).

## The Regional Setting

Nepal is a mountainous kingdom bordered by India to the East, South, and West and the Tibetan Region of China to the North. The country is roughly rectangular in shape having an east-west length of about 880 km and north-south breadth varying between 130 and 240 km. It occupies a geographical area of 147,181 sq. km. and lies between latitudes 26°22' and 30° 27' north and longitudes 80° 04' and 80° 12' east. Nepal's development is constrained by its extremely rugged topography, especially in the geologically unstable and environmentally fragile mountain areas. Nepal is divided into three ecological zones from north to south, namely mountains, hills, and the *terai* and five development regions from east to west (eastern, central, western, mid-western and far-western). The classification by ecological zones and development regions roughly provides the environmental and development perspectives of the spatial distribution of the population.

The mountain region includes the High Himal and the high mountains above 3,000 m in elevation. The hills include the middle mountains and the Mahabharat Range, and, in some cases, the northern slope of the Siwaliks, between 1,000-3,000 m in altitude. The *terai* includes the southern plains and the southern slopes of the Siwaliks which are less than a 1,000 m in elevation.

There is no clearly defined boundary between the mountain, hill and *terai* regions. However, of the total 75 districts in the country, 19 districts are categorised by the Government as lying in the mountain region, 36 districts in the hill region and 20 districts in the *terai* region (Figure 1.1). The mountain region is characterised by a cool temperate to alpine climate and has eight of the world's ten highest peaks. The permanent snowline starts at 4,800 metres. This region is broadly designated as being suitable for livestock development.

The hill region has a warm to cool temperate climate depending upon the altitude. This region is densely populated with intensive agricultural activities. The intensive use of the land is characterised by an intricate, extensive terrace system. Farms are small and subsistence oriented. Land use patterns are influenced by micro-environments. Population pressure and deforestation have resulted in increasing environmental problems including erosion and landslides. The hill region in general is considered suitable for horticultural development.

The *terai* is characterised by a sub-tropical climate. It is an extension of the broad Gangetic Plain of India and includes the Bhabar Region. The *terai* was thinly populated and mostly covered by forest until the 1950s but, after the control of endemic malaria, the population of the *terai* substantially increased because of migration from the mountains and hills and also from India. The *terai* is known for its crop and timber production.

Table 1.1 presents some key economic indicators for Nepal in general and the hill/mountain region in particular. The hill/mountain regions possess 77 per cent of the total geographical area, 51 per cent of

the total cultivable land, and 46 per cent of the total cultivated area of Nepal. The hills and mountains also accounted for 56 per cent of the total population and 39 per cent of the total cereal grain production (2.4 million MT) in 1981. Thus the population pressure on agricultural land is greater in the hills and mountains than in the *terai*.

Despite efforts made to increase the production of cereal crops, almost all of the 55 hill and mountain districts are food-deficit areas. Each hectare of cultivated land in the hills and mountains supports 8.6 persons, 5.6 head of large animals, and 3.8 head of small animals (APROSC 1990c:13).

The population of the hill and mountain region increased at an average annual growth rate of 1.62 per cent as against an average annual increase of 4.2 per cent in the *terai* between 1971 and 1981. The alarming rate of growth in the population of the *terai* is largely contributed by in-migration from the hills and mountains. Therefore, off-farm employment generation is an important issue in the context of hill and mountain development.

## Organisation of the Study

The purpose of this study is to review the current state of off-farm employment and assess critical issues and options in the promotion of prominent and potential off-farm employment activities in the hills and mountains of Nepal. The study is organised into five substantive chapters.

The following chapter presents an analysis of the structure of the labour force and employment in the context of historical trends in population growth, urbanisation, migration patterns, and occupational structure. Attempts are also made to trace the stages of economic growth in the country and to indicate the implications of this process on the transformation of the labour force. Chapter Two further presents the projection of the population and the labour force and discusses the challenges concerning off-farm employment.

Chapter Three provides a comprehensive picture of the current state of off-farm employment in formal and non-formal sectors and identifies some prominent and potential off-farm activities.

Chapter Four presents a review of Nepal's development strategies and government policies and their implications on employment in general and off-farm employment in particular. This chapter also examines the extent to which the policies and programmes are responsive to the objective conditions in the hill/mountain region.

Chapter Five is devoted to the detailed analysis of a few prominent or potential off-farm activities. The analysis is made with respect to the implications of the activities on environmental, demographic, economic, and distributional concerns.

Activity-level analysis of some selected off-farm enterprises is presented in the sixth chapter. Analyses of enterprises are based on the specific context of the off-farm activity with respect to the organisation and management, technical innovation and marketing, and extension and support services.

Chapter Seven presents a synthesis of the study and posits the critical issues and options in off-farm employment in the context of the hill/mountain regions of Nepal.

**FIG. 1.1 ECOLOGICAL REGIONS**



**Table 1.1: A Glimpse of Key Indicators**

|                                                                      | Year    | Unit           | Mountain/Hill | Terai      | Nepal      |
|----------------------------------------------------------------------|---------|----------------|---------------|------------|------------|
| Geographical Area                                                    |         | '000 Ha.       | 11,338        | 3,380      | 14,718     |
| Cultivated Area                                                      | 1985    | '000 Ha.       | 1,112         | 1,298      | 2,410      |
| Forest Area                                                          | 1985    | '000 Ha.       | 4,659         | 1,493      | 6,152      |
| Persons/Hectare<br>of Cultivated Land                                | 1985    |                | 7.6           | 5.1        | 6.2        |
| Population                                                           | 1981    | Thousand       | 8,466         | 6,557      | 15,023     |
| Male                                                                 | 1981    | "              | 4,285         | 3,410      | 7,695      |
| Female                                                               | 1981    | "              | 4,181         | 3,147      | 7,328      |
| Household Size                                                       | 1981    | "              | 5.93          | 6.20       | 6.05       |
| Average Annual<br>Population Growth Rate                             | 1971-81 |                | 1.62          | 4.20       | 2.66       |
| Labour Force                                                         | 1981    | Thousand       | 4,207         | 2,645      | 6,852      |
| Male                                                                 | 1981    | "              | 2,507         | 1,974      | 4,481      |
| Female                                                               | 1981    | "              | 1,699         | 673        | 2,372      |
| Average Annual<br>Labour Force Growth Rate                           | 1971-81 | "              | 2.46          | 5.46       | 3.51       |
| Male                                                                 |         | "              | 1.72          | 4.09       | 2.69       |
| Female                                                               |         | "              | 3.67          | 11.12      | 5.27       |
| Literacy Rate                                                        | 1981    | "              | 23.9          | 22.5       | 23.3       |
| Male                                                                 | 1981    | "              | 35.4          | 32.1       | 34.0       |
| Female                                                               | 1981    | "              | 12.1          | 11.9       | 12.0       |
| Urbanisation Level                                                   | 1981    | "              | 5.9           | 7.0        | 6.3        |
| Proportion of Popula-<br>tion below the Level<br>of Absolute Poverty | 1981    |                | 64.5%         | 48.8       | 53.3       |
| Unemployment Rate                                                    | 1984    | Rural<br>Urban | 2.9<br>4.8    | 3.0<br>6.3 | 2.7<br>8.2 |

**Economic Indicators Nepal**

|                               | 80/<br>81 | 81/<br>82 | 82/<br>83 | 83/<br>84 | 84/<br>85 | 85/<br>86 | 86/<br>87 | 87/<br>88 | 88/<br>89 | 89/<br>90 | 90/<br>91 |
|-------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 1. Consumer<br>Price Index    | 201       | 222       | 254       | 269       | 281       | 326       | 368       | 409       | 442       | -         | -         |
| 2. Exchange Rate<br>(Rs/US\$) | 11.9      | 13.2      | 13.9      | 15.3      | 17.8      | 19.8      | 21.5      | 22.1      | 25.0      | 28.0      | 427       |
| 3. Real GDP<br>Rs/Billion     | 20.2      | 20.9      | 20.3      | 22.3      | 23.6      | 24.6      | 25.3      | 21.8      | 28.2      | -         | -         |

**Changes in Key Economic Variables, Nepal**

|                                                               | Average<br>1971-80 | Average<br>1981-90 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 |
|---------------------------------------------------------------|--------------------|--------------------|------|------|------|------|------|------|
| <b><u>Growth in</u></b>                                       |                    |                    |      |      |      |      |      |      |
| 1. GDP                                                        | 2.3                | 4.5                | 6.1  | 4.3  | 3.9  | 7.8  | 2.3  | 2.0  |
| 2. Consumer Price                                             | 8.4                | 10.5               | 3.8  | 17.1 | 14.0 | 9.1  | 8.5  | 9.3  |
| 3. Per Capita GDP                                             | -                  | -                  | 3.3  | 1.6  | 1.4  | 5.3  | -0.2 | -0.6 |
| 4. Value added in<br>Agriculture                              | -0.5               | 4.3                | 2.4  | 5.1  | 0.6  | 8.1  | 6.4  | 3.2  |
| 5. Gross Domestic<br>Saving (as per cent<br>of GDP)           | 5.7                | 10.4               | 14.0 | 11.7 | 12.6 | 10.8 | 7.2  | 8.0  |
| 6. Gross Domestic<br>Investment<br>(as per cent of<br>of GDP) | 16.2               | 19.9               | 22.9 | 21.0 | 21.8 | 20.5 | 19.5 | 20.7 |

## STRUCTURE AND TRANSFORMATION OF THE LABOUR FORCE

The purpose of this chapter is to analyse the structure and transformation of the labour force in a broader context. It attempts to present the historical evolution of the problem of an increasing labour force and its implications for the transformation of the labour force.

### Definitional Issues

The definition of economic terms employed in this study follows the usage of the National Planning Commission Study (NPC 1983). These are outlined below.

**Employment.** The term employment covers the services of those who work in return for payment. Those who are above a certain age (10 and above) and fall under any of the seven main occupational classes have been regarded as employed. These occupational classes are: (i) farmers, fishermen, hunters, and related workers, (ii) production labour/workers, (iii) service workers, (iv) sales' workers, (v) clerical workers, (vi) administrative workers, and (vii) professional/technical workers.

**Unemployment.** Unemployed persons are defined as those above a certain age (10 years and above) who are not at work but who are seeking work or are available for work and who are not students, household workers, or persons physically unable to work.

**Underemployment.** Underemployed persons include those that are working less than a prescribed number of working days during the year (visible underemployment), or there being more persons engaged in a particular job than actually required according to a given standard (invisible underemployment). People are collectively called underemployed if more of them are engaged in certain activities than are needed to produce a given output. The latter situation of underemployment is one in which the labour force is so numerous in relation to the resources with which they work that, if a number of them are withdrawn for work elsewhere, total output would not decline. This kind of underemployment is often known as "disguised unemployment".

**Economically Active Population.** The economically active population includes all able-bodied persons in the age group of 10 years and above who belong to one or more of the seven occupational groups listed in defining employment above.

**Labour Force.** The labour force is used synonymously with the economically active population.

**Peak Periods.** Peak periods are defined as those months when the most important operations of crop cultivation, such as land preparation, sowing, weeding, and harvesting, are undertaken.

**Lean Periods.** Months not falling within peak periods have been identified as lean periods. Lean months are synonymous with off-season months when agricultural operations are at a minimum.

## Historical Trends in Population Growth

The first population census of Nepal was conducted in 1911 and since then it has been carried out approximately every ten years. However, scientific census evaluation commenced only with the 1952/54 census. Therefore, the trend analysis is based only on figures from 1952/54 onwards.

### *Size and Growth of Population*

In 1952/54 the recorded population of Nepal was 8.26 million. It had reached 15.02 million in 1981. The intercensal average annual growth rates in population show progressive increases from 1.65, to 2.07 and 2.66 percentages between the successive censuses of 1952/54, 1961, 1971, and 1981 respectively (Table 2.1). At 1971-81 growth rates, the population of the country would double every 26 years.

The accelerating population growth in the last three censuses has been primarily attributed to the rapid fall in the mortality rate as a result of the spread of curative health care without corresponding declines in fertility.

The estimated crude death rate declined from 27 in 1952/54 to 14 in 1981, whereas the crude birth rate remained stable within the range of 40-42 between 1952/54 and 1981 (CBS 1987).

**Table 2.1: Population Size and Growth, Nepal Census Years 1952/54-1981**

| Year    | Population | Average Annual Growth Rate % | Doubling Time (in years) |
|---------|------------|------------------------------|--------------------------|
| 1952/54 | 8,256,625  | -                            | -                        |
| 1961    | 9,412,996  | + 1.65                       | 42                       |
| 1971    | 11,555,983 | + 2.07                       | 34                       |
| 1981    | 15,022,839 | + 2.66                       | 26                       |

Source: CBS 1987a

### Age/Sex Structure

As a result of the high fertility and low mortality regime more than 30 per cent of the population was below the age of 10 in 1981 (Table 2.2). Around 40 per cent of the population is below the age of 15 and the median age in 1981 was 19.9 years. The sex ratio in 1981 was in favour of males (105.0). The dependency ratio, i.e., the ratio of non-workers (the population below 15 and above 60) to workers (the population between 15-59) has been steadily rising since the 1950s. In 1952/54 there were 77 dependents for every 100 of the working population. In 1981 there were 89 dependents for every 100 of the working population. The prevailing age structure and dependency ratio indicate the urgency to increase the productive employment of the working population.

**Table 2.2: Percentage Distribution of Population by Broad Age Group and Sex, Nepal, Census Years 1952/54-1981**

|       | 1952/54 |        | 1961  |        | 1971  |        | 1981  |        |
|-------|---------|--------|-------|--------|-------|--------|-------|--------|
| Ages  | Male    | Female | Male  | Female | Male  | Female | Male  | Female |
| 0-4   | 13.33   | 13.12  | 14.24 | 14.18  | 13.59 | 14.70  | 15.47 | 15.34  |
| 5-9   | 14.31   | 13.46  | 14.83 | 13.98  | 15.23 | 14.95  | 14.52 | 14.65  |
| 10-59 | 67.86   | 67.99  | 65.86 | 66.25  | 65.83 | 64.48  | 64.16 | 64.47  |
| 60+   | 4.52    | 5.43   | 5.07  | 5.59   | 5.35  | 5.87   | 5.85  | 5.54   |

Source: CBS 1987a

### Spatial Distribution of Population

The proportion of Nepal's population living in the hill/mountain region has been consistently on the decline since the 1950s (Table 2.3). About 65 per cent of Nepal's population was in the hill/mountains in 1952/54. This share had declined to 56 per cent in 1981. The growth rate in the population (Table 2.4) reveals that the average annual growth rate of the hill/mountain population has remained below 2 per cent in each intercensal decade since the 1950s. This growth rate has largely been a function of highland to lowland migration which has picked up in recent decades. In spite of increasing immigration to the *terai*, this region still had fewer persons per hectare of cultivated land (5.04) than the hill/mountains (Fig. 2.1).

**Table 2.3: Distribution of Population by Geographic Region, 1952/54 - 1981**

| Years   | Mountain           | Hill                | Mountain and Hill   | Terai               | Total                  |
|---------|--------------------|---------------------|---------------------|---------------------|------------------------|
| 1952/54 | N.A.               | N.A.                | 5,349,988<br>(64.8) | 2,906,637<br>(35.2) | 8,256,625<br>(100.0)   |
| 1961    | N.A.               | N.A.                | 5,991,297<br>(63.6) | 3,421,699<br>(36.4) | 9,412,996<br>(100.0)   |
| 1971    | 1,138,610          | 6,071,407           | 7,210,017           | 4,345,966           | 11,555,983             |
| 1981    | 1,302,896<br>(8.1) | 7,163,115<br>(47.7) | 8,446,011<br>(56.4) | 6,556,828<br>(43.6) | 15,022,839<br>(100.00) |

Source: CBS 1987b

**FIG. 2.1 POPULATION DENSITY ON CULTIVATED LAND**



**Table 2.4: Intercensal Growth Rate of Population by Geographic Region**

| Period       | Mountains | Hills | Mountains and Hills | <i>Terai</i> |
|--------------|-----------|-------|---------------------|--------------|
| 1952/54-1961 | N.A.      | N.A.  | 1.42                | 2.06         |
| 1961-1971    | N.A.      | N.A.  | 1.87                | 2.42         |
| 1971-1981    | 1.36      | 1.67  | 1.62                | 4.20         |

Source: CBS 1987b

### Urbanisation

In Nepal, designated municipal areas are generally regarded as urban. In 1981 about 6.4 per cent of the country's population lived in 23 designated urban areas. About half of the total urban population of the country lived in the hill region, mainly in the Kathmandu Valley. Since the 1950s, urbanisation in Nepal has been more characteristic of the *terai* plains where much of the productive infrastructure and apparatus of the country are concentrated. The level of urbanisation as well as the urban growth rate is lower in the hill region compared to the *terai* (Table 2.5). Of the 23 designated urban areas in 1981 only nine were in the hills. At present there are 33 municipal areas in Nepal, thirteen of these are in the hill region. The mountain region has no urban population. The pre-eminence of Kathmandu Valley in the urbanisation of the Nepalese hill region is evidenced by the fact that about 73 per cent of the hill urban population in 1981 was in the Kathmandu Valley.

**Table 2.5: Growth and Distribution of Urban Population 1952/54 - 1981**

| Year    | Total Urban | Per cent Urban | Hill Urban Pop. | Hill Urban as Per Cent of Total Urban | Average Annual Growth Rate |            |
|---------|-------------|----------------|-----------------|---------------------------------------|----------------------------|------------|
|         |             |                |                 |                                       | Total Urban                | Hill Urban |
| 1952/54 | 238,275     | 2.9            | 196,777         | 82.6                                  | -                          | -          |
| 1961    | 336,222     | 3.6            | 234,329         | 69.7                                  | 4.40                       | 2.21       |
| 1971    | 461,938     | 4.0            | 300,101         | 65.0                                  | 3.23                       | 2.50       |
| 1981    | 956,721     | 6.4            | 495,534         | 51.8                                  | 7.55                       | 5.14       |

Source: Sharma 1989

Urbanisation as a process is considered synonymous with the expansion in off-farm opportunities. Hill urban centres in Nepal in general are centres of tertiary and service occupations. With the sole exception of Kathmandu, the growth of the secondary (manufacturing) sector has remained extremely sluggish in the hill urban areas. Recent information reveals that in most urban areas in the hills over one-third of the adult working population is engaged in primary activities (NRB 1988).

## Structure of the Labour Force and Employment

Labour force participation is a complex concept in a rural economy. The labour force participation rate is estimated by the economic activity rate in Nepal. Estimation of the labour force in the context of economic activity generally provides a classification of workers at a single point in time according to the main occupation. Therefore, it is likely to underestimate off-farm employment which is generally a secondary source of income on a part-time or seasonal basis in the rural economy.

The economically active population data are provided by all Nepalese censuses since 1952/54. The definition and concepts of the economically active population used by these censuses, however, were not the same. The degree of variation has decreased since 1971 when elaborate guidelines were adopted to delineate the major occupational status of a person and also to code this information (CBS 1987b). Therefore, for reasons of comparability only labour force data provided by the 1971 and 1981 censuses are analysed below.

The economically active population (10 years of age and over) in the country was 4.85 million in 1971 and this increased to 6.85 million in 1981. The economically active population in the hill/mountain region increased from 3.3 million to 4.2 million during the period (Table 2.6). The higher growth of the labour force is largely attributed to the rapid increase in the female participation rate between 1971 and 1981. The growth in the female labour force (3.67%) is more than twice the growth rate in the male labour force (1.73%) in the hill/mountains. It may also be noted that the growth rate of the labour force is much higher in the *terai* than in the hill/mountain region partly because of highland-lowland migration. For the hill/mountain region, as well as the nation as a whole, the average annual growth rate in the labour force (2.46 and 3.51 per cent respectively) has remained higher than the growth rate in the population (1.62 and 2.66 per cent respectively).

**Table 2.6: Distribution and Growth of the Labour Force (1971-1981)**  
(Economically Active Population 10 years of age and over)

| (Population in Thousands) |      |                                                        |       |        |
|---------------------------|------|--------------------------------------------------------|-------|--------|
|                           | Year | Economically Active Population<br>(10 years and above) |       |        |
|                           |      | Total                                                  | Male  | Female |
| Nepal                     | 1971 | 4,852                                                  | 3,434 | 1,418  |
|                           | 1981 | 6,852                                                  | 4,481 | 2,372  |
| Annual Growth Rate (%)    |      | 3.51                                                   | 2.69  | 5.27   |
| Mountains                 | 1971 | 578                                                    | 357   | 221    |
|                           | 1981 | 709                                                    | 412   | 297    |
| Annual Growth Rate (%)    |      | 2.07                                                   | 1.45  | 3.01   |
| Hills                     | 1971 | 2,721                                                  | 1,756 | 964    |
|                           | 1981 | 3,497                                                  | 2,095 | 1,402  |
| Annual Growth Rate (%)    |      | 2.54                                                   | 1.78  | 3.81   |
| Hills/Mountains           | 1971 | 3,299                                                  | 2,113 | 1,185  |
|                           | 1981 | 4,207                                                  | 2,507 | 1,699  |
| Annual Growth Rate (%)    |      | 2.46                                                   | 1.72  | 3.67   |

## Occupational Structure

Between 1971 and 1981 the percentage share of the population employed in agricultural occupations has declined by 3 per cent from 94.4 to 91.4. However, the data show that the percentage share in non-agricultural occupations increased by only 0.8 per cent during the same period and a larger share of 2.3 per cent appeared to be in an unspecified occupational category (Table 2.7). This reveals that there has been no significant movement of the labour force from agricultural to non-agricultural occupations.

The data also show that the proportion of females engaged in agricultural occupations is higher than that of males in both censuses. The higher proportion of females in agricultural occupations may be attributed to the higher concentration of female unpaid family workers in the traditional agricultural sector.

**Table 2.7: Percentage Distribution of Employed Population (1971-81)**  
(10 Years and above) by Major Occupation and Sex, Census Years

| Sex           | Year | Agriculture | Non-Agriculture | Unspecified | Total No. |
|---------------|------|-------------|-----------------|-------------|-----------|
| Both<br>Sexes | 1971 | 94.4        | 5.6             | -           | 4,852,524 |
|               | 1981 | 91.4        | 6.3             | 2.3         | 6,850,886 |
| Male          | 1971 | 92.8        | 7.2             | -           | 3,434,288 |
|               | 1981 | 88.9        | 8.1             | 3.0         | 4,479,944 |
| Female        | 1971 | 98.2        | 1.8             | -           | 1,418,236 |
|               | 1981 | 96.1        | 2.9             | 1.0         | 2,370,942 |

Source: CBS 1987a

Of those who were employed in non-agricultural occupations the greatest proportion, about 39 per cent in 1971 and almost 50 per cent in 1981, was engaged in production and related occupations (Table 2.8). The second largest group of employees in non-agricultural occupations was found in sales' occupations, followed by administration, and clerical and related works in both 1971 and 1981. While there has been a considerable increase in the proportion of the non-agricultural population engaged in production-related, professional, and technical-related occupations during the intercensal period 1971-81, there has been a decrease in the proportion of those engaged in service works, sales' works, administration, clerical, and related occupations. It is also noted that the proportion of employed males (14.3%) is considerably higher than females (4.7%) in sales' occupations in 1981. On the contrary, the proportion of employed females (58.8) is considerably higher than that of males (47.3) in production and related works. The differences in employment by sex were found to be minor in other non-agricultural occupations in 1981. It may, however, be noted that the absolute number of females engaged in non-agricultural occupations is much lower than that of males in both the censuses.

**Table 2.8: Percentage Distribution of Employed Population (10 Years and above) in Non-agricultural Occupations by Major Groups and Sex, Census Year 1971-81**

| Occupation                           | 1971    |         |        | 1981    |         |        |
|--------------------------------------|---------|---------|--------|---------|---------|--------|
|                                      | Total   | Male    | Female | Total   | Male    | Female |
| Professional, technical and related  | 9.3     | 9.4     | 7.7    | 14.7    | 14.6    | 15.3   |
| Administration, clerical and related | 17.5    | 18.6    | 7.2    | 12.7    | 14.3    | 4.7    |
| Sales' Workers                       | 22.0    | 21.4    | 27.9   | 19.6    | 19.9    | 17.9   |
| Service Workers                      | 12.5    | 11.7    | 20.7   | 3.8     | 3.8     | 3.4    |
| Production and related               | 38.7    | 38.2    | 36.5   | 49.1    | 47.3    | 58.8   |
| Total Number                         | 273,197 | 247,269 | 25,528 | 435,031 | 365,115 | 69,943 |

Source: CBS 1987a

### Rate and Magnitude of Unemployment

The analysis of unemployment and underemployment in Nepal is hindered by the lack of satisfactory data. Available estimates reveal that the unemployment rate (1.6 per cent) derived from the 1981 census data is much lower than estimates obtained from two other sample surveys (Table 2.9). The census figure is probably underestimated because of definitional problems. Unemployed rates estimated from two other studies seem more reasonable, though still low, considering the predominantly agrarian economy of Nepal. Comparison of the survey results (NPC 1983, NRB 1988), although not strictly comparable because of the different methodology used, shows a decline in the unemployment rate from 5.6 in 1977 to 4.1 in 1984-85 for Nepal as a whole. However, comparing rural and urban unemployment rates it is found that rural unemployment declined from 5.6 to 2.7 per cent but the urban unemployment rate increased from 6.0 to 8.2 per cent during the same period. This, perhaps, is a reflection of the incipient process of rural to urban migration in Nepal.

Both the NPC and NRB surveys show a lower unemployment rate for males than for females and for rural areas than for urban areas. However, the NPC survey reports comparable figures of unemployment for males (5.5%) and females (5.7%) in rural areas, whereas, in urban areas, the female unemployment rate (10.2%) was found to be more than twice that of males (4.5%) during 1977. The NRB survey shows the urban unemployment rate to be about three times higher than the rural unemployment rate. The survey further reveals that the female unemployment rate is higher by about 50 per cent in rural areas and by about 30 per cent in urban areas relative to males.

**Table 2.9: Unemployment Rate by Sex and Rural/Urban Nepal**

(In percentages)

|       | 1977 <sup>1</sup> |        |       | 1981 <sup>2</sup> |        |       | 1984-85 <sup>3</sup> |        |       |
|-------|-------------------|--------|-------|-------------------|--------|-------|----------------------|--------|-------|
|       | Male              | Female | Total | Male              | Female | Total | Male                 | Female | Total |
| Rural | 5.5               | 5.7    | 5.6   | 1.8               | 1.0    | 1.5   | 2.2                  | 3.2    | 2.7   |
| Urban | 4.5               | 10.2   | 6.0   | 3.0               | 2.3    | 2.8   | 7.7                  | 9.0    | 8.2   |
| Total | 5.3               | 6.0    | 5.7   | 1.9               | 1.1    | 1.6   | 3.8                  | 4.3    | 4.1   |

Source: <sup>1</sup> NPC 1982

<sup>2</sup> CBS 1981

<sup>3</sup> NRB 1988

The NRB survey also provides unemployment data by ecological zones as presented in Table 2.10. The rate of unemployment was found to be higher in the urban hills (9.8%) in general and for urban females (10.5%) in particular. In view of the methodological problems, the unemployment data should only be taken as indicative.

**Table 2.10: Unemployment Rate by Ecological Zone and In Rural/Urban Nepal**

(In percentages)

| Ecological Zone |       | Unemployment Rate (1984-85) |        |       |
|-----------------|-------|-----------------------------|--------|-------|
|                 |       | Male                        | Female | Total |
| Mountains       | Rural | 1.5                         | 1.2    | 1.4   |
| Hills           | Rural | 3.0                         | 2.9    | 2.9   |
|                 | Urban | 9.4                         | 10.5   | 9.8   |

Source: NRB 1988

The rate of unemployment appears to be negatively correlated with the size of holdings among farm households. However, the unemployment rate of non-cultivators is very low compared to cultivators (Table 2.11). It is interesting to note that the unemployment rate is lowest in the mountains followed by the hills and *terai* for all types of farmer, except marginal farmers, whereas, in the case of non-cultivators, the reverse is true.

**Table 2.11: Rural Unemployment Rate by Farm Size**

(In percentages)

| Farm Categories | Terai | Hill | Mountain | Rural Nepal |
|-----------------|-------|------|----------|-------------|
| Large           | 3.6   | 1.9  | 1.2      | 2.3         |
| Medium          | 3.4   | 2.8  | 0.8      | 2.5         |
| Small           | 3.9   | 3.3  | 1.5      | 3.3         |
| Marginal        | 3.2   | 6.5  | 3.3      | 4.2         |
| Non-Cultivators | 0.1   | 0.8  | 1.0      | 0.4         |
| All Categories  | 3.0   | 2.9  | 1.4      | 2.7         |

Source: NRB 1988

### Magnitude of Unemployment

An estimate based on the unemployment rate for 1984/85 (Table 2.9) and the estimated labour force for 1990 shows about 2,82,000 persons as unemployed in 1990 for Nepal as a whole and about 171,000 persons as unemployed in the hills/mountains (Table 2.12). The estimates show that of the total unemployed persons about three-fourths are in the rural areas.

**Table 2.12: Estimated Number of Unemployed Persons, 1990**

|                 | Urban | Rural  | Total  |
|-----------------|-------|--------|--------|
| Mountains       | -     | 10520  | 10520  |
| Per cent        | -     | 100.0  | 100.0  |
| Hills           | 38200 | 122520 | 160700 |
| Per cent        | 23.8  | 76.2   | 100.0  |
| Hills/Mountains | 38200 | 133040 | 171220 |
| Per cent        | 22.3  | 77.7   | 100.0  |
| Nepal           | 65270 | 216980 | 282250 |
| Per cent        | 23.1  | 76.9   | 100.0  |

### Underemployment

Underemployment refers to a situation in which a person is employed for less than the normal duration and is seeking, or would accept, additional work (ILO 1976). However, various definitions of normal work duration have been used by different studies in Nepal. The National Planning Commission survey

allocated 323 days and 280 days as the normal duration of work in a year for both males and females in rural and urban Nepal respectively (NPC 1983). The Nepal Rastra Bank Survey allocated 272 days as the number of work days per person per year for rural Nepal. Comparative figures for the hill and mountain areas were 269 and 249 days respectively (Table 2.13). Available workdays were estimated to be slightly higher for males than for females.

**Table 2.13: Average Annual Working Days by Sex, Ecological Zone, and In Rural/Urban Nepal**

(days/year)

| Regions     | Male | Female | Both Sexes |
|-------------|------|--------|------------|
| Rural Nepal | 289  | 254    | 272        |
| Hills       | 286  | 256    | 269        |
| Mountains   | 265  | 235    | 249        |
| Urban Nepal | 282  | 259    | 274        |
| Hills       | 279  | 256    | 270        |

Source: NRB 1988

The underemployment rate was estimated to be 63.5 per cent for rural Nepal and 44.6 per cent for urban Nepal in 1977 (NPC 1983). The corresponding estimates were 46.4 per cent and 33.6 per cent respectively in 1984-85 (NRB 1988). Another study estimates the underemployment rate in rural Nepal to be 54 per cent: 21 per cent in the *terai*, 37 per cent in the hills, and 54 per cent in the mountains (ILO-ARTEP 1982). It was observed that the underemployment rate was about 30 per cent lower in urban areas than in rural area in both survey periods, and 25 per cent lower in 1984-85 than in 1977 for both urban and rural areas. It appears that the underemployment rate is directly associated with farming and salaried occupations. The reason for the lower underemployment rate for males, particularly in urban areas, may be attributed to the relatively smaller proportion of the male population involved in manufacturing and salaried occupations.

### Magnitude of Underemployment

Estimates of the total number of unutilised work days and surplus labour caused by underemployment of the labour force are made on the basis of the estimated labour force for 1990 (World Bank 1989) and the underemployment rate obtained from the Multipurpose Household Budget Survey (NRB 1988). The estimates show that as many as 1.2 billion mandays equivalent are unutilised due to underemployment in Nepal, of which about 667 million mandays equivalent are unutilised in the mountains and hills. The estimates show that about 46.4 per cent of the hill/mountain labour force remains underemployed.

It is further estimated that the equivalent full-time jobs for 4.3 million persons in the country as a whole and 2.5 million full-time jobs in the hill/mountains are needed to ensure full employment for the labour force (Table 2.14).

**Table 2.14: Estimated Unutilised Days and Surplus Labour 1990**

|               | Labour Force<br>(in '000) | Average Annual Working Days *** | Total Working Days<br>(in '000) | Under employment Rate ***<br>(in '000) | Unutilised Days<br>(in '000) | Surplus Labour |
|---------------|---------------------------|---------------------------------|---------------------------------|----------------------------------------|------------------------------|----------------|
| Hill/Mountain |                           |                                 |                                 |                                        |                              |                |
| Rural         | 5,083                     | 266.1                           | 1,352,940                       | 47.0                                   | 638,398                      | 2,395          |
| Urban         | 319                       | 269.6                           | 86,002                          | 33.3                                   | 286,339                      | 106            |
| Total         | 5,402                     | 266.4                           | 1,438,942                       | 46.4                                   | 667,037                      | 2,501          |
| Nepal         |                           |                                 |                                 |                                        |                              |                |
| Rural         | 8627                      | 271.9                           | 2,345,681                       | 46.4                                   | 1,088,396                    | 4,003          |
| Urban         | 798                       | 273.5                           | 218,253                         | 33.6                                   | 73,333                       | 268            |
| Total         | 9425                      | -                               | 2,563,934                       | 45.3                                   | 1,161,729                    | 4,271          |

### *Transformation Processes of Labour Force Structure*

It is often observed that the labour force structure changes when countries pass through different stages of development. Thus the level of economic development can be assessed by looking at the changes in the proportion of the labour force classified into three major sectors of the economy: namely, the primary, secondary, and tertiary sectors. The primary sector includes mainly agriculture, fishing, mining, and quarrying. The secondary sector consists of manufacturing and construction. The tertiary sector includes public utilities, transport and communications, trade, and personnel and community services.

Fisher (1939) and Clark (1940) employed the distinction between primary, secondary, and tertiary production as a basis for the theory of development. Countries are believed to be primarily agricultural producers in the early stages of development, thereafter resources gradually shift into manufacturing and construction or secondary activities. Finally, owing to rising income, more resources move into service or tertiary activities. The Fisher-Clark view was supported by the empirical study of Thirlwall (1983) who found that over 70 per cent of the labour force in developing countries, on an average, are employed in agriculture while only 14 per cent are employed in industry. The corresponding rates for developed countries were 6 per cent and 40 per cent respectively.

The labour force structure data provided by the different censuses of Nepal indicate that the proportion of the labour force engaged in the primary sectors remained static between 1952/54 and 1971 but declined by about 3 per cent from 94.4 to 91.4 between 1971 and 1981 (Table 2.15). The agricultural labour force increased by an average annual rate of 2.98 per cent compared to a growth rate of 4.88 per cent in the non-agricultural labour force between 1971 and 1981.

**Table 2.15: Percentage Distribution of the Labour Force by Major Industrial Groups, Nepal (1952/54-81)**

| Industrial Groups | 1952/54 | 1971  | 1981 |
|-------------------|---------|-------|------|
| Primary           | 93.48   | 94.37 | 91.5 |
| Secondary         | 2.13    | 1.17  | 0.53 |
| Tertiary          | 4.19    | 4.45  | 6.47 |
| Unspecified       | 0.20    | -     | 1.87 |

Source: CBS 1987a

The low literacy rate, the limited employment opportunity in secondary and tertiary sectors, and the lack of urban centres in mountain areas reflect a higher dependency on the primary sectors for the labour force in general and the female labour force in particular as revealed in Table 2.16. It also shows that the change over of the labour force from the primary sector to other sectors is taking place at a much slower rate in the mountains and hills compared to the nation as a whole.

**Table 2.16: Percentage Distribution of Labour Force by Major Industrial Groups and Sex in the Hills/Mountain, 1971/81**

| Industrial Group |      | Mountains |        |        | Hills   |         |         |
|------------------|------|-----------|--------|--------|---------|---------|---------|
|                  |      | Male      | Female | Total  | Male    | Female  | Total   |
| Primary          | 1971 | 96.72     | 98.81  | 97.51  | 91.96   | 98.26   | 94.16   |
|                  | 1981 | 93.93     | 97.49  | 95.39  | 90.11   | 96.42   | 92.57   |
| Secondary        | 1971 | 0.96      | 0.60   | 0.82   | 1.61    | 0.46    | 1.21    |
|                  | 1981 | 0.28      | 0.18   | 0.24   | 0.59    | 0.26    | 0.46    |
| Tertiary         | 1971 | 2.32      | 0.59   | 1.67   | 6.43    | 1.28    | 4.63    |
|                  | 1981 | 3.60      | 0.87   | 2.48   | 6.97    | 1.88    | 4.99    |
| Unspecified      | 1971 | -         | -      | -      | -       | -       | -       |
|                  | 1981 | 2.19      | 1.46   | 1.89   | 2.32    | 1.44    | 1.98    |
| Total            | 1971 | 307737    | 186430 | 494167 | 1510483 | 812950  | 2323433 |
|                  | 1981 | 360630    | 252098 | 612728 | 1825131 | 1164709 | 2989840 |

Source: CBS 1987a

It should be noted that the census data may underestimate the employment in non-agricultural sectors as it does not take into account subsidiary occupations. It is estimated that about 30 per cent of households in the mountains and 35 per cent in the rural hills undertake subsidiary occupations along with their main

occupation (NRB 1988). Most people employed in crafts, cottage industries, small businesses, etc are part-time workers. It is very likely that people with agricultural holdings would consider themselves to be engaged in agricultural occupations notwithstanding the period they spend or income they earn from non-agricultural activities.

Table 2.17 reveals that what is true of the sectoral distribution of the labour force is also true of the sectoral distribution of output, although the proportion differs according to the differences in productivity among sectors. Since traditional agriculture is more labour intensive than industry or the services' sector, the proportion of total output generated by agriculture is lower than its share of the labour force.

**Table 2.17: Sectoral Share of GDP, Nepal 1970/90**

|             | 1970 | 1980 | 1990 |
|-------------|------|------|------|
| Agriculture | 67.5 | 61.8 | 58.6 |
| Industry    | 11.4 | 11.9 | 13.6 |
| Services    | 21.0 | 26.3 | 27.8 |

Source: ADB 1991

The overwhelming dominance of the primary sector in the absorption of the labour force has remained unchanged. The new generation entering the labour force has the least opportunity to move from unskilled agricultural labour to semi-skilled labour in other sectors because of the lack of employment avenues outside traditional farming. The low productivity of traditional agriculture and a lack of surplus production are the main hindrances for movement of the labour force from the agricultural to the industrial sector.

The above analysis leads to the conclusion that Nepal's economic performance has not been able to bring about changes in the sectoral distribution of the labour force. The labour absorption capacity of the primary sector remains saturated. The secondary sector, consisting mainly of cottage industries and the mechanised small consumer goods' industry, has a very limited capacity to absorb the labour force. The tertiary sector has shown a small but steady increase in the absorption of the labour force, and this is primarily attributed to rising urbanisation, the expansion of services and trade in small towns, and markets that are emerging along the major roads.

Although most of the industrial employment is generated in urban areas, the NRB survey estimated that 35 per cent of the labour force in urban Nepal are employed in agriculture, 10.5 per cent in manufacturing, and the rest in services and other sectors (Table 2.18).

### *Migration and Off-farm Employment*

Increasing population pressure on limited land resources, declining agricultural productivity, and lack of employment opportunities have historically accelerated out-migration from the highlands of Nepal. In recent decades, particularly after the 1950s, land availability and the expanded scope of income-generation opportunities in the non-agricultural sectors in the *terai* have played an important role in determining the direction, magnitude, and pattern of migration.

**Table 2.18: Percentage Distribution of Labour Force in Urban Nepal, 1984/85**

| Industry Groups                   | Male | Female | Total |
|-----------------------------------|------|--------|-------|
| Agriculture                       | 23.5 | 54.6   | 34.9  |
| Mining                            | -    | -      | -     |
| Manufacturing                     | 11.7 | 8.3    | 10.5  |
| Electricity, Water and Sanitation | 0.4  | -      | 0.2   |
| Trade and Commerce                | 14.3 | 8.8    | 12.3  |
| Construction and Transport        | 6.1  | 0.2    | 4.0   |
| General Labourers                 | 10.5 | 12.3   | 11.2  |
| Government Service                | 31.4 | 12.4   | 24.4  |
| Domestic Service                  | 2.1  | 3.4    | 2.5   |

Source: NRB 1988

Both pull and push factors work to increase migration from the mountains and hills to *terai* and outside the country. The push factors have to do with the limited off-farm activities and low agricultural production. The pull factors relate to the availability of agricultural land in the *terai* and employment opportunities in urban areas. Studies conducted specifically in hill/mountain areas show the important role of seasonal migration from these regions to other regions in generating additional income during the agricultural slack season (McDougal 1968; Dahal et al. 1977; Caplan 1972). In dealing with the employment implications of migration on the hill/mountain region it is therefore necessary to look at three types of migration: seasonal, semi-permanent, and permanent (Sharma 1989b).

#### *Permanent/Semi-permanent Migration*

The decennial population censuses are the main source of information on migration in Nepal. However, they do not distinguish clearly between temporary and permanent migration. Moreover, migration data available from different censuses are not all easily comparable. The census defines absentee population as those who have been away from home for six or more months at the time of enumeration, and life-time internal migrants as those enumerated at a place different from the place of birth. The census does not take into account the fact that some of the people who have been away for more than six months at the time of enumeration might be returning to their villages afterwards.

#### *Absentee Population*

In the past, out-migration was primarily directed outside the country to the new frontier lands of Sikkim and Bhutan in the Eastern Himalayas and for military and other services in foreign countries, primarily

India (Gurung 1989). The opening of the lowlands (*terai*) through malaria control and resettlement programmes has contributed to a decline in the proportion of migrants going abroad although the magnitude has been increasing since the mid-1950s. The 1952/54 census recorded 216,853 persons away from home for six months or more. Of these, 198,120 or 91.4 per cent went abroad. In 1961, the number of absentees increased to 386,471 and 82.2 per cent of the total absentees were outside the country. In 1981, the total number of absentees reached 590,722. Of these 68.2 per cent went outside the country and about 90 per cent of the absentees going abroad were from the hills and mountains.

### *Lifetime Internal Migration*

The intercensal comparison of life-time migrants is problematic because of changes in district boundaries between 1961 and 1981. However, the estimates of life-time migrants are comparable on the level of ecological regions, i.e., the mountains, hills, and *terai* for 1971 and 1981.

Table 2.19 reveals that the number of migrants from inter-ecological regions increased from 445,128 in 1971 to 929,585 in 1981. The share of the hills in the total out-migrants decreased from 86.6 per cent in 1971 to 64.0 per cent in 1981, although there was an increase in absolute numbers. The corresponding share of mountain out-migrants almost tripled from 11.1 per cent in 1971 to 31.9 per cent in 1981.

**Table 2.19: Native Born Population Distributed by Place of Birth and Place of Enumeration by Ecological Zones, Census Year 1971 and 1981**

| Place of Enumeration |      | Place of Birth    |                   |                 | Total              | Net Life-time Migrants |
|----------------------|------|-------------------|-------------------|-----------------|--------------------|------------------------|
|                      |      | Mountains         | Hills             | <i>Terai</i>    |                    |                        |
| Mountains            | 1971 | -                 | 9,258             | 440             | 9,698              | -39,959                |
|                      | 1981 | -                 | 33,423            | 2,196           | 35,619             | -359,966               |
| Hills                | 1971 | 15,667            | -                 | 9,699           | 25,366             | -261,467               |
|                      | 1981 | 134,254           | -                 | 35,669          | 109,923<br>(18.3)  | -424,711               |
| <i>Terai</i>         | 1971 | 33,990            | 376,074           | -               | 410,064<br>(92.1)  | 399,966                |
|                      | 1981 | 162,832           | 561,211           | -               | 724,043            | 686,178                |
| Total                | 1971 | 49,657<br>(11.1)  | 385,332<br>(86.6) | 10,139<br>(2.3) | 445,128<br>(100.0) |                        |
|                      | 1981 | 297,086<br>(31.9) | 594,634<br>(64.0) | 37,865<br>(4.1) | 929,585<br>(100.0) |                        |

Source: CBS 1987b

Note: - indicates net out-migrants from the region  
+ indicates net in-migrants to the region

Figures exclude migration flows within the same region.

The large increase in out-migration from the mountains during the seventies may be attributed to the decline in food availability and in border trade between Nepal and Tibet. The mountain economy was historically supplemented by the traders engaged in trading food grain in exchange for Tibetan salt and other commodities. The decline in border trade beginning in the 1960s adversely affected many mountain communities. Census data show that the mountains and hills experienced a net loss of 686,178 through life-time migration to the *terai* in 1981. The absolute loss was highest from the hills. The *terai* was the recipient of 92.1 per cent of the total number of migrants from inter-ecological regions in 1971 but its share declined to 77.9 in 1981, largely because migration from the mountains to the hills increased by more than eight times between 1971 and 1981. The decline in availability of agricultural land in the *terai* and the growth of hill towns (including the Kathmandu Valley) is expected to influence the pattern of migration in the future.

Information on the intra-regional mobility of life-time migrants, by reasons for migration, shows that trade/commerce was the most important reason for more than 40 per cent of those who moved from the mountains to the *terai*. In the case of migrants who moved to the *terai* from the hills it was found that the most important reason was agriculture. About half of the hill migrants to the *terai* and more than one third of the migrants from the mountains to the *terai* reported agriculture as the major reason for migration.

### Inter-regional Migration

It has been mentioned above that highland to lowland movement has remained the dominant pattern of inter-regional migration in Nepal. Two major streams of inter-regional migration are discernible from census data: the predominant one is from the hills to the *terai* and the other is from the mountains to the hills. A large proportion of hill migrants are destined for the adjacent *terai* region. In 1981, 87.2 per cent of the hill migrants in the Far West; 57.1 per cent in the Mid-West, 42 per cent in the West, 69.8 per cent in the Centre and 76.4 per cent in the East hailed from respective contiguous hill regions.

The flow of migrants from mountains to hills was in smaller numbers with decreasing intensity from the east to the west. However, in the case of the western and eastern mountain regions a larger volume of migrants was directed to their respective *terai* regions rather than to their immediate hill regions (Gurung 1989).

### Rural to Urban Migration

The 1971 and 1981 censuses provide information on life-time migrants from all areas to urban areas. Therefore, rural to rural, urban to urban, or rural to urban migration streams cannot be traced from census data. However, the Demographic Sample Survey conducted in 1986/87 reports that 96 per cent of those who migrated to rural areas originated from other rural areas and over 80 per cent of those who migrated to urban areas came from rural areas.

An estimate based on the difference in actual increase in urban population and expected increase at an annual national growth rate of 2.66 per cent between 1971 and 1981 indicates that about 200,000 persons migrated to the 16 urban areas in 1971 from rural Nepal and outside of Nepal between 1971 and 1981 (ERL 1989). This shows that about 23 per cent of hill urban population growth and 42 per cent of total urban population growth were a result of in-migration between 1971 and 1981. The opportunity for employment in secondary and tertiary sectors, the towns, and the relatively higher wages and expectation of such wages in towns than in rural areas, seem to be the primary attractions for migrants.

## International Migration

A significant number of migrants from the hills and mountain regions of Nepal go to India to join the Indian Army, to work as guards, or to work as labourers in urban areas of India. For example, in Nuwakot long-term migrants to foreign countries accounted for 24 per cent of the total number of long-term migrants and 20 per cent of the total migrants, including both short-term and long-term (Banskota 1985). Another study shows that over 78 per cent of the sample households in Manang had at least one member that was a long-term reversible migrant to foreign countries (Gurung 1984). On the other hand, evidence shows that the labour market in the *terai* and in some urban areas is affected by substantial inflows of Indian labour.

A CBS estimate (1981) based on the difference between expected and enumerated population patterns, shows a net male immigration of 161,344 from 1971-1981 (Sharma 1989c). Another survey by the National Population Commission estimated the net international migration to be around 450,000 for the period 1971-81 (NCP 1983). The free mobility of labour across the international border between India and Nepal has been encouraged by both parties since the days of British India. However, Nepal has attempted to reduce the inflow of Indian labourers in recent years but to no avail - because restrictions are physically difficult to enforce and because strong economic incentives for non-compliance exist (World Bank 1990:30).

## Seasonal Migration

The census data do not provide information about seasonal migration as they exclude any information on migrants who go away for less than six months. However, various baseline studies as well as evaluation studies of rural development projects, and district and village profile studies (Gurung et al. 1973; Dahal et al. 1979; APROSC 1980; DRCG 1982) provide some illuminating insights about seasonal migration in Nepal. In recent decades highland-lowland migration of a seasonal nature appears to be on the rise. The major objective of such migration is to supplement the family income. Most seasonal migration from the hills and mountains normally takes place during the slack season for agriculture from November to March when people are in search of temporary employment opportunities for trade or marketing, cultivation of secondary landholdings, and pasturing of cattle.

It is estimated that in some places in the hills, as many as 70 per cent of the males migrate seasonally (FAO 1978, quoted by ADB/Manila 1982: 12). Of the total seasonal migrants an overwhelming proportion are male.

A large number of people from the hills and mountains migrate to the *terai* during the winter to work as agricultural labourers (since harvesting starts a little later in the *terai* than in the hills), to work as construction labourers on road, or to work on other projects. Others go to the *terai* during the winter to sell ghee, hides, and herbs and to purchase household necessities in markets close to the Indian border (McDougal 1968: 64).

Those who migrate seasonally for cultivation or to oversee their secondary holdings in the *terai* form a relatively small and privileged category of seasonal migrants (Gurung 1973). Many families, living at very high elevations in the mountains migrate, taking their animals to the lower hills during the winter. Transhumance of this type, however, appears to be losing relevance because of the degradation of pastures as well as the decline in livestock-based farming systems.

Most people in the hill and mountain areas depend heavily on seasonal or temporary migration to supplement their agricultural income. Many landless labourers, small and marginal farmers, and occupational caste groups migrate permanently to other places when income from their agricultural land and from seasonal employment is not enough.

Among the different types of migration, seasonal migration ranks first in terms of the number of migrants. This is mainly because of the availability of a large surplus of labour in the non-agricultural season in rural areas. A larger percentage of non-seasonal migrants go to the urban areas of either Nepal or India to search for off-farm employment opportunities.

Most long-term recurrent migrants join foreign armies. However, recruitment in foreign armies is open to certain ethnic groups only. Available evidence shows that those who migrate to join foreign armies are able to save a large part of their income and they often invest this in their village after returning home. All types of migration are found to be sex and age selective. Thus, the migratory process puts an enormous pressure on women and children because most migrants are active males of the household.

It is observed that the migratory process helps in some ways to mitigate the population pressure in the hills and mountains. But the problem remains since the absolute population in the hills and mountains in general is increasing. Migration, in general, is an indicator of the prevalence of higher underemployment in the hills and mountains. Given the inability to produce enough grain from marginal land, and the lack of income generating opportunities, the majority of the seasonally unemployed population has no option but to out-migrate for work during the agriculturally lean periods.

When malaria was eradicated from the *terai* in the 1950s and 1960s, this region began to experience increasing population pressure from the hills and mountains through migration. Now that the *terai* itself is experiencing a substantial increase in its own population, migration from the north and immigration from the south cannot be sustained for long. The importance of off-farm employment in accommodating the increasing population in the hills and mountains is therefore evident.

### *Region and Resource-specific Variations of the Labour Force Structure*

Land is a vital natural resource in the Nepalese economy. The agricultural sector contributes more than 75 per cent of the total exports and over 50 per cent of the gross domestic product of the country (HMG 1989). The hills and mountains combined accounted for 56 per cent of the total population of the country in 1981. In terms of resources, the hills and mountains together shared 77 per cent of the total geographical area, 75 per cent of the total forest land, and 46 per cent of the total cultivated land in 1985.

Land use differs among regions. Of the total geographical area (11,338,000 ha) of the mountains and hills, the cultivated area accounted for 10.0 per cent and the area under forests for 41.1 per cent of the total land area (Table 2.20). However, at subregional level, the share of cultivated land to total geographical area varied from 0.9 per cent in the western mountain areas to 2.0 per cent in the mid-western mountains, and 20.0 per cent in the eastern hills. Similarly the share of areas under forests varied from 4.3 per cent in the western mountains to 71.2 per cent in the far-western hills. The share of grazing land varied from 3.4 per cent in the central hills to 34.2 per cent in the western mountains.

Relatively large family sizes and a high labour average per hectare of farm land is characteristic of hill and mountain agriculture in Nepal. The average family size varied from 6.4 persons in the mid-western hills to 8.0 persons in the far-western hills (Table 2.21).

**Table 2.20: Land Utilisation by Regions 1985**

| Region<br>Settlement  | Per cent of Total Land        |                 |        |              |                |                 |        |
|-----------------------|-------------------------------|-----------------|--------|--------------|----------------|-----------------|--------|
|                       | Total<br>Area<br>(000s<br>ha) | Culti-<br>vated | Forest | Graz-<br>ing | Snow-<br>cover | Settle-<br>ment | Others |
| Eastern Mountains     | 1050                          | 5.6             | 40.1   | 11.4         | 33.0           | 0.3             | 9.6    |
| Eastern Hills         | 1077                          | 20.0            | 52.1   | 4.1          | -              | 1.2             | 22.3   |
| Total                 | 2127                          | 12.9            | 46.2   | 8.0          | 16.3           | 0.9             | 16.0   |
| Central Mountains     | 614                           | 9.3             | 42.3   | 12.5         | 26.0           | 0.3             | 9.3    |
| Central Hills         | 1182                          | 18.0            | 57.0   | 3.4          | 0              | 1.1             | 20.0   |
| Total Central         | 1796                          | 15.0            | 52.0   | 6.5          | 9.3            | 0.8             | 16.2   |
| Western Mountains     | 576                           | 0.9             | 4.3    | 34.2         | 54.5           | 0               | 6.0    |
| Western Hills         | 1841                          | 14.0            | 43.1   | 13.0         | 7.0            | 1.0             | 22.3   |
| Total Western         | 2417                          | 11.0            | 34.0   | 18.0         | 18.3           | 0.8             | 18.4   |
| Mid-western Mountains | 2165                          | 2.0             | 23.0   | 27.3         | 47.0           | 0.0             | 1.0    |
| Mid-western Hills     | 1379                          | 10.1            | 53.4   | 13.0         | 0.4            | 2.1             | 21.3   |
| Total Mid-western     | 3511                          | 5.11            | 35.0   | 22.0         | 29.0           | 0.8             | 9.0    |
| Far-western Mountains | 783                           | 5.4             | 27.1   | 19.4         | 22.0           | 0.4             | 26.0   |
| Far-western Hills     | 673                           | 12.6            | 71.2   | 7.1          | -              | 1.3             | 8.0    |
| Total Far-western     | 1456                          | 9.0             | 47.5   | 14.0         | 12.0           | 0.8             | 17.3   |
| Total Mountains       | 5186                          | 4.0             | 27.2   | 22.0         | 39.0           | 0.2             | 8.0    |
| Total Hills           | 6152                          | 14.7            | 53.0   | 9.0          | 2.2            | 1.3             | 20.0   |
| Total Hills/Mountains | 11338                         | 10.0            | 41.0   | 15.0         | 19.0           | 0.8             | 15.0   |

Source: APROSC 1986b

**Table 2.21: Selected Characteristics of the Average Hill Farm by Development Regions**

| Region<br>Characteristics                     | Development Regions |             |         |         |         |
|-----------------------------------------------|---------------------|-------------|---------|---------|---------|
|                                               | Far-western         | Mid-western | Western | Central | Eastern |
| Average size of farm (ha)                     | 0.9                 | 0.6         | 0.9     | 1.0     | 1.6     |
| Family size                                   | 8.0                 | 6.4         | 7.5     | 7.2     | 7.4     |
| Full-time family labour                       | 3.5                 | 3.1         | 3.2     | 3.2     | 3.1     |
| Farm labour size full-<br>time farm labour/ha | 3.9                 | 5.2         | 3.6     | 3.2     | 1.9     |

Source: LRMP 1986

A number of other variations are also apparent from Table 2.21. The size of farm was found to be the lowest (0.6 ha) in the mid-western and the highest (1.6 ha) in the eastern hills. It is estimated that more than 60 per cent of the households are reported to own less than one hectare of land and the average farm size of these households is less than 0.5 ha (ADB 1982). The table further reveals a negative relation between the farm size and number of farm labourers used per hectare of farm. While full-time labour per ha of farm was found highest (5.2) in the Mid-west followed by Far-west (3.9), West (3.6), Central (3.2), and Eastern regions (1.2), the ranking of average farm size was observed in exactly the reverse order.

These figures indicate that while the structure of the labour force remains similar in the hill/mountain regions of Nepal the man-land relationship as well as the resource base differ, sometimes significantly, from one part of the region to the other.

### *Typical Labour Demand Profile in Agriculture and Its Implications for Off-farm Activities*

There are no satisfactory data on the demand for labour in Nepal. However, crude estimates provided by the World Bank Mission suggest that in aggregate the available supply exceeds the demand for agricultural labour (World Bank 1990). The surplus labour is in the order of 98 million person days per annum in the hills (Table 2.22). The World Bank report also noted that the apparent surplus of labour is inconsistent with persistent stories of labour shortages in the *terai* both in agriculture and in construction (World Bank 1990). Other studies (New Era 1986, Acharya 1987) suggest that almost all households, including those of marginal farmers (those with very small land-holdings) hire labour at some point of time during the year. This causes temporary shortages of labour at peak demand times which are associated normally with rainfed agriculture. Such peak periods may last from a few days (during the rice transplanting period) to 2-3 months during the harvesting period.

**Table 2.22: Rural Labour Supply and Demand (million person-days)**

|       | Rural Labour Supply <sup>a</sup> | Estimated Agricultural Labour Demand <sup>b</sup> | Surplus |
|-------|----------------------------------|---------------------------------------------------|---------|
| Hills | 359                              | 261                                               | 98      |
| Terai | 398                              | 204                                               | 194     |

<sup>a</sup> Supply based on the active 1990 labour force, net of hours spent on domestic tasks (average 62%) and assuming no workdays per year - this is a conservative estimate of supply.

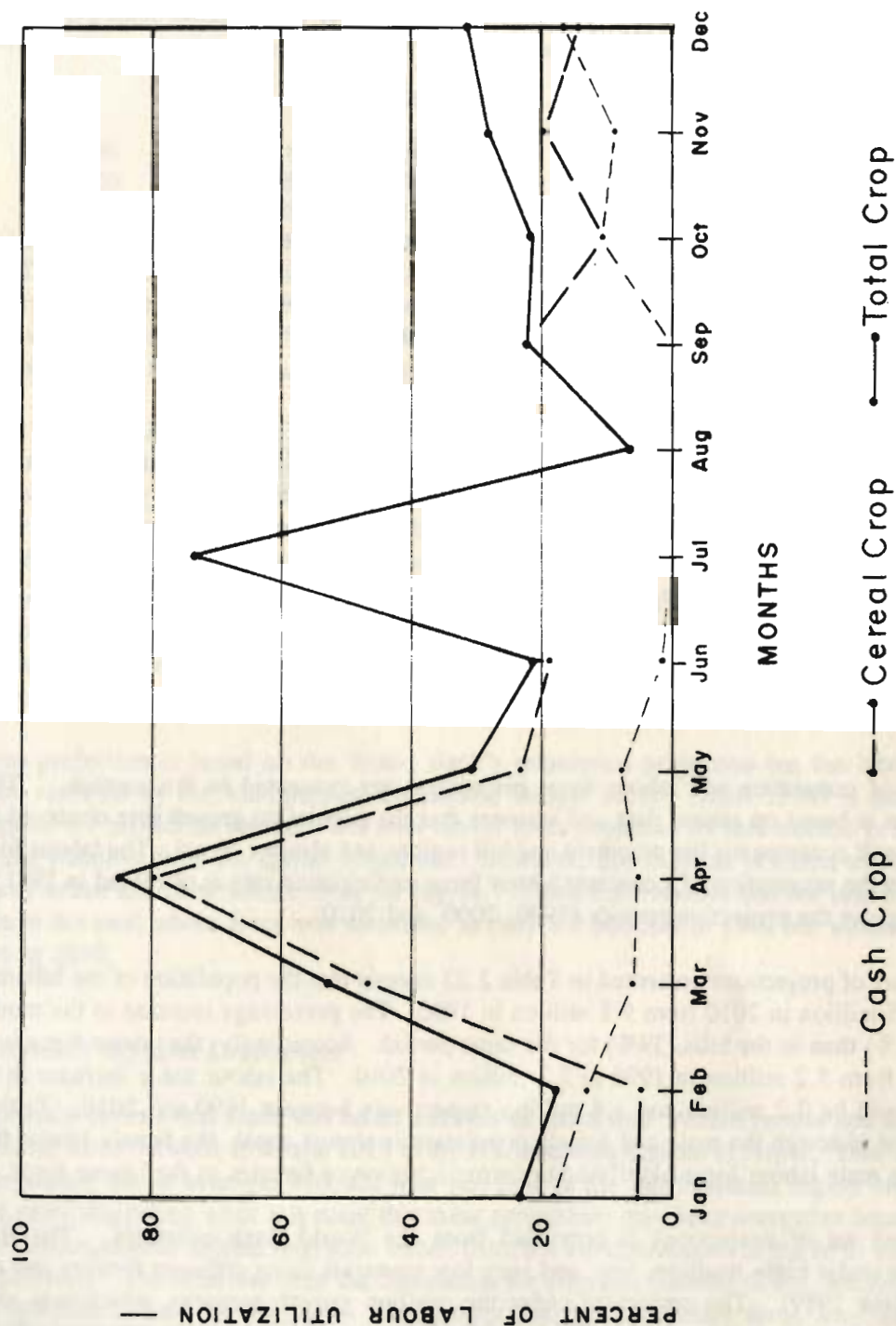
<sup>b</sup> Demand based on labour intensity per ha by area cropped to each major crop.

Source: World Bank 1990

The IDS study on the "Third Small Farmers Development Project, Nepal" reveals the existence of three peak periods of labour demand lasting about four months in total, corresponding to land preparation, transplanting, weeding, and harvesting (IDS 1989). The IDS study estimated the labour requirements for each crop on a monthly basis and arrived at the total farm labour demand as presented in Figure 2.2. The monthly labour availability was estimated by assuming an activity rate of 39 per cent of the total population with 91 per cent working in agriculture for an average of 17 days a month. The figure reveals that the percentage of labour utilisation could vary from as high as 85 per cent in April and 74 per cent in July to a low of seven per cent in August.

Figure 2.2

**Figure 2.2 Percentage of Farm Labour Utilization  
by Month and Type of Crops**



Source: Third Small Farmer Development Project, Nepal.

Such seasonal variations in the intensity of labour utilisation in farming activities have limited the role of the agricultural sector in fully employing the labour force. Assuming that those who are economically active in agriculture usually spend a considerable portion of their time in non-crop and off-farm activities and that these sectors will expand proportionately with crop productions, Bhattarai estimates that a cropped hectare in the hills would have to productively absorb 298 mandays in 1980, 45 per cent more than was actually obtained in that year (Bhattarai 1989). This does not appear to be feasible under the traditional system of agriculture. An increase in employment in the off-farm sector in the rural areas in the agricultural lean seasons has the potential to reduce under-employment caused by the seasonality of agriculture and also to raise the income level of rural households.

## **Demographic Prognosis**

A continuing increase in labour force, coupled with an increasing labour force participation rate, especially of females, poses a major problem for the hill/mountain economy of Nepal. The labour force increased by 27.5 per cent during the intercensal period 1971-1981, whereas the population increased by 17.5 per cent during the same period. Between 1971 and 1981, the male labour participation rate remained almost stable, but the female participation rate increased by almost 50 per cent.

The growth in population and in labour force in the hills/mountains is smaller than in the country as a whole but the problem may be more severe because of the higher percentage of people engaged in agricultural occupations, slower movement of the labour force from primary sectors to secondary and tertiary sectors, and limited and fragile agricultural land and natural resource base. The following sections present the projections of the population and labour force and discuss the implications of this growth on the natural resource endowments of the hills/mountains.

### *Projection of Population and Labour Force*

Two sets of population and labour force projections are presented in this section. The first set of projections is based on census data and assumes that the population growth rate observed between 1971 and 1981 will continue for the mountain and hill regions and also for Nepal. The labour force projection is based on the assumption of a constant labour force participation rate as observed in 1981 by region and sex throughout the projection periods (1990, 2000, and 2010).

The first set of projections presented in Table 2.23 reveals that the population of the hills/mountains will reach 13.5 million in 2010 from 9.8 million in 1990. The percentage increase in the mountains will be lower (36%) than in the hills (39%) for the same period. Accordingly, the labour force will increase by 2 million from 5.2 million in 1990 to 7.2 million in 2010. The labour force increase in the mountains and hills will be 0.2 million and 1.8 million respectively between 1990 and 2010. Table 2.23 further reveals that although the male and female population is almost equal, the female labour force is almost half of the male labour force signifying underparticipation of females in the labour force.

The second set of projections is borrowed from the World Bank estimates. The Bank projected population under high, medium, low, and very low scenarios using different fertility and mortality rates (World Bank 1989). The projection under the medium growth scenario, which was also termed the "expected scenario", is presented in Table 2.24. However, this projection estimates about 1.2 million more people in the hills/mountains because of an assumed higher growth rate in the hills.

**Table 2.23: Population and Labour Force Projection by Sex (1990-2010): Scenario I**

(in Thousands)

| Region              | 1990 |        |       | 2000  |        |       | 2010  |        |       |
|---------------------|------|--------|-------|-------|--------|-------|-------|--------|-------|
|                     | Male | Female | Total | Male  | Female | Total | Male  | Female | Total |
| <u>Population</u>   |      |        |       |       |        |       |       |        |       |
| Mountains           | 750  | 721    | 1471  | 858   | 825    | 1683  | 982   | 944    | 1926  |
| Hills               | 4200 | 4112   | 8312  | 4955  | 4852   | 9807  | 5846  | 5724   | 11570 |
| Sub-total           | 4950 | 4833   | 9783  | 5813  | 5677   | 11490 | 6828  | 6668   | 13496 |
| Total Nepal         | 9744 | 9279   | 19023 | 12670 | 12064  | 24734 | 16455 | 15685  | 32150 |
| <u>Labour Force</u> |      |        |       |       |        |       |       |        |       |
| Mountains           | 464  | 337    | 801   | 531   | 385    | 916   | 607   | 441    | 1048  |
| Hills               | 2581 | 1831   | 4412  | 3045  | 2161   | 5206  | 3592  | 2549   | 6141  |
| Sub-total           | 3045 | 2168   | 5213  | 3576  | 2546   | 6122  | 4199  | 2990   | 7189  |
| Total Nepal         | 5673 | 3002   | 8675  | 7376  | 3903   | 11279 | 9585  | 5076   | 14661 |

The out-migration from the hills to the *terai* is assumed at lower rates in this projection than observed between 1971 and 1981. This projection also estimates the rural-urban distribution for each region and shows the increase in share of urban population in the hills/mountains from 7.3 per cent in 1990 to 13.6 per cent in 2010.

The labour force projection is based on the World Bank's population projection but the labour force participation rate reported by the Multipurpose Household Budget Survey (NRB 1988) is assumed to continue throughout the projection period. The total labour force projected by this method is not much different from that obtained from the earlier projection. However, this exercise is useful since it gives the distribution of urban and rural labour force by region. Table 2.24 reveals that the urban share of the labour force to the total labour force was estimated as only 5.9 per cent in 1990 but would increase to 11.2 per cent in 2010.

### *Challenges Concerning Off-farm Employment*

The preceding section reveals that there will be an addition of about four million people and about two million to the labour force between 1990 and 2010 in the hill/mountain regions of Nepal. This translates into the need to create, on an average, 100,000 jobs per year in the hill/mountain region only. The situation is even more staggering when it is noted that these projections may be conservative because they have assumed a continuation of current migration trends from the hills/mountains to the *terai* which may not be true in the future. The *terai* has been the destination for migrants because of the relatively easier availability of agricultural land in the past. The projections for the labour force may be further downward-biased because of the assumptions of a constant labour force participation rate. The past trend has been that of an increasing female participation rate.

**Table 2.24: Population and Labour Force Projection by Rural/Urban Areas (1990-2010): Scenario II**

(in Thousands)

| Region              | 1990  |       |       | 2000  |       |       | 2010  |        |       |
|---------------------|-------|-------|-------|-------|-------|-------|-------|--------|-------|
|                     | Urban | Rural | Total | Urban | Rural | Total | Urban | Rural  | Total |
| <b>Population</b>   |       |       |       |       |       |       |       |        |       |
| Mountains           | -     | 1380  | 1380  | -     | 1369  | 1369  | -     | 1358   | 1358  |
| Hills               | 731   | 7922  | 8653  | 1208  | 9448  | 10656 | 8997  | 112668 | 13265 |
| Sub-total           | 731   | 9302  | 10033 | 1208  | 10817 | 12025 | 1997  | 12626  | 14623 |
| Total Nepal         | 1895  | 16883 | 18778 | 4339  | 20268 | 24607 | 6818  | 24408  | 31226 |
| <b>Labour Force</b> |       |       |       |       |       |       |       |        |       |
| Mountain            | -     | 821   | 821   | -     | 815   | 815   | -     | 808    | 808   |
| Hill                | 319   | 4262  | 4581  | 527   | 5083  | 5610  | 871   | 6062   | 6933  |
| Sub-Total           | 319   | 5083  | 5402  | 527   | 5898  | 6425  | 871   | 6870   | 7741  |
| Total Nepal         | 789   | 8627  | 9425  | 1827  | 10357 | 12184 | 2870  | 12472  | 15342 |

In any case, it is apparent that the traditional agricultural economy of the hills/mountains cannot absorb the growing population. The agricultural sector is already over-burdened in terms of providing gainful employment. Estimates of underemployment of the labour force in agricultural occupations are found normally to be in the range of 45 to 65 per cent. Intensive farming with irrigation and improved crop varieties can absorb more labour days but, considering the existing high rate of underemployment, it is unlikely to absorb any significant number of new entrants.

The number of persons per hectare of cultivated land in the hills/mountains is already large and will further increase as population increases. One hectare of cultivated land in the hills/mountains was shared by about 9 persons on the average in 1990, but it will have to be shared by about 12 persons under the first scenario and 13 persons under the second scenario by 2010 (Table 2.25). The high man-land ratio and low productivity (except in a few pockets of fertile valleys) has made most of the hill/mountain districts food-deficit districts.

It is theoretically possible to meet the food demand of the hills/mountains by importing from outside. This would require that the hills/mountains produce other marketable goods of comparative advantage to earn cash income. This potential, however, remains to be exploited.

In the past, the hill/mountain economy has absorbed population growth by a variety of adaptive mechanisms - through a continuation of smaller farms, migration to the opening land of the *terai*, and labour market expansion. However, with the reduction of arable land in the *terai*, most of these new entrants will have to be absorbed in off-farm employment activities. Thus, the following chapters discuss the existing conditions, potential, and constraints of off-farm employment in Nepal in general and the hills/mountains in particular.

**Table 2.25: Persons per Hectare of Cultivated Land, 1990-2010**

| Region        | Under First Scenario |      |      | Under Second Scenario |      |      |
|---------------|----------------------|------|------|-----------------------|------|------|
|               | 1990                 | 2000 | 2010 | 1990                  | 2000 | 2010 |
| Mountains     | 7.1                  | 8.1  | 9.3  | 6.6                   | 6.6  | 6.5  |
| Hills         | 9.2                  | 10.9 | 12.8 | 9.6                   | 11.8 | 14.7 |
| Hill/Mountain | 8.8                  | 10.3 | 12.1 | 9.0                   | 10.8 | 13.2 |
| Nepal         | 9.7                  | 10.3 | 13.3 | 7.8                   | 10.2 | 13.0 |

### CURRENT STATE OF OFF-FARM EMPLOYMENT

The term off-farm employment is used in a very broad sense in this study. It includes employment in activities other than traditional subsistence agriculture. Thus horticulture, vegetable gardening, and livestock-based activities are also included within off-farm employment. However, for the sake of clarity, the current state of off-farm employment is analysed by grouping off-farm employment into three main categories. These categories are: (1) off-farm employment in the formal sector, (2) off-farm employment in the informal sector, and (3) off-farm employment within agriculture.

The formal sector category includes mostly full-time and formally-designated jobs such as those in manufacturing, construction and public works, services, trade and transport, tourism, and mining. The informal sector category includes mostly part-time, temporary, or seasonal types of employment such as in small or household-level cottage industries, small businesses, portering, and the like. Off-farm employment in the agricultural sector includes employment in sericulture, beekeeping, livestock, and horticulture, where cash-earning opportunities exist, but excludes employment in crop production and production of goods for self consumption.

Each off-farm employment activity is discussed in terms of the magnitude of employment generated, sources of employment generation, resource base, factors affecting the particular employment activity, and the scope for, as well as constraints to, the expansion or promotion of such activities.

#### Off-farm Employment in the Formal Sector

The formal sector in simple terms is characterised by the formal organisational structure of the employment activity. Generally it includes manufacturing, mining/quarrying, government, construction, utilities, and a proportion of the trade and transport sub-sectors. There is, however, a lot of overlap between the formal and informal sectors, especially in the areas of cottage industries, tourism, construction, and commerce.

#### *Manufacturing*

Industrialisation is still in its infancy and the application of modern technology in the production process is limited in Nepal. In manufacturing industries, the formal sector includes organised or modern establishments that employ ten or more persons or use mechanical power. Unorganised cottage industries and household level enterprises fall in the informal sector.

According to the 1986/87 Census of Manufacturing Establishments, the formal manufacturing sector employs 153,000 persons in about 9,400 formal establishments within the country (Table 3.1). In 1986/87 the manufacturing sector accounted for about 6 per cent of the GDP but employed only 2 per cent of the labour force.

In the formal manufacturing sector the grain milling units comprise the largest proportion (65.5%) of the total establishment, but their shares in the employment and value-added are relatively small (14.3% and 21.1% respectively). However, most grain-milling units are of a service rendering type. If these are excluded the percentage share of grain mills comes down to 4.3 per cent in the number of establishments, 4.2 per cent in employment, and 5.6 per cent in value-added. The brick/tile industries provide the highest employment (27.2%), but in terms of the number of establishments they account for only 4.7 per cent and in value-added terms only 6.1 per cent (Table 3.1). The other major industries in terms of employment include yarn/textiles (6.3%), carpets and rugs (5.8%), and wearing apparel (except footwear) (5.7%).

### Growth of the Manufacturing Sector

A comparison of gross output, value-added, and employment of manufacturing establishments between 1976/77 and 1986/87 reveals a healthy growth in value-added (22.1% p.a.) followed by a growth of gross output (12.3% p.a.) both in nominal terms and in employment (10.0% p.a.) over the 10 year period (Table 3.2). The impressive growth in employment is mainly contributed by the rapid growth in textiles/carpets and brick/tiles. Food and allied industries provided the largest share of the employment (35% of the total employment) in 1976/77 but in 1986/87 the share had declined to 21.05 per cent.

Although the magnitude of employment has increased in all industrial groups, the percentage shares of total employment for Food and Allied Industries, Drinks and Tobacco, and Wood/Paper/Print have declined over the decade. In the case of textiles, carpets, and non-metallic mineral (bricks/tile) products there was considerable improvement in their share of output, value-added, and employment.

### Manufacturing Industries in the Hills and Mountains

The spatial distribution of manufacturing establishments shows that most of the establishments are located in the *terai*. Of the total 9,359 manufacturing establishments only 3,434 (36.7%) are in the hills and mountains, including the Kathmandu Valley. The distribution of manufacturing establishments in the hills/mountains by development region is presented in Table 3.3. If we exclude grain mills that provide services only, the hill/mountain region accounts for 48 per cent of the total manufacturing establishments (Table 3.4). This indicates a relatively higher concentration of grain mills in the *terai* than in the hills/mountains. Regionwise, the Central Region accounts for 79.7 per cent of the total 1,758 establishments located in the hills and mountains followed by the Western (17.0%), Mid-western (1.4%), Eastern (1.2%), and Far-western regions (0.7%).

The total employment in the manufacturing sector (excluding service-rendering grain mills) in the hills/mountains is about 66,000, and this is 43 per cent of the total employment in the manufacturing sector of the country. The Central Development Region, which includes Kathmandu Valley, accounts for nearly 90 per cent of the total employment. This shows the insignificant contribution of the manufacturing sector to employment in the mountain/hill region if we exclude the Kathmandu Valley. The share of manufacturing establishments in the hill/mountain region in terms of value-added accounted for 36 per cent of the National Census value-added (Rs. 4.5 billion). The corresponding percentage share in terms of output and gross fixed assets is 28.8 per cent and 40.0 per cent respectively.

Table 3.5 reveals that textile/carpet and leather industries employed 38 per cent and brick/tiles, cement, lime and plaster industries employed about one third of the total number of employed. The employment breakdown in these industrial groups is not available.

Table 3.1: Percentage Distribution of Some Principal Indicators by Some Selected Industrial Groups (1986/87)

| Industry Groups                 | No. of Establishments | Per Cent     | Employment     | Per Cent     | Gross Output (1000 Rs.) | Per Cent     | Value-Added      | Per Cent (1000 Rs.) |
|---------------------------------|-----------------------|--------------|----------------|--------------|-------------------------|--------------|------------------|---------------------|
| Vegetable, Animal oils and fats | 120                   | 1.3          | 1,128          | 0.7          | 424,018                 | 3.2          | 189,772          | 4.2                 |
| Grain Mills                     | 6,130                 | 65.5         | 21,877         | 14.3         | 5,295,687               | 29.1         | 944,782          | 21.1                |
| Sugar                           | 22                    | 0.2          | 4,537          | 3.0          | 276,432                 | 2.0          | 122,904          | 2.7                 |
| Bidi                            | 64                    | 0.7          | 7,089          | 4.6          | 85,217                  | 0.7          | 44,960           | 1.0                 |
| Yarns/Textiles                  | 327                   | 3.5          | 9,605          | 6.3          | 785,070                 | 5.8          | 282,371          | 6.3                 |
| Carpets and Rugs                | 123                   | 1.3          | 8,856          | 5.8          | 425,620                 | 3.5          | 134,164          | 4.3                 |
| Jute Manufacturing              | 5                     | 0.1          | 6,128          | 4.0          | 213,369                 | 1.6          | 105,658          | 2.4                 |
| Weaving/Apparels                | 86                    | 0.9          | 8,712          | 5.7          | 331,303                 | 2.9          | 184,605          | 4.1                 |
| Saw Mills/Wood Mills            | 310                   | 3.3          | 3,739          | 2.5          | 335,251                 | 1.7          | 84,387           | 1.9                 |
| Furniture/Fixtures              | 293                   | 3.1          | 2,998          | 2.0          | 107,248                 | 0.6          | 45,863           | 1.0                 |
| Printing and Allied             | 326                   | 3.5          | 3,402          | 2.9          | 158,495                 | 1.8          | 70,369           | 1.6                 |
| Bricks/Tiles                    | 442                   | 4.7          | 41,492         | 27.2         | 458,605                 | 2.4          | 274,678          | 6.1                 |
| Iron/Steel/Basic                | 34                    | 0.4          | 1,335          | 0.9          | 432,337                 | 3.2          | 102,150          | 2.3                 |
| Structure Metal                 | 182                   | 1.9          | 1,918          | 1.3          | 153,918                 | 1.2          | 59,240           | 1.3                 |
| <b>Total</b>                    | <b>8,469</b>          | <b>90.4</b>  | <b>122,774</b> | <b>80.5</b>  | <b>918,462</b>          | <b>60.9</b>  | <b>2,705,903</b> | <b>60.3</b>         |
| <b>All Industries</b>           | <b>9,359</b>          | <b>100.0</b> | <b>152,579</b> | <b>100.0</b> | <b>1353,599</b>         | <b>100.0</b> | <b>4,483,497</b> | <b>100.0</b>        |

Source: CBS 1989

**Table 3.2: Output, Value-Added and Employment in Major Industrial Groups 1976/77 and 1986/87 (Employment in Numbers, Output, and Value-Added in Rs million, Current Prices)**

| Industrial Product Group                                      | 1976/77          |                   |                 | 1986/87          |                   |                   |
|---------------------------------------------------------------|------------------|-------------------|-----------------|------------------|-------------------|-------------------|
|                                                               | Employment       | Output            | Value-added     | Employment       | Output            | Value-added       |
| Food and Allied                                               | 20,835<br>(35.3) | 3,394.0<br>(80.1) | 339.1<br>(55.8) | 32,121<br>(21.1) | 4,910.8<br>(36.5) | 1,256.8<br>(28.0) |
| Drinks/Tobacco                                                | 6,887<br>(11.7)  | 134.0<br>(*)      | 28.5<br>(4.7)   | 11,965<br>(7.8)  | 363.3<br>(2.7)    | 178.0<br>(4.0)    |
| Textiles/Carpets                                              | 8,323<br>(14.1)  | 173.5<br>(*)      | 66.4<br>(10.9)  | 35,575<br>(23.3) | 2,154.2<br>(15.9) | 876.2<br>(19.5)   |
| Wood/Paper/Print                                              | 5,971<br>(10.1)  | 143.9<br>(*)      | 43.7<br>(7.2)   | 11,829<br>(7.8)  | 604.7<br>(4.5)    | 236.3<br>(5.3)    |
| Plastic/Chemicals                                             | 743<br>(1.3)     | 16.2<br>(*)       | 6.3<br>(1.0)    | 7,361<br>(4.8)   | 362.9<br>(6.4)    | 266.7<br>(12.4)   |
| Non-metallic                                                  | 7,549<br>(12.8)  | 59.0<br>(*)       | 27.6<br>(4.5)   | 45,490<br>(29.8) | 938.0<br>(6.9)    | 555.0<br>(12.4)   |
| Metallic sub-sector                                           | 1,389<br>(2.4)   | 46.4<br>(*)       | 10.9<br>(1.8)   | 5,813<br>(3.8)   | 770.9<br>(5.7)    | 222.2<br>(4.9)    |
| <b>Total</b>                                                  | <b>59,037</b>    | <b>4,238.1</b>    | <b>608.5</b>    | <b>152,579</b>   | <b>13,537.6</b>   | <b>4,489.5</b>    |
| <b>Average annual growth/rate between 1976/77 and 1986/87</b> |                  |                   |                 | <b>10.0</b>      | <b>12.3</b>       | <b>22.1</b>       |

Source: CBS 1988

Figures in parenthesis are respective percentages of column totals

\* = less than 0.1 per cent

**Table 3.3: Distribution of Classified Manufacturing Establishments in the mountains/hills by Development Region, 1986/87**

| NSIC Classification                       | East-ern   | Cent-ral    | West-ern    | Mid-western | Far-western | Total       |
|-------------------------------------------|------------|-------------|-------------|-------------|-------------|-------------|
| Dairy Products                            | 1          | 22          | 4           | 0           | 0           | 27          |
| Veg. and Animal Oils/Fats                 | 0          | 27          | 4           | 1           | 0           | 32          |
| Grain Mill Products                       | 90         | 829         | 724         | 93          | 22          | 1758        |
| Bakery Products                           | 1          | 33          | 11          | 0           | 0           | 45          |
| Cocoa & Confectionery Products            | 1          | 3           | 2           | 0           | 0           | 6           |
| Manufacture of Food Products              | 3          | 8           | 10          | 0           | 0           | 21          |
| N.E.C.                                    |            |             |             |             |             |             |
| Animal Feed                               | 0          | 19          | 4           | 0           | 0           | 23          |
| Distilled, Rectified & Blending Spirit    | 0          | 4           | 1           | 2           | 6           | 13          |
| Wine Industries                           | 0          | 0           | 3           | 0           | 1           | 4           |
| Beer Manufacturing                        | 0          | 2           | 0           | 0           | 0           | 2           |
| Soft Drinks & Carbonated Water            | 0          | 2           | 1           | 0           | 0           | 3           |
| Tobacco Manufacturing                     | 0          | 1           | 0           | 0           | 0           | 1           |
| Spinning/Weaving/Finishing Textiles       | 0          | 187         | 59          | 3           | 1           | 250         |
| Non-Woven Textile Goods                   | 0          | 3           | 0           | 0           | 0           | 3           |
| Knitting Mills                            | 0          | 24          | 9           | 0           | 2           | 35          |
| Carpets and Rugs                          | 1          | 112         | 0           | 0           | 1           | 119         |
| Wearing Apparel (Except Footwear)         | 0          | 71          | 4           | 0           | 0           | 75          |
| Footwear Manufacturing                    | 0          | 4           | 0           | 0           | 0           | 4           |
| Saw Mills & Other Wood Mills              | 0          | 163         | 24          | 1           | 0           | 188         |
| Wood Cork Products N.E.C.                 | 0          | 11          | 1           | 0           | 0           | 12          |
| Furniture/Fixtures (Except of Metal)      | 3          | 152         | 28          | 6           | 1           | 190         |
| Paper and Paper Products                  | 3          | 9           | 2           | 0           | 0           | 14          |
| Printing & Allied Industries              | 4          | 134         | 19          | 4           | 1           | 162         |
| Drugs and Medicines                       | 0          | 8           | 1           | 0           | 0           | 9           |
| Soap and other Chemical Products          | 0          | 5           | 5           | 0           | 0           | 10          |
| Chemical Products N.E.C.                  | 0          | 5           | 0           | 0           | 0           | 5           |
| Manufacturing of Rubber Products          | 0          | 9           | 0           | 0           | 0           | 9           |
| Plastic Products N.E.C.                   | 0          | 20          | 1           | 0           | 0           | 21          |
| Structural Clay Products                  | 3          | 123         | 35          | 5           | 0           | 166         |
| Cement, Lime, and Plaster                 | 0          | 30          | 11          | 0           | 0           | 41          |
| Non-Metallic Mineral Products             | 0          | 5           | 1           | 0           | 0           | 6           |
| Iron and Steel Basic Industries           | 0          | 5           | 1           | 0           | 0           | 6           |
| Metallic Furniture and Fixtures           | 0          | 5           | 1           | 0           | 0           | 17          |
| Structural Metal Products                 | 1          | 74          | 13          | 1           | 0           | 89          |
| Non-Machine Fabricated Metal              |            |             |             |             |             |             |
| N.E.C.                                    | 0          | 26          | 18          | 0           | 0           | 44          |
| Radios, T. Vs. & Communications Equipment | 0          | 2           | 0           | 0           | 0           | 2           |
| Electrical Apparatus N.E.C.               | 0          | 5           | 0           | 0           | 0           | 5           |
| Professional Scientific Equip. N.E.C.     | 0          | 5           | 0           | 0           | 0           | 5           |
| Other Manufacturing Industries N.E.C.     | 0          | 10          | 0           | 0           | 0           | 10          |
| <b>Total</b>                              | <b>111</b> | <b>2167</b> | <b>1003</b> | <b>116</b>  | <b>35</b>   | <b>3432</b> |

Source: CBS 1988

**Table 3.4: Some Principal Indicators of Manufacturing Establishments in the mountains/hills by Development Region**

| Development<br>Region           | No. of<br>Establish-<br>ments | Employment       | Gross Fixed<br>Assets | Output           | Value-<br>Added  |
|---------------------------------|-------------------------------|------------------|-----------------------|------------------|------------------|
|                                 | Number                        |                  | (In Million Rupees)   |                  |                  |
| Eastern                         | 21<br>(1.2)                   | 648<br>(1.0)     | 24.0<br>(1.2)         | 15.6<br>(0.4)    | 6.8<br>(0.4)     |
| Central                         | 1,401<br>(79.7)               | 58,793<br>(89.3) | 1760.0<br>(92.6)      | 3521.4<br>(93.7) | 1515.6<br>(94.4) |
| Western                         | 299<br>(17.0)                 | 5,687<br>(8.6)   | 109.9<br>(5.8)        | 202.8<br>(5.4)   | 73.4<br>(4.6)    |
| Mid-western                     | 24<br>(1.4)                   | 586<br>(0.9)     | 5.0<br>(0.3)          | 10.0<br>(0.3)    | 5.6<br>(0.4)     |
| Far-western                     | 13<br>(0.7)                   | 145<br>(0.2)     | 1.4<br>(0.1)          | 8.7<br>(0.2)     | 3.8<br>(0.2)     |
| Total<br>(excludes grain mills) | 1735                          | 65,859           | 1,900.3               | 3758.5           | 1,605.2          |
| Per cent of the Nation          | 48.0                          | 43.0             | 40.0                  | 28.8             | 36.0             |

Source: CBS 1988

**Table 3.5: Some Principal Indicators of Manufacturing Establishments in the mountains/hills**

| NISC Name                                                      | Establishment    | Employment | Gross Fixed Assets | Census Output | Census Value-Added |
|----------------------------------------------------------------|------------------|------------|--------------------|---------------|--------------------|
|                                                                | Number           |            | Million Rupees     |               |                    |
| 1. Food, Beverages, Leather                                    | 256              | 5641       | 501.3              | 963.0         | 362.3              |
| 2. Textile Carpet Leather Industries                           | 486 <sup>1</sup> | 25022      | 331.6              | 1313.0        | 541.0              |
| 3. Wood Products                                               | 390              | 3661       | 100.0              | 149.0         | 57.3               |
| 4. Paper Products and Printing                                 | 174              | 2302       | 79.0               | 95.2          | 48.0               |
| 5. Chemicals, Rubber & Plastic Products                        | 55               | 2341       | 131.0              | 262.4         | 48.0               |
| 6. Bricks/Tiles, Cement, Lime & Plasters, Non-metallic Mineral | 214 <sup>2</sup> | 22740      | 632.0              | 701.5         | 411.5              |
| 7. Basic Metal Industries                                      | 8                | 270        | 17.2               | 37.9          | 59.7               |
| 8. Fabricated Metal, Machinery Products                        | 165              | 2775       | 104.9              | 231.4         | 75.8               |
| 9. Other Manufacturing Industries                              | 10               | 107        | 2.7                | 5.1           | 1.9                |
| Total (excludes grain mills)                                   | 1758             | 64859      | 1882.5             | 3758.5        | 1545.6             |

Source: CBS 1988

1/ Includes spinning/weaving/finishing textiles = 253,

Knitting Mills = 35, Carpets and Rugs = 119, and Wearing Apparel = 79

2/ Includes Brick/Tiles = 167, Cement, Lime and Plaster = 41 and Non-metallic Metal = 6

3/ Not available

Both the ready-made garment and carpet industries are dependent on imported inputs. Export quality garments that are mostly produced in the Kathmandu Valley are prepared from Indian cotton fabrics. Similarly, export quality carpets are made from wool imported from New Zealand (90%) and Tibet (10%). The dyeing materials are also mainly imported from India and a very small amount of indigenous vegetable-colouring materials are used. The brick and tile industries are energy-intensive and consume lots of fuelwood thus impinging on the declining forest resources.

### Employment Implications

The manufacturing sector has been adding only about 9,000 jobs a year, compared to a labour force growth of 280,000 per year in Nepal (World Bank 1990:66). Most jobs created in the manufacturing sector require certain skills. Poor people migrating to urban areas with no education, or with a low level of education and skills, are less likely to benefit from expansion in manufacturing employment. One study, based on survey data obtained from 49 sampled industries located in the central and eastern development regions, shows that only about 20 per cent of manufacturing jobs are unskilled (Shrestha 1983). The study found that about 12 per cent of the manufacturing jobs are occupied by females and the proportion of female employment decreases with the increase in skill level of the manufacturing job. This shows that manufacturing employment provides very few opportunities for the uneducated, the poor, and females. Skilled jobs in manufacturing establishments (especially in the expanding sectors of garments and brick-laying) are to a large extent taken by immigrant labour.

### Scope/Constraints

The growth of employment in the manufacturing sector is hindered by a number of constraints. The lack of infrastructural development (such as transportation and communication), a small and fragmented market, and an unskilled labour force are obstacles to industrialisation. Similarly, the geophysical situation of the country makes it difficult to adopt an independent trade liberalisation policy. There is greater financial incentive to invest in rent-seeking activities at the expense of physical plant and employment-generating activities (World Bank 1990).

The garment and carpet industries, which have grown phenomenally in the last few years, are faced with uncertainty because of dependency on imported inputs and a limited and uncertain export market. More than 90 per cent of all Nepalese garments are exported to a single country, the United States. Nepal has received guaranteed access to the US market until 1993 in product areas covered by the US/Nepal Textile Negotiation. The remaining 10 per cent of the garments go to European countries, but most of the European countries, apart from Germany, have provided "residual quotas" for the import of Nepalese garments (TPC 1989).

The demand for Nepalese carpets in the international market is still high because of their quality and uniqueness. However, other countries, such as India, have lured away most of the Nepalese master weavers and have started to export similar carpets. India has an almost 40 per cent cost advantage because of government subsidies and the lower cost of sea freight (TPC 1990).

However, Nepalese labour is still relatively cheap and the current share of Nepalese exports in the world market is quite small (2%). There is enough scope for the growth of carpet and garment exports. What may be required is an appropriate government policy that provides incentives to garment and carpet manufacturers both to maintain the quality and expand the market.

## Construction/Public Works

Construction and public work activities, such as roads, irrigation, hydropower, and social infrastructure, provide employment opportunities for the rural poor. Employment in such projects is, however, on an intermittent basis for a few weeks or months at a time. However, there is a wide range of labour-intensity among the various types of construction works. Roads and housing are generally labour-intensive projects whereas large-scale irrigation and hydropower projects are usually capital intensive. In general, small rural works are more labour-intensive than major works. For example, it is estimated that almost 90 per cent of the expenditure on trail development goes to labour, whereas only about 30.50 per cent of the expenditure on roads goes to labour (World Bank 1990). Similarly, small community-type irrigation projects are relatively more labour intensive than bigger ones.

### Formal/Informal Sector Employment

Available data in the area of employment in the construction sector is extremely limited. It is difficult to estimate the total number of full-time equivalent jobs in the construction sector because most rural construction labourers are farmers who work in construction during agriculturally lean seasons. Further, it is difficult to separate formal and informal employment in construction.

Based on public expenditure on construction (which amounted to Rs. 6 billion in 1987/88), the total number employed in construction in the formal sector was estimated to be 250,000 and about 125,000 in the informal sector in 1987/88 (World Bank 1990). These estimates were based on the assumption that between 30 and 37 per cent of construction expenditure goes to labourers who are paid Rs. 40/day for 220 working days per year, per worker. The private sector receives about 50 per cent of the public sector employment in construction. An estimate based on the occupational breakdown proportion, obtained from the Multipurpose Household Budget Survey (NRB 1989) and the economically active population in the mountains and hills from the 1981 Census, shows that a total of 507,000 persons (9.4% of economically active population) are employed in the construction sectors (Table 3.6). Of the total number employed in construction about 92 per cent are classified as labourers. Fifty per cent of labourers and almost all other construction workers are thought to be in the formal sector (World Bank 1990). It should be noted that about one third of the labourers in construction work are females (NRB 1988). Table 3.6 also reveals that about 92 per cent of the employment in the construction sector is unskilled. Over 93 per cent of this employment is in the rural areas. A survey of manpower in some construction companies by New Era also arrives at similar conclusions (New Era 1989).

### Scope/Constraints

The Seventh Plan categorised the available supply of skilled manpower by level of skills at the end of the fiscal year 1984/85. Of a total of 12,667 skilled workers, 17 per cent were highly skilled, 36 per cent were middle-level, and the remaining 47 per cent had basic skills only (NPC 1986).

Figure 3.1 shows the roads and trails under construction or proposed for construction in the near future. The magnitude of these public works is large enough to provide sizeable off-farm employment opportunities to local people. Such employment opportunities, however, are not limited solely to local workers because of the free-flow of construction workers from across the southern border. In several instances, large construction contractors are found to prefer Indian labourers for construction work because of their level of skill levels, wage demands, lack of labour problems, and work continuity. Nepalese construction workers, particularly in urban areas like Kathmandu, are reported to be notorious for absenteeism on account of festivals and the like.

**Table 3.6: Estimated Employment in the Construction Sector, 1990**

| Particulars                     | Rural<br>Mountains | Rural<br>Hills    | Urban<br>Hills   | Total              |
|---------------------------------|--------------------|-------------------|------------------|--------------------|
| <u>Skilled</u>                  |                    |                   |                  |                    |
| Contractors*                    | -                  | 4,262<br>(81.7)   | 957<br>(18.3)    | 5,219<br>(100)     |
| Carpenters 1,642                | 21,310<br>(6.4)    | 2,552<br>(83.6)   | 25,504<br>(10.0) | (100)              |
| Bricklayers and<br>Stone masons | 821<br>(7.3)       | 8,524<br>(75.7)   | 1914<br>(17.0)   | 11,259<br>(100)    |
| <u>Unskilled</u>                |                    |                   |                  |                    |
| General<br>Labourers            | 61,575<br>(13.2)   | 370,794<br>(79.8) | 32,857<br>(7.6)  | 465,226<br>(100)   |
| Total                           | 64,038<br>(12.6)   | 404,830<br>(79.8) | 38,280<br>(7.6)  | 507,208<br>(100.0) |

Source: Estimate based on information from the Multipurpose Household Budget Survey (NRB 1989) and estimated labour force for 1990 (World Bank 1988).

\* East Consult a consulting firm, estimates that there are about 5000 contractors in Nepal of which about 80 per cent are class D contractors.

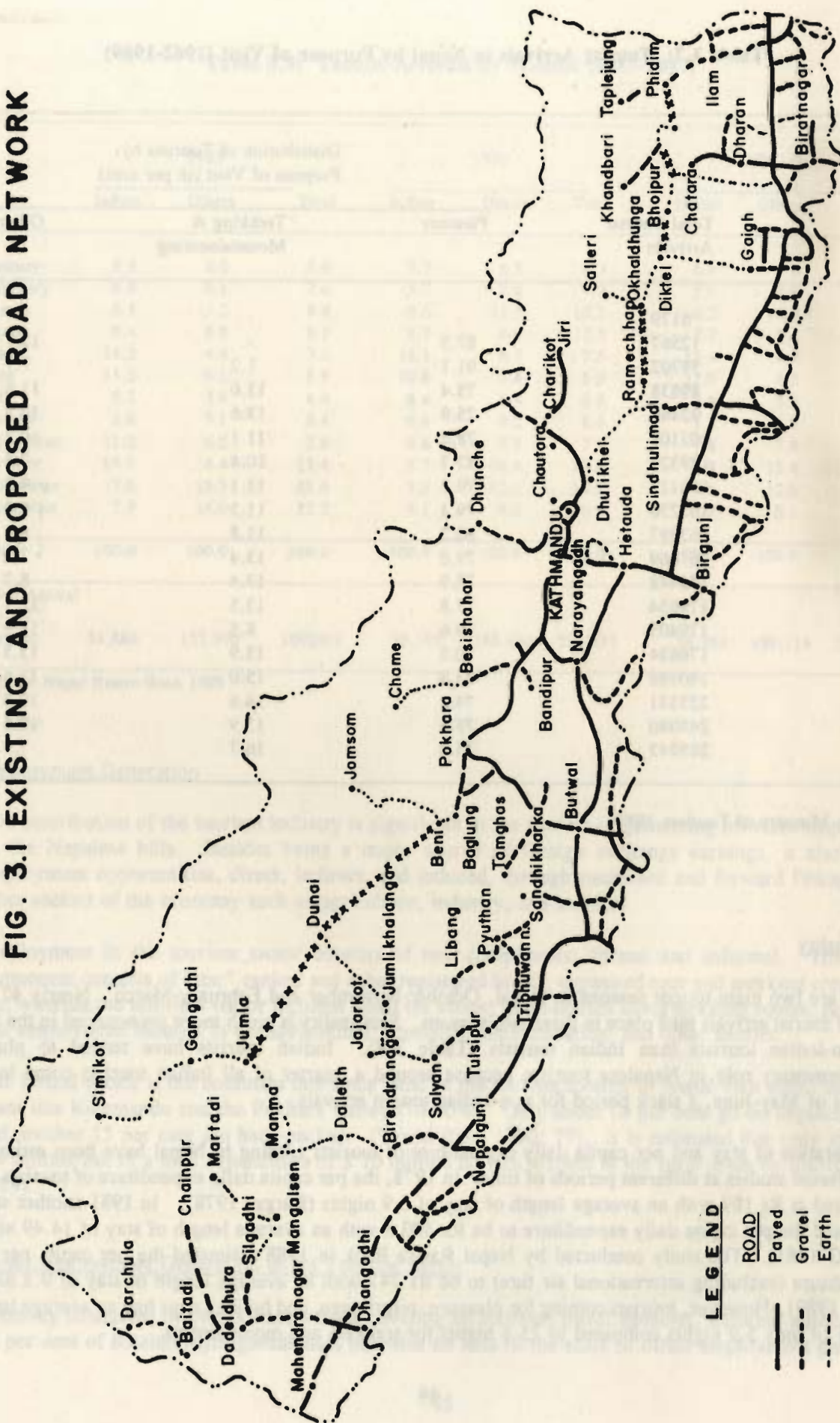
### *Tourism*

Tourism is a rapidly growing sector in Nepal. It has remained the major source of foreign exchange earnings and a potential source of off-farm employment growth in Nepal. The total foreign exchange earnings from tourism increased from Rs 170.6 million in the fiscal year 1973-74 to Rs 3,121.2 million in 1989/90. Earnings from tourism accounted for 23.3 per cent of the gross total foreign exchange earnings, 28.5 per cent of the gross service income, 59.5 per cent of merchandise exports, and 3.4 per cent of the Gross Domestic Product in 1989-90.

The number of tourist arrivals (excluding Indian tourist arrivals by road) in Nepal recorded about a fifteen-fold increase (from 6,179 to 89,838) between 1962 and 1974 and about a three-fold increase from 1974 to 1988 to reach 265,943 (Table 3.7). The relative decline in the number of tourist arrivals in 1989 was a result of the trade impasse with India.

Of the total tourists coming to Nepal, about 75 per cent come for pleasure, pilgrimages, and holidays, 15 per cent come for trekking and mountaineering and 10 per cent come for business, official, and other purposes (Table 3.7).

FIG. 3.1 EXISTING AND PROPOSED ROAD NETWORK



**LEGEND**

**ROAD**

Paved

Gravel

Earth

Under construction

Proposed: North-South

Proposed: Mid Hills Highway

**Table 3.7: Tourist Arrivals in Nepal by Purpose of Visit (1962-1989)**

| Year | Total Tourist Arrivals | Distribution of Tourists by Purpose of Visit (in per cent) |                           |        |
|------|------------------------|------------------------------------------------------------|---------------------------|--------|
|      |                        | Pleasure                                                   | Trekking & Mountaineering | Others |
| 1962 | 6179                   | -                                                          | -                         | -      |
| 1966 | 12567                  | 87.3                                                       | -                         | 12.7   |
| 1970 | 59702                  | 91.1                                                       | 1.2                       | 7.7    |
| 1974 | 89838                  | 75.4                                                       | 13.0                      | 11.6   |
| 1975 | 92440                  | 75.9                                                       | 13.6                      | 10.5   |
| 1976 | 105108                 | 78.6                                                       | 11.1                      | 10.3   |
| 1977 | 129329                 | 82.3                                                       | 10.4                      | 7.3    |
| 1978 | 156123                 | 79.7                                                       | 11.1                      | 9.2    |
| 1979 | 162276                 | 79.4                                                       | 11.3                      | 9.3    |
| 1980 | 162897                 | 80.2                                                       | 11.8                      | 8.0    |
| 1981 | 161669                 | 79.0                                                       | 13.4                      | 7.6    |
| 1982 | 175448                 | 77.9                                                       | 13.4                      | 8.7    |
| 1983 | 179634                 | 73.8                                                       | 13.5                      | 12.7   |
| 1984 | 179405                 | 79.6                                                       | 8.5                       | 11.9   |
| 1985 | 176634                 | 70.8                                                       | 15.9                      | 13.3   |
| 1986 | 180989                 | 73.4                                                       | 15.0                      | 11.6   |
| 1987 | 223331                 | 74.6                                                       | 14.6                      | 10.8   |
| 1988 | 248080                 | 75.5                                                       | 13.9                      | 10.6   |
| 1989 | 265943                 | 75.4                                                       | 16.7                      | 7.9    |

Source: Ministry of Tourism 1989

### Seasonality

There are two main tourist seasons in Nepal, October-November and February-March. Nearly 42 per cent of tourist arrivals take place in these two seasons. Seasonality is much more pronounced in the case of non-Indian tourists than Indian tourists (Table 3.8). Indian tourists have tended to play a complementary role in Nepalese tourism because around a quarter of all Indian tourists come in the months of May-June, a slack period for non-Indian tourist arrivals.

The duration of stay and per capita daily expenditure of tourists coming to Nepal have been estimated by different studies at different periods of time. In 1978, the per capita daily expenditure of tourists was estimated at Rs 169 with an average length of stay of 6.9 nights (Burger 1978). In 1981 another study estimated the per capita daily expenditure to be Rs 390.3 with an average length of stay of 14.49 nights (DRCG 1981). The study conducted by Nepal Rastra Bank in 1988 estimated the per capita per day expenditure (excluding international air fare) to be Rs 747 with an average length of stay of 9.3 nights (NRB 1989). However, tourists coming for pleasure, pilgrimage, and holiday trips had an average length of stay of only 5.9 nights compared to 25.8 nights for trekkers and mountaineers.

**Table 3.8: Tourist Arrivals by Months (1985-1987)**

|                                    | 1985   |         |         | 1986   |         |         | 1987   |         |         |
|------------------------------------|--------|---------|---------|--------|---------|---------|--------|---------|---------|
|                                    | Indian | Others  | Total   | Indian | Others  | Total   | Indian | Others  | Total   |
| January                            | 5.2    | 6.0     | 5.8     | 5.7    | 6.5     | 6.3     | 6.8    | 7.0     | 6.9     |
| February                           | 6.5    | 8.1     | 7.6     | 5.7    | 8.6     | 7.9     | 5.1    | 9.9     | 8.8     |
| March                              | 6.5    | 11.2    | 9.8     | 6.6    | 11.5    | 10.3    | 6.2    | 10.8    | 9.7     |
| April                              | 8.4    | 8.0     | 8.1     | 8.7    | 6.9     | 7.3     | 7.7    | 7.4     | 7.5     |
| May                                | 14.2   | 4.4     | 7.3     | 16.1   | 4.7     | 7.5     | 15.4   | 4.7     | 7.2     |
| June                               | 11.3   | 3.1     | 5.5     | 10.8   | 3.4     | 5.3     | 12.5   | 4.3     | 6.3     |
| July                               | 5.5    | 3.9     | 4.4     | 8.4    | 6.4     | 6.9     | 7.4    | 5.3     | 5.8     |
| August                             | 4.9    | 7.1     | 6.4     | 6.4    | 9.2     | 8.5     | 7.3    | 8.3     | 8.1     |
| September                          | 11.2   | 6.5     | 7.9     | 6.6    | 7.3     | 7.1     | 7.6    | 7.8     | 7.8     |
| October                            | 10.9   | 14.4    | 13.4    | 8.7    | 14.4    | 13.0    | 8.9    | 13.4    | 12.3    |
| November                           | 7.6    | 13.3    | 11.6    | 7.3    | 12.1    | 10.9    | 7.5    | 12.1    | 11.0    |
| December                           | 7.9    | 14.0    | 12.2    | 9.1    | 9.0     | 9.0     | 7.5    | 8.1     | 8.6     |
| Total                              | 100.0  | 100.0   | 100.0   | 100.0  | 100.0   | 100.0   | 100.0  | 100.0   | 100.0   |
| Total Arrival<br>No. of<br>persons | 53,880 | 127,109 | 180,989 | 55,195 | 168,136 | 223,331 | 58,964 | 189,114 | 248,080 |

Source: Nepal Rastra Bank 1989

### Employment Generation

The contribution of the tourism industry is significant in the context of generating off-farm employment in the Nepalese hills. Besides being a major source of foreign exchange earnings, it also creates employment opportunities, direct, indirect, and induced, through backward and forward linkages with other sectors of the economy such as agriculture, industry, and services.

Employment in the tourism sector consists of two components: formal and informal. The formal component consists of "star" ranked and other registered hotels, organised tour and trekking companies, etc, whereas the informal sector includes small tea shops, guest-houses along trekking routes, portering, and employment induced in the agricultural, transport/communication, and other sectors.

The formal sector is the dominant one since most of the tourists coming to Nepal visit major urbanised areas like Kathmandu and the Pokhara Valley (70-80%). Only about 10 per cent go on organised treks and another 15 per cent are back-packers (World Bank 1990: 77). It is estimated that only about US \$ 4 million out of a total expenditure of \$ 70 million dollars is spent in the rural areas by tourists (ERL 1989).

### Direct Employment Generation in the Tourism Sector

A survey conducted by Nepal Rastra Bank covering all airlines, travel agencies, trekking agencies, and 81 per cent of hotels/lodges/guesthouses provides an idea of the scale of direct employment generation

by the tourism sector. The survey found 11,176 people directly employed in the tourism sector of which 58 per cent were employed in hotels and lodges, 13.8 per cent in travel agencies, 8.8 per cent in trekking agencies, and the remaining 19.4 per cent in airlines (Table 3.9). The proportion of female employment in these sectors varied from 13.8 per cent in hotel/lodges to 3.2 per cent in trekking agencies. Travel agencies employed a high (43%) proportion of middle-level manpower followed by basic level (39.4%) and top level (17.6%) manpower.

The investment - employment ratio in the tourism sector revealed that trekking agencies required the lowest amount of investment (Rs 28,200) per employment followed by travel agencies (Rs 51,300), hotel/lodges (Rs 112,400), and airlines (Rs 213,500).

**Table 3.9: Direct Employment Generation in the Tourism Sector**

| Category or Employment                    | Hotel/<br>Lodges |       | Travel<br>Agency |       | Trekking<br>Agency |       | Airlines |       | Total  |       |
|-------------------------------------------|------------------|-------|------------------|-------|--------------------|-------|----------|-------|--------|-------|
|                                           | No.              | (%)   | No.              | (%)   | No.                | (%)   | No.      | (%)   | No.    | (%)   |
| <u>Skilled level</u>                      |                  |       |                  |       |                    |       |          |       |        |       |
| Top                                       | 504              | 8.5   | 272              | 17.6  | 122                | 12.5  | 121      | 4.4   | 1,019  | 9.1   |
| Middle                                    | 1,751            | 29.6  | 664              | 43.0  | 254                | 26.0  | 593      | 21.7  | 3,262  | 29.2  |
| Basic                                     | 3,661            | 61.9  | 608              | 39.4  | 602                | 61.5  | 2,024    | 73.9  | 6,895  | 61.7  |
| <u>Sex</u>                                |                  |       |                  |       |                    |       |          |       |        |       |
| Male                                      | 5,102            | 86.2  | 1,413            | 91.5  | 947                | 96.8  | 2,510    | 91.6  | 9,972  | 89.2  |
| Female                                    | 814              | 13.8  | 131              | 8.5   | 31                 | 3.2   | 228      | 8.4   | 1,204  | 10.8  |
| <u>Nationality</u>                        |                  |       |                  |       |                    |       |          |       |        |       |
| Nepalese                                  | 5,815            | 98.3  | 1,520            | 98.4  | 974                | 99.6  | 2,707    | 98.9  | 11,016 | 98.6  |
| Indians                                   | 85               | 1.4   | 21               | 1.4   | 2                  | 0.2   | 18       | 0.7   | 126    | 1.1   |
| Others                                    | 16               | 0.3   | 3                | 0.2   | 2                  | 0.2   | 13       | 0.3   | 34     | 0.3   |
| Total                                     | 5,916            | 100.0 | 1,544            | 100.0 | 978                | 100.0 | 2,738    | 100.0 | 11,176 | 100.0 |
| Investment/Employment<br>(Rs in thousand) | 112.4            |       | 51.3             |       | 213.5              |       | 28.2     |       |        |       |

Source: NRB 1989

The demand created by tourists for handicrafts, carpets, garments, etc. generates employment and income in the production and sales of these items. The investment-employment ratio in the tourism-related sector shows that in the garment industry, investment per job was Rs 34,200 whereas in the cargo agencies, handicrafts, and restaurants investment per job was Rs 17,200, Rs 14,100 and Rs 26,000 respectively. The investment per job in the carpet industry was the lowest (Rs 13,200) among tourism-related sectors. This shows that the induced employment potential of tourism is considerable.

## Scope/Constraints

Pleasure, and pilgrimage activities are mainly concentrated in the Kathmandu Valley. About one-fifth of all tourists visit Pokhara (Gurung 1990). Such activities principally stimulate the urban economy through employment in hotels, travel agencies, and through the creation of demand for goods and services for tourist needs. Increased demands for horticulture, livestock, poultry and vegetables create employment and production incentives in the agricultural sector. It is difficult, however, to quantify the extent of such employment.

Mountain tourism plays an important role in generating employment and income-earning opportunities in the rural areas. Since trekkers and mountaineers have a longer duration of stay in the country, and particularly in the rural areas, their expenses have a wider spread effect. The environmental effects of mountain tourism, however, merit serious consideration.

In the hills and mountains, trekking and mountaineering activities have the potential to provide sizeable opportunities for employment of the unemployed and underemployed in specific regions during the off-farm season. Estimates of people annually employed in trekking and mountaineering, although highly seasonal, range from 46,000 to 72,000 (Gurung 1990; Sharma 1989a; CEDA 1989). The NRB Survey estimated that about 79 per cent of the employment in the shops along trekking routes is full time, although the total magnitude of employment is difficult to estimate.

## *Government, Trade, Transport, and Services*

### The Government Sector

The rapid growth of government and semi-government sectors is a considerable source of off-farm employment. The employment in the government sector is mostly concentrated in the Kathmandu Valley and in other administrative centres at the regional, zonal, and district level. Government employment mainly provides an avenue for the literate and educated. Even unskilled peon - (janitor) level jobs are accessible to the literate. The majority of government employees belong to certain caste groups and to regions with better accessibility.

The number of permanent civil service employees in 1989-90 was 96,357 of which the majority were non-gazetted employees (Table 3.10). The unskilled (peon level) jobs constituted 27 per cent of the total employment in the civil services. The official statistics on the number of persons employed in the army and the police are not available. However, unofficial estimates are that at least 75,000 persons are employed in the army and the police together. The number of people employed in parastatal organisations is estimated to be 40,000 (World Bank 1990). Thus the public sector is estimated to employ more than 210,000 persons. The share of the hills and the mountains in this employment is not known, although most of the people employed in the army and the police belong to hill and mountain regions.

### Trade, Transport, and Services' Sector

On the basis of occupational breakdown (contained in the Multipurpose Household Budget Survey, the census, and elsewhere) and some broad assumptions about the proportions falling in the formal and non-formal sectors, the World Bank study estimated that about 180,000 people were employed in transport (20,000), services (100,000), and commerce (60,000) in the country as a whole.

**Table 3.10: Number of Permanent Civil Service Employees, 1989-90**

| Service Level             | Employment | (Per cent) |
|---------------------------|------------|------------|
| <u>Gazetted</u>           |            |            |
| Administration            | 3,874      | (4.0)      |
| Technical                 | 6,023      | (6.3)      |
| Gazetted Total            | 9,897      | (10.3)     |
| <u>Non-Gazetted</u>       |            |            |
| Administrative            | 29,091     | (30.2)     |
| Technical                 | 31,076     | (32.2)     |
| Non-gazetted Total        | 60,167     | (62.4)     |
| <u>Peon or Equivalent</u> | 26,293     | (27.3)     |
| Total                     | 96357      | (100.0)    |

Source: CBS 1989

This includes employment provided by large commercial establishments, trading firms, and banks; private sector services in health, education, and consulting firms; and employment in the larger trekking companies and airlines (World Bank 1990).

However, if the occupational breakdown of the active population contained in the Multipurpose Household Budget Survey is applied to the economically active population estimated for 1990, the employment in service occupations in the hill and mountain regions comes to around 374,000 persons (Table 3.11). While this is not indicative of full-time employment, it shows the importance of the service sector in the hills and mountains.

#### Scope/Constraints

The linkage between government employment and the growth in transport, trade, and service occupations is an important one. The growing number of public servants has fuelled considerable growth in the local economy through increased commercial activity, e.g., small businesses, tea shops, and services. These informal sector enterprises, in turn, are linked to the formal sector which acts as a supplier of goods. In the mountain areas, which generally lack access and modern means of transportation, such enhanced linkages between informal and formal sectors also lead to a high demand for portering services, an important off-farm activity for the poor people in the mountains.

Further, as the transport networks in the hills and mountains expand, the scope for the expansion of employment opportunities in transport, trade, and services is also enhanced. The scope for the expansion in employment in the hills/mountains as a result of the growth in government bureaucracy, however, remains limited.

**Table 3.11: Estimated Employment by Service Occupation in Hills and Mountain, 1990.**

| Occupation Category | Rural Mountains | Rural Hills      | Urban Hills      | Total             |
|---------------------|-----------------|------------------|------------------|-------------------|
| Officer workers     | 9031<br>(7.3)   | 76716<br>(62.2)  | 37642<br>(30.5)  | 123389<br>(100.0) |
| Sales' workers      | 10673<br>(6.3)  | 119336<br>(70.0) | 40513<br>(23.7)  | 170522<br>(100.0) |
| Services' workers   | 11494<br>(14.3) | 42620<br>(53.1)  | 26158<br>(32.6)  | 80272<br>(100.0)  |
| Total               | 31198<br>(8.3)  | 238672<br>(63.7) | 104313<br>(28.0) | 374183<br>(100.0) |

Source: Estimates based on the information obtained from the Multipurpose Household Budget Survey (NRB 1988) and estimated labour force for 1990 (World Bank 1988).

### *Mining and Quarrying*

Studies conducted so far indicate that Nepal is rich in sedimentary deposits and poor in metallic deposits, apart from lead, zinc, and copper deposits in a few localities. The geological investigations made so far are not sufficient to assess the mineral prospects of Nepal. However, Nappe hypothesis (the view that formation of the Himalayan Zone is a result of a series of younger rocks overlying the old rocks) does not support the occurrence of vital minerals in Nepal. On the contrary, the block hypothesis that has been advanced as an alternative explanation of the geological structure of Nepal provides enough grounds for the supposition of significant mineral occurrences in Nepal (Malla & Shrestha 1983).

The gross domestic product from the mining and quarrying sectors increased from Rs 26 million in 1976/77 to Rs 132 million in 1986/87 at current prices. However, the share of the mining and quarrying sectors in total GDP is very small and increased from 0.16 per cent in 1976/77 to 0.24 per cent in 1986/87.

### Employment Generation

The total employment generated by the mining and quarrying industry in Nepal is not known. It is reported that cement, agricultural lime, metal casting foundry units, and marble industries, established at a total cost of Rs 1,520 million, are currently employing 2,759 persons (HMG 1990). Another study estimated that the production of limestone, magnesite, zinc and lead, agricultural lime, slate, and boulders provides employment to the extent of 3,000 full-time jobs and several thousand seasonal jobs (ADB 1990a). Table 3.12 presents production potential and the estimated employment in some selected mining industries located in the hill and mountain districts (Fig 3.2).

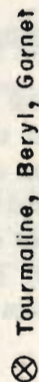


**Table 3.12: Estimated Employment and Production Potential of Some Mining Industries**

| Industry and Location                                        | Employment*  | Production Potential                                                                                                                             |
|--------------------------------------------------------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Nepal Metal Company<br>Ganesh Himal Lead<br>and Zinc, Rasuwa | 450          | 490,000 tonnes of proven ore and 513,000 tonnes of probable ore containing 10.98% zinc, 1.53% lead, and some cadmium and silver.                 |
| Nepal Orind Magnesite<br>Dolakha/<br>Sindhupalchowk          | 700          | 180 million tonnes of magnesite with 66 million tonnes of Kharidhunga, refractory grade. 330,000 tonnes of proved talc resources.                |
| Himal Cement Company                                         | 900          | 15.3 million tonnes of proven and probable limestones in a mine in Chobhar, Kathmandu, depth of 60 metres                                        |
| Agro-Industrial Lime<br>Jogimara, Dhading                    | 50           | 0.95 million tonnes of proven and 2.65 million tonnes of probable chemical grade limestones                                                      |
| Godawari Marble<br>Industry, Lalitpur                        | 500          | A probable reserve of 246,000 m <sup>3</sup> of white marble, 130,200 m <sup>3</sup> of brown marble, and 248,400 m <sup>3</sup> of pink marble. |
| Foundry Industry                                             | 75           |                                                                                                                                                  |
| Lignite (28 lease<br>holders in Bagmati<br>Corridor)         | 605          |                                                                                                                                                  |
| <b>Total</b>                                                 | <b>3,280</b> |                                                                                                                                                  |

\* Estimates provided by Mining Department Personnel

Source: HMG, Nepal. Mineral Exploration Development Board

Although precise figures are not available, stone-quarrying for road and building construction near hill urban areas, especially on the outskirts of Kathmandu Valley are reported to provide quite a lot of employment. The environmental effects of mining and quarrying operations have raised serious concerns. Several minerals such as iron ore, copper, mica, marble, and lignite have been extracted, although on a small scale, in several places since earlier times. Some minerals under small-scale production from various deposits include: copper from Wapsa, Gyazi and Okharbot, semi-precious tourmaline, beryl, and garnet from the pegmatites of Sankhuwashabha and Taplejung districts; talc from various small talc deposits; and slate, stones, and gravels in various parts of the country.

### Scope/Constraints

Available information on mineral resources in Nepal reveals that non-metallic construction, minerals, and rocks such as limestones, boulders, and gravel are abundant in Nepal but metallic and non-metallic industrial minerals and hydrocarbons are extremely limited. However, recent studies have identified the

possibilities of hydrocarbon basins to the extent of 10-20 thousand sq. km. If commercially recoverable reserves of petroleum were to be found, the result could be significant in terms of Nepal's energy position, trade balance, and off-farm employment. The economic deposits of some minerals, which are to be exploited in the near future, are presented in Table 3.13.

**Table 3.13: Economic Deposits of Some Exploitable Mineral Resources in the Hill Region**

| Mineral Type and Location                              | Production Potential Future                                                                                                                                                                             |
|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Phulchowki Iron Ore<br>Lalitpur                        | 10 million tonnes of total resources (proved, probable, and Deposit, with 54-58% iron). Feasibility of production of 50,000 tonnes capacity per year by a possible mini steel plant has been indicated. |
| Okhare, Limestone<br>Deposit, Makwanpur District       | 10.14 million tonnes of pro-cement grade limestone.                                                                                                                                                     |
| Udaipur Dolomite Deposit<br>Udaipur District           | 4.84 million tonnes of proven dolomite.                                                                                                                                                                 |
| Karrakhola Silica Sand,<br>Makwanpur District          | About 3 million tonnes of silica sand suitable for ordinary glass-making.                                                                                                                               |
| Chaukune Limestone Deposit,<br>Surkhet District        | 10.4 million tonnes of cement grade limestone.                                                                                                                                                          |
| Khanchikot Limestone Deposit,<br>Arghakhanchi District | 8.26 million tonnes of cement grade limestone.                                                                                                                                                          |
| Lakharpata Limestone Deposit,<br>Surkhet District      | 9.5 million tonnes of cement grade limestone.                                                                                                                                                           |

Source: HMG, Mineral Exploration Development Sector.

The non-metallic construction minerals and rocks have low unit value and high transportation costs. Therefore, these minerals are only of local importance. Cement grade limestone is abundantly available in Nepal. There is a shortage of cement production in the northern region of India and if Nepal could set up a number of large joint venture cement plants it could supply cement to meet the requirements not only of Nepal but also of north India, Bhutan, and Bangladesh. The environmental implications of some mining operations (such as Himal Cement at Chobhar and Godavari Marble Quarry, both in Kathmandu) have been seriously questioned in spite of their employment potentials.

### Off-farm Employment in the Informal Sector

The "informal sector", a concept popularised by ILO (1976), refers to activities that operate largely outside the system of government regulations and are characterised by ease of entry, small-scale operations, family ownership, and unregulated and competitive markets.

In the rural areas of the hills and mountains, the type and extent of off-farm activities in the informal sector are difficult to recognise and assess because of the diverse and unique characteristics of informal sector activities. The absence of systematic studies on the subject makes it difficult to estimate the number of people actually employed in off-farm activities in the informal sector in Nepal, especially in the mountains. Considering the small size of landholdings, the subsistence mode of production, and the small size of the organised formal sector, the dependence of a large number of mountain people on informal sector activities, both as main and subsidiary occupations, can be presumed to be significant. Some of the important informal sector off-farm activities are discussed in the following section.

### *Cottage Industries*

In Nepal, cottage industries have been defined in terms of annual turnover, scale of investment, low energy base, and traditional and craft linkages. The Industrial Enterprises Act, 1980, amended in 1987, defined cottage industries as follows.

1. Industries specified by His Majesty's Government as traditional industries, which are largely labour-oriented, linked with the traditions, art, and culture of the nation, and which mobilise special skills or local raw materials and resources.
2. Industries that require convertible foreign exchange to purchase the main raw materials, utilise machinery, tools, and implements worth not more than Rs 200,000, have a total fixed capital not exceeding Rs 700,000 and use not more than 10 hp of energy; and the total annual output does not exceed Rs 1.5 million.
3. Industries for which the main raw materials are locally available and which have a fixed capital investment not exceeding Rs 700,000 and a total annual output of not more than Rs 2.5 million.

Small-scale, household-based cottage industries are common economic activities in the mountains. These generally provide supplementary income to households. Although most of the produce is home-consumed, cottage industry products are also marketed locally and exported to urban centres. The data base on informal cottage industries is poor since the Census of Manufacturing Industries (CME) does not include industries that employ less than 10 persons or do not use automachines. Area-specific, micro-studies are the only source of information on cottage industries.

The reported share of cottage industries in the GDP is small and accounted for just over one per cent in 1982/83. However, the share of cottage industries accounted for 29.2 per cent of the total industrial output in 1982/83. The annual rate of growth in cottage industries between 1974/5 - 1982/3 was 7.5 per cent (Table 3.14).

### Employment Generation

Although cottage industries contribute only about one third of the total industrial GDP, they employed 95.6 per cent of the industrial labour force in 1981/82 (Table 3.15). However, most people engaged in unorganised cottage industries are part-time workers involved in small-scale units processing agricultural and forest products for household consumption.

**Table 3.14: Contribution of Cottage Industry to Overall and Industrial GDP**

(In Million of Rupees)

| Fiscal Year                     | Industry |       |       | GDP    | % Share of CI in |     |
|---------------------------------|----------|-------|-------|--------|------------------|-----|
|                                 | Cottage  | Other | Total |        | Industry         | GDP |
| (mid-July/mid-July)             |          |       |       |        |                  |     |
| 1974/75                         | 224      | 440   | 664   | 16,571 | 11.4             | 1.4 |
| 1975/76                         | 231      | 459   | 690   | 17,394 | 33.4             | 1.3 |
| 1976/77                         | 237      | 499   | 736   | 17,280 | 32.2             | 1.3 |
| 1977/78                         | 263      | 531   | 794   | 19,732 | 33.1             | 1.3 |
| 1978/79                         | 289      | 559   | 848   | 22,215 | 34.1             | 1.3 |
| 1979/80                         | 318      | 618   | 936   | 23,351 | 34.0             | 1.4 |
| 1080/81                         | 337      | 712   | 1,049 | 27,307 | 32.1             | 1.2 |
| 1981/82                         | 369      | 820   | 1,189 | 30,265 | 31.0             | 1.2 |
| 1982/83                         | 399      | 969   | 1,368 | 33,621 | 29.2             | 1.2 |
| Annual Growth Rate<br>(1975-83) | 7.5      | 10.4  | 9.5   | 9.2    | -                | -   |

Source: CBS 1988

**Table 3.15: Relative Position of Cottage Industry in Nepal (1981/82)**

|                          | Unit       | All Industry | Cottage<br>& Small<br>Industry | Perce-<br>tage |
|--------------------------|------------|--------------|--------------------------------|----------------|
| 1. No. of Establishments | '000       | 754.0        | 751.0                          | 99.5           |
| 2. Employment            | '000       | 1,271.0      | 1,215.0                        | 95.6           |
| 3. Production            | Rs Million | 3,288.1      | 713.0                          | 21.7           |
| 4. Value-added           | Rs Million | 698.3        | 2188                           | 31.3           |
| 5. Investment            | Rs Million | 826.1        | 341.1                          | 41.3           |

Source: NPC 1985

Cottage industries can be classified into two categories in Nepal, namely, organised (those with higher investment using local materials as well as raw materials from outside, full-time participation, registration with the Department of Cottage and Village Industries (DCVI) and producing for the market), and unorganised (part-time and mostly catering to household needs, using traditional tools and local raw materials, and unregistered). The number of unorganised cottage industries in the country was estimated at about 751,000 in 1981/82, 95 per cent of them operated only on a part-time basis with an estimated investment of Rs 50,000 or less (Pandey 1988:5). The total employment in the cottage industry sector is estimated at about 1.3 million. Almost one-third are believed to be in the organised sector (HMG 1990).

It is believed that a large number of cottage industries stop operating after a few years of establishment. However, available data do not indicate the number of units in actual operation in the country as a whole. Data obtained for the 12 hill and mountain districts of the Mid-western Development Region (MWDR) from DCVI, and processed by the study team, show that about 61 per cent of the cottage industries registered were not operating during the survey period (Table 3.16). This clearly shows the state of cottage industries in the country. The problems commonly cited are lack of raw materials, capital goods, and spares, inadequate promotional support and technical assistance programmes, and lack of timely and adequate credit assistance.

**Table 3.16: Number of Registered Cottage Industries by Operational Status, MWDR, 1990**

| Industries                      | In operation | Closed | Total Registered |
|---------------------------------|--------------|--------|------------------|
| Woollen and Cotton thread-based | 115          | 242    | 357              |
| Leather                         | 10           | 4      | 14               |
| Forest based                    | 32           | 27     | 59               |
| Metal/Utensils                  | 1            | 27     | 28               |
| Mud, Stone, and Cement-based    | 1            | 26     | 27               |
| Confectionery and Bakeries      | 5            | 20     | 25               |
| Soap                            | 1            | 6      | 7                |
| Educational Materials           | 2            | 3      | 5                |
| Rice Mills                      | 110          | 77     | 187              |
| Miscellaneous                   | 57           | 89     | 146              |
| Total Number                    | 334          | 521    | 855              |
| Per cent                        | 39.1         | 60.9   | 100.0            |

Table 3.16 reveals that service-rendering industries, such as rice mills, and local resource-based industries, such as leather - and forest-based cottage industries, appear to have a higher degree of sustainability.

### Growth and Linkages with Other Sectors

The growth of off-farm employment in rural areas depends upon the linkages between agricultural productivity and industry. Lack of physical and human infrastructure, difficulty in getting machinery and spares, and lack of markets limit the size of industries in most hill and mountain areas of Nepal. Also, because of the geophysical setting and the resource base, small-scale cottage industry activities seem to be suitable for the hills and mountains.

Cottage industries are better linked with agriculture because of their forward and backward linkages. Many informal cottage industries, such as weaving and manufacturing of bamboo and fibre-related products, are undertaken for household consumption and are sometimes marketed. Growth in farm output and income also generates demand for cottage industry produce, on the one hand, and provides an impetus to local processing on the other. Often, it is the growth in the agricultural sector that provides an environment for growth in remunerative cottage industry activities.

Forest-based products and horticultural products such as citrus fruits, apples, and apricots, have important linkages with processing industries, especially in the hills and mountains where transportation costs are very high. Processed products often carry a higher value and have less weight and are, therefore, cheaper to transport.

### *Skill/Craft-based Activities*

The skill/craft-based activities in Nepal are characterised by small production units with predominantly labour-intensive technologies. Household members themselves normally engage in these activities on a part-time basis during the non-agricultural seasons to supplement the family income. Almost everyone employed in craft-based activities is self employed and a large share of the produce is used to meet household needs.

The employment statistics of craft-based activities are not available on a comparable time-series basis. The census data reveals that about 2.3 per cent of the economically active population were engaged in craft-based industries in 1961. This rate was only 0.4 per cent in 1971. However, there is no evidence to support a significant reduction in employment in craft-based activities between 1961 and 1971. Therefore, it is more than likely that the two censuses may have counted craft-based employment in different ways: the 1961 census may have included both part-time and full-time workers whereas the 1971 census may have included only full-time workers.

### Employment Generation

An estimate based on available micro-studies shows that about 175,000 persons were engaged in selected craft-based activities in the country, of which 171,000 were from the hills and mountains (Upadhaya and Sharma 1985). Of the total employment in four selected crafts, cotton-based activities employed 69.2 per cent and wool-based about 30 per cent. Metal- and wood-based activities employed less than one per cent.

Table 3.17 reveals that 83 per cent of the craft-based employment was generated in the hills, followed by about 15 per cent in the mountains, and 2.5 per cent in the *terai*. It may be noted that wool-based activities are relatively more important in the mountains than in the hills.

Cotton-based craft activities mostly imply traditional handloom industries. Weaving is carried out predominantly by women in the non-agricultural season to meet clothing needs in the hills and mountains. According to one study, handlooms provided seasonal employment to about 50 thousand weavers in 1977/78 (ISC 1978).

The metal craft industry, which includes brass and bronze, only employs about 1,200 persons in the hills and about 150 in the mountains. The metal craft industry is concentrated in the Patan Area of the Kathmandu Valley, the Palpa District in Mid-western Nepal, and the Bhojpur and Sankhuwa Sabha districts in Eastern Nepal.

### Scope/Constraints

Studies show that there is considerable potential for increasing the production of cotton- and wool-based crafts. Improvements in the product quality, however, are required to meet export demand (Upadhaya

and Sharma 1985). Wool-based crafts, including traditional carpets, blankets, and rugs (*radi, pakhi*), employ about 12,000 people in the mountains and 40,000 people in the hills. Traditional woollen goods that are manufactured in the mountains and in the rural hills, for the most part use locally available wool. However, hand-knotted carpets, produced predominantly in the Kathmandu Valley, are manufactured from imported wool and more than 95 per cent of these are exported abroad. Metal- and wood-based activities are more artistic in nature and have the potential to cater to specific markets.

**Table 3.17: Estimated Employment in Selected Crafts Derived from Different Sources**

| Region                         | Cotton based | Wool based | Metal* based | Wood** based | Total   | Percentage |
|--------------------------------|--------------|------------|--------------|--------------|---------|------------|
| <u>Mountains</u>               |              |            |              |              |         |            |
| Households                     | 9,532        | 7,843      | 50           | -            | 17,425  | 16.1       |
| Persons                        | 13,881       | 11,722     | 150          | -            | 25,753  | 14.7       |
| <u>Hills</u>                   |              |            |              |              |         |            |
| Households                     | 62,067       | 24,525     | 476          | 300          | 87,368  | 90.6       |
| Persons                        | 103,384      | 40,303     | 1,190        | 750          | 145,627 | 82.8       |
| <u>Mountains/Hills (Total)</u> |              |            |              |              |         |            |
| Households                     | 71,599       | 32,368     | 526          | 300          | 104,793 | 96.7       |
| Persons                        | 117,265      | 52,025     | 1,340        | 750          | 171,380 | 97.5       |
| <u>Nepal (Total)</u>           |              |            |              |              |         |            |
| Households                     | 75,149       | 32,368     | 526          | 300          | 108,334 | 100.0      |
| Persons                        | 121,587      | 52,025     | 1,340        | 750          | 175,702 | 100.0      |
| Per Cent of Total Employment   | 69.2         | 29.6       | 0.8          | 0.4          | 100.0   |            |

Source: Upadhaya and Sharma 1985

\* brass and bronze only

\*\* wood carvers are excluded

### *Carpet Weaving*

The weaving of carpets, rugs, and blankets (locally known as *galaincha, radi, and pakhi* respectively) from locally obtained wool and the hair of mountain goats, sheep, and yak is a traditional activity in the hills and mountains. These woollen goods are generally produced at the household level and mostly for household needs. However, a significant portion of the total production is sold or traded in local or nearby markets to earn cash income to purchase other household necessities.

In the early 1960s, Tibetan refugees migrated to Nepal bringing their carpet-weaving skills and traditional designs. A Swiss-assisted development project was initiated in order to provide employment to these refugees, and this turned out to be the basis for the modern carpet industry in Nepal. The carpet industry has developed substantially since then, employing both Nepalese as well as Tibetan refugees and has become the primary source of Tibetan-style carpets for the world market.

### Employment Generation

In 1987/88, the CBS recorded a total formal employment of 15,600 persons in 145 enterprises in the carpet industry each employing more than 10 persons (ADB 1990a).

The Livestock Master Plan report estimates that more than 250,000 persons are involved in informal employment in the industry for washing, carding, spinning, dyeing, and weaving wool on a household or cottage industry basis. Sixty per cent of the employees were estimated to be female. A more recent estimate suggests that there are over five hundred carpet manufacturers and about 200 exporters in the country, (TPC 1990). The carpet industry provided 52 per cent of overseas' exports and earned over 2.29 billion rupees worth of foreign exchange in 1989/90.

Modern carpet industries are mostly located within the Kathmandu Valley. Access to labour, easier import of raw materials, and better access to export facilities (via air) for overseas' markets appear to be the major factors influencing the location of carpet industries in the valley. The Livestock Master Plan estimates that there are 135,000 looms with about 10 to 300 looms per manufacturer. More than 90 per cent of these looms are located in the Kathmandu Valley and the remaining are thought to be in Pokhara and the Annapurna Conservation Area.

### Resource Base

Almost all wool and dyeing materials for modern carpet manufacturing are imported. Dyes and cotton warp are imported from India, although in recent years dyes have also been directly obtained from the manufacturers in Switzerland. Tibetan wool is preferred because of its unique lustre and resilience. However, the supply of Tibetan wool is far below the rapidly increasing demand for Nepalese carpets. Thus, most of the wool is now imported from New Zealand (Table 3.18).

### Scope/Constraints

The Nepalese carpet has created a 'niche' in the international market. It is not a direct substitute for Persian-style, carpets which contain up to 300,000 knots per sq. metre as opposed to 80,000 knot per sq. metre in Nepalese carpets. The international appeal of Nepalese carpets is their handcrafted nature and their unique Tibetan-style designs.

The carpet industry in Nepal has been booming in recent years. However, its long-term sustainability poses a number of issues. The industry is totally dependent on imported raw materials. The Department of Livestock has, for some years, been involved in sheep-breeding research but has not yet been successful in developing a suitable multipurpose breed for the hills and mountains of Nepal. It is unlikely that Nepal can locally meet the demand for wool of suitable quality for its carpet industry in the foreseeable future.

**Table 3.18: Import of Wool by Country of Origin and Year (mt)**

| Country of Origin | 1983/84 | 1984/85 | 1985/86 | 1986/87 | 1987/88 |
|-------------------|---------|---------|---------|---------|---------|
| New Zealand       | 251     | 324     | 221     | 1,302   | 5,061   |
| Tibet             | 1,121   | 754     | 1,343   | 753     | 1,650   |
| China             | -       | 788     | 1,375   | 1,667   | -       |
| India             | 151     | 192     | 85      | 493     | 279     |
| Other             | 57      | 74      | 31      | 185     | 177     |
| Total             | 1,588   | 2,133   | 3,055   | 4,400   | 7,177   |

Source: ADB 1990a

A number of operations in carpet manufacturing (cleaning the wool, bleaching, dyeing, etc) require considerable quantities of fuelwood as the main energy source. Because of the heavy demand for fuelwood, the carpet industry has not been environmentally friendly.

In recent years, other countries have tried to break into the European market for Tibetan carpets. China attempted to capture the export market with lower-priced products but could not produce the quality required by Europeans. India also attempted to imitate Nepalese designs but was unable to match the wool quality and the use of traditional Tibetan motifs. However, both these countries have a number of other comparative advantages such as market access by sea freight (2 per cent of the c.i.f. cost compared to Nepal's 18 per cent of the c.i.f. as airfreight cost), local dyes and cotton supplies, and other export incentives.

About 97 per cent of Nepalese carpet exports were to Europe in 1987/88. Of the total exports, Germany alone absorbed more than 50 per cent. Thus, it is imperative for the long-term sustainability of the carpet industry that Nepal open new markets, such as the U.S.A., in order to reduce dependency on a single market in Europe.

### *Portering*

Portering is one of the few alternative traditional forms of employment for poor people during the slack agricultural months. Landless or marginal farmers, in general, and those belonging to the lower occupational castes, undertake portering to earn cash income needed for purchasing household necessities. A study conducted in West Central Nepal found portering to be a part-time activity contributing a small share to households income (Seddon et al. 1979:99). The mean number of portering assignments for a sample of thirty porters (interviewed in Syangja and Tanahu districts, West Central Nepal) was found to be eighteen trips per year, usually concentrated in the winter from October to April. Portering contributed 8.2 per cent of the total household income and 38.2 per cent of the total non-agricultural income in Rasuwa and 2.6 per cent of the total household income and 17.8 per cent of the non-agricultural income in Nuwakot (DRCG 1982). The importance of portering therefore is also region-specific.

## Wages and Hiring Practices

There are two kinds of porter, namely, wage-porters (those who work for others and receive wages) and owner-carriers (those who carry their own loads). In the context of off-farm income and employment, only wage-portering is considered here. Portering plays an important role in the hill economy. Yet porters are not in a strong position to bargain because the supply of porters far exceeds the demand (New Era 1989). Most porters accept a going rate which applies more or less universally and is normally calculated on a per unit basis between origin and specified destinations. An average porter generally earns Rs 30 - Rs 40 per day. During festivals and during agricultural peak seasons, porters are in short supply and the wage rate tends to rise in these months.

The hiring of porters is done in many ways. Businessmen usually hire porters from the same village as their own so as to minimise the risk of dishonesty. In organised trekking or mountaineering, porters are generally hired collectively by the agency or the *Sirdar*, the trek or mountaineering guide. Business or individual trekkers who are not familiar with porters on their desired route also employ commission agents to hire porters. Sherpa porters from Nepal are globally known for their mountain climbing and portering skills.

## Employment Implications

It can be seen that the demand for portage of all kinds (both paid and owner-carried) is extremely variable from place to place and is mostly explained by the type and quantity of regional exports, since imports are less variable in type and quantity per head (Seddon et al. 1979:92). The development of administrative centres has increased the demand for import items which in turn has increased the demand for portage. Increased tourism, especially mountaineering and trekking, has also led to the rise in demand for porters. In 1988, the total number of trek permits issued reached 61,273 of which 22,063 were agency-handled. Assuming that individual trekkers were usually backpackers, and only agency-handled trekkers hired porters, the total employment in the portering business created by trekkers alone can be estimated to have been about 1.1 million mandays in 1988. This estimate is based on the assumption that each trekker on an average hires two and half porters for 20 days.

## Scope/Constraints

Since other means of surface transportation are as yet undeveloped, in Nepal, because of the difficult topography, portering is the only viable means of transporting agricultural produce, basic consumer goods, and inputs for agricultural production. The construction of the north-south hill roads has displaced porters in some areas since it is cheaper and quicker to transport goods by truck rather than by porters. However, studies show that even in places where major link roads, such as the Sidhartha Rajmarg, Arniko Rajmarg, Prithvi Raj Marg, and Lamo Sangu-Jiri Road are already complete, off-road transport linkages are being maintained by wage porters. However, long-distance portering has decreased considerably as a result of the construction of major roads.

## Small Business

In recent decades small-scale commercial activities have proliferated in the urban areas and along the highways. These activities are diverse and include small retailers or petty traders, pedlars, and hawkers in urban centres and also in remote villages. Small businesses predominantly use family labour. A

survey of "business" establishments in the urban areas of the west-central hills in 1974-75 revealed that the proportion of business without paid employees varied from 89 per cent in the towns of the hills that lie off the road to about 35 per cent in the towns of the *terai* (Blaikie et al. 1980:207).

In rural markets and urban areas, pedlars and hawkers constitute the largest business stratum and also the most vulnerable. A survey of 1,346 pedlars and hawkers in Kathmandu revealed that, in the trade sub-sector, 47.6 per cent were engaged in the textile and garment trade, 14.5 per cent in fruits and vegetables, and the rest in cosmetics, tea and sweets, cigarettes and nuts, shoes, bags and containers, and roasted maize.

In the service sector, out of 202 pedlars, 35.6 per cent were engaged in shoemaking/repairing, 24.7 per cent in hair-cutting, 19.8 per cent in tailoring, 12.4 per cent in watch repairing, and 7.4 per cent in gas lighter refilling (New Era 1988).

There are three main categories of small businesses, namely, shop-keeping, catering, and service and repair businesses.

In recent years, there has been a visible increase in the number of small shops that stock household goods and groceries. Such an increase has been a function of many factors: increasing pressure on rural income (which encourages the taking up of side business), growth in demand for imported goods, and low entry costs into such businesses.

Hotel and catering activities are mainly associated with the growth of towns and market centres, particularly along the roads. Such establishments provide food and drinks for travellers. The most common type is the traditional *bhatti* (lodge). In tourist areas such as the Annapurna Conservation Area and the Everest Region, lodge-keeping and catering are important activities.

Service and repairing businesses include such activities as tailoring, hair-cutting, shoe repairs, watch repairs, radio repair services as well as roadside workshops of various kinds. These activities require some skills which are obtained through informal on-the-job training.

### **Off-farm Employment within Agriculture**

Off-farm employment within the agricultural sector includes employment in sectors other than traditional crop production and those carried out for cash earning opportunities. This includes employment opportunities and potentials in livestock and poultry, horticulture, vegetables, medicinal plants, beekeeping, sericulture, and hand-made paper.

#### *Livestock and Poultry*

Livestock is an integral part of the agricultural production system. It provides manure, draft power, and the means of transportation for agricultural produce. Livestock products, such as meat, skin, milk, ghee, draft power, and manure, contributed an estimated 15 per cent to the GDP and 28 per cent to the total agricultural production in 1986/87. However, the share of livestock in GDP as well as in agricultural production has decreased in the last 10 years, following the decline in the share of the agricultural sector as a whole in the GDP (as seen in Table 3.19).

Livestock are particularly important in the hill and mountain region where they contribute about 20 per cent to the household cash income. The contribution to cash income from livestock as part of the total household income in four hill districts of Rapti was estimated to be 20 per cent in Rukum, 16 per cent in Rolpa, and about 12 per cent in Pyuthan and Salyan (APROSC 1990). Livestock were the source of 22.6 per cent of the gross household income in Rasuwa and 23.0 per cent in Nuwakot (DRCG 1982). Another study conducted in the Koshi Hill Area estimates that about 55 per cent of the total farm family income comes from the sale of livestock and livestock products (Conlin and Falk 1979). The share of income from livestock gives some indication of the magnitude of off-farm employment it provides.

**Table 3.19: Share of Agriculture and Livestock in the Gross Domestic Product**

| (In percentage)                         |         |         |
|-----------------------------------------|---------|---------|
| Share in GDP                            | 1976/77 | 1986/87 |
| 1. Agriculture                          | 64      | 58      |
| 2. Livestock                            | 18      | 15      |
| 3. Livestock in Agricultural Production | 29      | 28      |

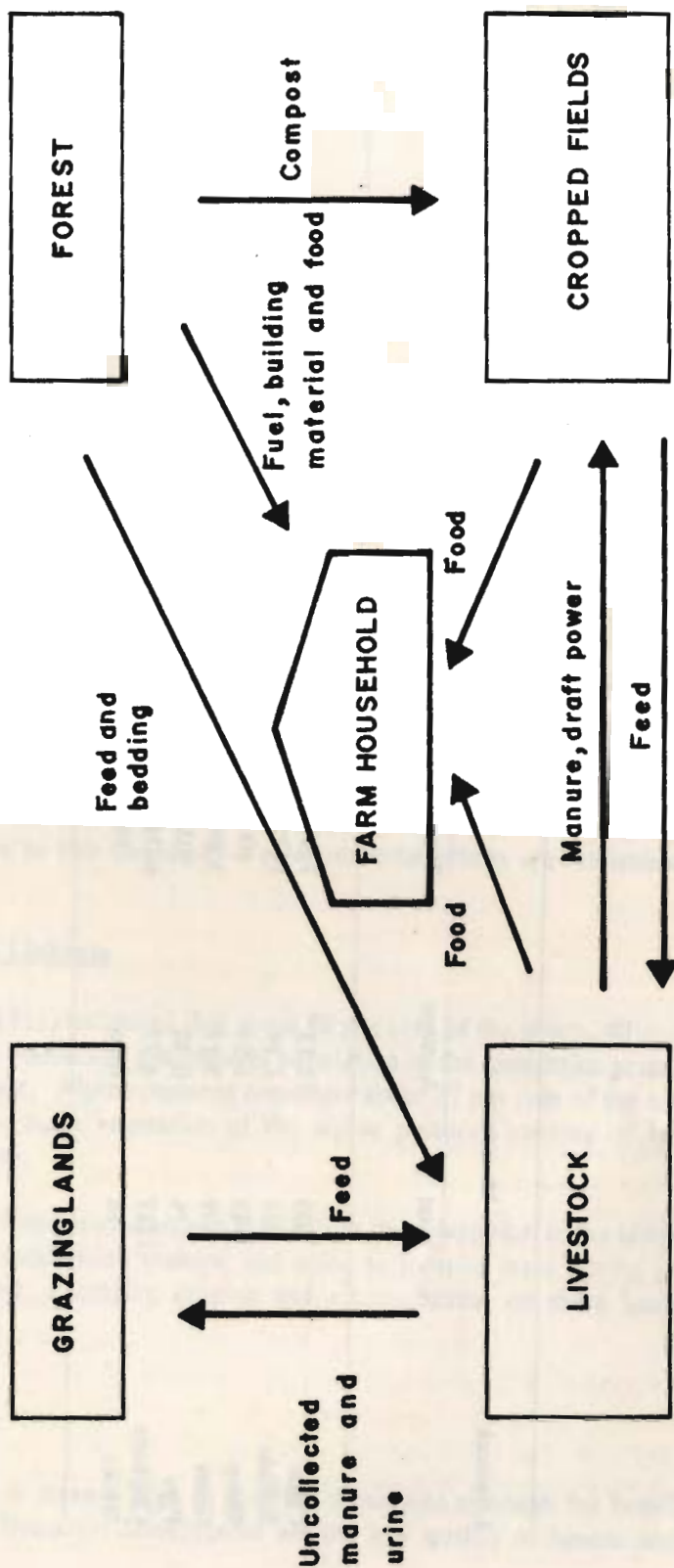
Source: ADB 1990a

The livestock sector is well integrated with the agricultural sector in Nepal and therefore it is difficult to isolate the manpower involved in this sector from the agricultural sector in general (Fig. 3.3). However, the number of people engaged in livestock-rearing as their main occupation is estimated to be about 23,000 in the mountains/hills on the basis of the occupational breakdown obtained from a sample survey (NRB 1988) and the estimated economically active population in 1990.

Most rural households keep several types of livestock and poultry. The total number of different types of livestock and poultry and the average animal holding per household are presented in Table 3.20. In general, mountain households keep more livestock than hill and *terai* households. Also, the average holding of livestock depends upon income level, landholding size, ethnicity, climatic conditions, etc. Table 3.20 shows that the average holdings of all livestock types, apart from buffaloes, was higher in the mountains than in the hills.

The mountain and hills together also have a very large proportion of the sheep, goat, and pig population in the country. The average holding of cattle in Nepal is one of the highest in the world. The large holding size is mainly due to the legal prohibition on the slaughter of cows. Large animal holdings have led to a shortage of pasture and poor nourishment, resulting in low productivity.

**FIG. 3.3 AGRICULTURE, FORESTRY AND LIVESTOCK INTERRELATIONSHIPS**



Source : Land Resource Mapping Project, 1986

Table 3.20: Livestock Number and Average Number of Livestock Owned per Household 1989

| Livestock | (Livestock Population in '000) |         |       |         |        |         |                                                                |      |
|-----------|--------------------------------|---------|-------|---------|--------|---------|----------------------------------------------------------------|------|
|           | Mountains                      |         | Hills |         | Nepal  |         | Livestock Population in hills/mountains as a per cent of Nepal |      |
|           | Total                          | Average | Total | Average | Total  | Average |                                                                |      |
| Cattle    | 800                            | 3.13    | 3243  | 2.33    | 6285   | 2.00    |                                                                | 64.3 |
| Buffalo   | 303                            | 1.19    | 1772  | 1.27    | 3003   | 0.96    |                                                                | 69.1 |
| Sheep     | 385                            | 1.51    | 400   | 0.29    | 910    | 0.29    |                                                                | 86.3 |
| Goats     | 809                            | 3.17    | 3099  | 2.23    | 5304   | 1.69    |                                                                | 73.7 |
| Pigs      | 76                             | 0.30    | 319   | 0.23    | 548    | 0.17    |                                                                | 72.1 |
| Chickens  | 1217                           | 4.77    | 6431  | 4.62    | 10,159 | 3.23    |                                                                | 75.3 |
| Ducks     | 16                             | 0.06    | 58    | 0.04    | 375    | 0.11    |                                                                | 19.7 |

Source: DFAMS 1989

## Livestock-Crop Production Linkage

The major source of feed for livestock is crop by-products. Paddy, wheat, millet, and barley straw and maize stalks are the by-products commonly used for feeding cattle and buffalo while rice husks and some cereal crops are used to feed pigs and poultry. The availability of crop by-products is directly related to the size of cultivated area, cropping intensity, and cropping patterns in the region. An estimate shows that the crop by-products constitute 15 per cent of the Total Digestible Nutrients (TDNs) of livestock in the mountains and 35 per cent in the hills. The contribution of crop by-products to TDNs is as much as 75 per cent in the *terai* (APROSC 1986a).

Animal draft power is an indispensable means of cultivating land and threshing crops in the hills/mountains especially where mechanical power is not available. Thus, the primary importance of cattle is often measured in terms of manure and draft power, leaving milk and other products as secondary only. This is also the reason why livestock bred in Nepal remain of a lower quality.

The rate of application of chemical fertiliser is very low in the mountains and hills, and, therefore, farming is mainly dependent upon animal manure. The total animal manure production was estimated to be 8.8 million mt in the mountains and 39.8 million mt in the hills in 1985. The total animal manure production in the mountains and hills was estimated to be equivalent to 281,000 mt of nitrogen, 68,000 mt of phosphorus, and 23,200 of potassium (APROSC 1986a).

## Livestock-Forest Linkages

Forests are the main source of fodder and animal bedding for livestock. Estimates of the contribution of forests to the total supply of fodder for livestock vary. While Pandey (1982) estimated that about 35 per cent of fodder in the mid-hills was supplied by the forests, Rajbhandari and Shah (1981) estimated their contribution to be about 20 per cent in 1980. A rising livestock population indicates an increasing pressure on the forests. An increase in livestock-based activities would therefore demand changes in the management of livestock so that the negative environmental effects are minimised.

## Livestock-Pasture Land Linkages

Rajbhandari and Shah (1981) estimated that about 80 per cent of the sheep, 40 per cent of the goats, and 23 per cent of the cattle (including yak/*chauri*) population in the mountains graze on alpine pastures for about 4-5 months in a year. Alpine pastures constitute about 57 per cent of the total grazing lands in the Himalayan Range. The main vegetation of the alpine pastures consists of Juniper, Rhododendron, Berberis, and Agrophyres.

The grazing lands in the Nepalese mountains occur from the subtropical to the temperate zones in patches. Livestock also provide uncollected manure and urine to pasture areas during grazing and these have nutrient value. However, excessive grazing and encroachment on these lands have depleted most vegetation.

## Scope/Constraints

The livestock population is already high in the hills/mountains although the breeds are of poor quality. The main constraints to livestock development are the low quality of breeds and the unavailability of

fodder to feed livestock. The success of livestock development in future depends upon improvements in the management of resources, particularly pasture land.

Future increases in livestock production cannot be expected from an increase in livestock numbers alone but by improving the productivity of existing animals through breed improvement. Any expansion of livestock activities is likely to place increasing stress on the environment. Thus, there is a need to focus on the individual livestock rearer and the farming systems in which they operate. Since most livestock use forests and common grazing lands, their impact on forests and on the environment should remain a major concern.

### *Horticulture*

Fruit cultivation has been practised for centuries in different parts of the country. However, such cultivation has been mostly limited to backyard kitchen gardens or terrace bunds, and the fruits produced are used for home consumption. Only a limited number of commercial orchards exists at present in the hills and mountains.

In the subtropical region (1000-1500 m) in the hills, citrus fruits such as mandarin oranges, sweet oranges (junar), limes, and lemons are commercially grown in small patches. Mandarins and sweet oranges thrive best at altitudes ranging from 800-1400m. The optimum range for limes is from 700-1400 m and for lemons 600-1400m.

In the case of the temperate region (1800-3500m), the main fruits that can be grown successfully are apples, pears, and walnuts. Apples and walnuts thrive well at altitudes of 1800-2800 m whereas pears thrive at altitudes of 1400-2500m.

The areas/districts prioritised for the cultivation of different kinds of fruit are shown in Table 3.21. Although it is not an exhaustive list, it provides some indication of the prospects in horticulture.

### Linkages with other Sectors

Horticulture not only helps in the growth of the non-agricultural sector but also supports agricultural development. During the early periods of orchard establishment there are considerable spaces in between the young trees which could be used for intercropping. The leaves of the fruit trees act as manure for these inter-crops. Furthermore, the consumption of fruits has considerable nutritional value for farm households. The promotion of horticulture also offers employment in several subsidiary industries such as preservation, dehydration, packaging, transportation, and refrigeration. Apart from generating employment, and thereby increasing income, the cultivation of fruit trees, particularly in the hills and mountains, helps to improve the environment and also to reduce the problems of soil erosion and landslides.

### Scope/Constraints

A number of factors have inhibited horticultural development in the Nepalese hills. The potential of many areas for commercial fruit production is constrained owing to the lack of infrastructural development. Roads are essential for transporting the produce to markets.

**Table 3.21: Priority Areas for Commercial Fruit Development in the Hills/Mountains During the Seventh Plan Period**

| Fruits     | Priority Areas (Districts)                                                                                                                                                             |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Citrus     | Dhankuta, Bhojpur, Tehrathum, Sankhuwasabha, Panchthar, Ilam, Sindhuli, Ramechhap, Dhading, Kavrepalanchok, Gorkha, Lamjung, Tanahu, Syangja, Kaski, Palpa, Dailekh, Salyan Dadeldhura |
| Apples     | Solukhumbu, Sindhupalchok, Rasuwa, Mustang, Jumla, Kalikot, Dolpa, Rukum, Doti, Baitadi, Darchula                                                                                      |
| Bananas    | Kavrepalanchok, Dhading, Nuwakot                                                                                                                                                       |
| Pineapples | Dhading, Nuwakot, Sarlahi, Chitwan                                                                                                                                                     |
| Walnuts    | Jumla, Kalikot, Bajhang, Darchula, Baitadi, Dolpa, Rukum                                                                                                                               |
| Pears      | Dhankuta, Bhaktapur, Lalitpur, Kavrepalanchok, Dhading, Makwanpur, Sindhupalchok, Nuwakot, Rasuwa, Palpa                                                                               |
| Grapes     | Manang, Mustang                                                                                                                                                                        |

Source: NPC 1986

Fruit growers are at present facing serious problems because of the inadequacy of processing facilities. The fruit growers, particularly marginal and small farmers, are facing the problems of fruit storage in their homesteads. Often they are compelled to sell their produce at low prevailing prices because of the lack of storage facilities. Processing and storage also represent new opportunities for entrepreneurs, particularly in areas that have electricity.

In most areas, the fruits are cultivated without irrigation. The production of some fruits may be increased substantially by providing irrigation facilities where possible. Heavy rainfall and hail seriously affect the fruit production in terms of both quantity and quality in some areas of the country. Small and marginal farmers do not grow fruits because of the long gestation period of these crops and also due to the fear of food scarcity. They are also unaware of improved cultivation practices for horticultural crops; such as proper spacing, manuring, pruning, etc. Extension services are weak and are inadequate for the promotion of fruit cultivation. Apart from the above constraints, factors such as ignorance, the lack of adequate information, financial and credit-related problems, and the land tenure system also hinder the development of horticulture.

A wide range of climatic variations makes cultivation of different kinds of tropical, sub-tropical, and temperate fruits possible in Nepal. At present, there are sufficient, terraced marginal lands under crop cultivation which may profitably be brought under fruit crops. The depth and texture of the soils are suitable for fruit cultivation on such marginal lands. Promotion of fruit cultivation on hilly terrain is helpful in conserving the soil which erodes every year as a result of traditional cropping systems.

There is abundant surplus labour in the hill regions. Many people migrate in search of employment to the *terai* as well as other urban areas and India. Fruit cultivation needs more labour and this offers additional employment and income and thus could reduce migration.

The present production of fruit in Nepal has not been able to meet the internal demand, the deficit being met by importing large quantities of fresh, as well as preserved, fruit products from India. Similarly, increasing population, change in food habits, and the rise in the number of tourists every year increase the demand for fruit and fruit products. There is, therefore, great scope for increasing the production and processing of different kinds of fruit to meet internal demand as well as for export.

Compared to traditional crops, cultivation of different kinds of fruit is, in fact, more profitable. There are comparative advantages for particular fruits, such as citrus, which are not grown in the northern part of India adjoining the Nepalese border. Mandarin and sweet oranges may find easy markets in the towns and cities of Uttar Pradesh and Bihar in India.

### *Vegetable Farming*

In recent years, there has been a growing interest in vegetable production and consumption as a result of greater appreciation of the food value of vegetables. Since vegetables are an important component of the Nepalese diet, a significant proportion of the total income of households is spent on them.

The variations in altitude and climatic conditions within short distances in Nepal provide great opportunities to grow different kinds of vegetables in different altitudinal zones and micro-environments. Many kinds of vegetables such as cucurbits, colocasia, ladyfingers, cow-peas and chillies are cultivated at altitudes below 1400 metres in summer, while radishes, broad-leaved mustard, tomatoes, brinjals, potatoes, onions, and peas are grown in the winter. At higher elevations, beans, radishes, peas, tomatoes, and potatoes are grown as summer crops.

Vegetable cultivation has received priority emphasis in government plans only since the Fifth Plan (1975-80). During the plan period, 96,000 hectares of land were estimated to be under vegetable cultivation. To increase vegetable production, extension and research programmes were launched in different areas of the country. In the Sixth Plan (1980-88) the target was to increase vegetable acreage by 40 thousand hectares and production by 800,000 mt. During the Seventh Plan (1985-1990), it was envisaged that the area under and the production of vegetables were to be increased by 2,500 hectares and 230 thousand mt, respectively.

### Area and Yield

The Perspective Plan for Agriculture (APROSC 1986a) claims that the area and production of vegetables reported in government statistics were exaggerated. Based on the reported area and production, the yield of vegetables comes to 5.2 mt per hectare. This is lower than the yield observed in the field. The perspective plan estimated that the total area and production of vegetables in 1985 was around 79,000 hectares and around 596,000 mt respectively for the whole country (Table 3.22).

Table 3.23 shows the area and production of vegetables in different regions of the country. The mountain and hill region produces around 31,000 mt of vegetables. This comes to about 38.6 per cent of the country's total vegetable production.

It is also evident from Table 3.23 that the yield of vegetables is lower in both the hills and mountains compared to the country as a whole.

**Table 3.22: Area, Production, and Yield of Vegetables (1985)**

| Data Reported   |         |  | Data Adjusted   |         |  |
|-----------------|---------|--|-----------------|---------|--|
| Area (ha)       | 138,000 |  | Area (ha)       | 79,230  |  |
| Production (mt) | 714,600 |  | Production (mt) | 595,891 |  |
| Yield (mt/ha)   | 5.2     |  | Yield (mt/ha)   | 7.5     |  |

Source: APROSC 1986a

**Table 3.23: Area and Yield of Vegetables in Different Regions, 1990**

|        | Mountains |       | Hills  |       | Mountains/Hills |       | Nepal (Total) |       |
|--------|-----------|-------|--------|-------|-----------------|-------|---------------|-------|
|        | Area      | Yield | Area   | Yield | Area            | Yield | Area          | Yield |
| Summer | 4,300     | -     | 18,700 | -     | 23,000          | -     | 48,100        | -     |
| Winter | 1,000     | -     | 17,400 | -     | 18,400          | -     | 43,300        | -     |
| Total  | 5,300     | 5.9   | 36,100 | 7.7   | 41,400          | 7.5   | 91,400        | 8.8   |

Source: APROSC 1986a

### Linkages with Other Sectors

Vegetable cultivation is interrelated with both agricultural and non-agricultural activities. Increase in vegetable production is positively related to absorption of the surplus and/or unemployed labour force. In areas where there is large-scale production of vegetables, jobs are created in portering and in the transportation and marketing of vegetables. Vegetable processing is a potential activity with significant backward linkages as it provides the impetus to increase production. Vegetable cultivation not only increases the net cash income of farmers but also enhances the nutritional status of households. Production of traditional farm tools by blacksmiths and small-scale repairing services provided by craftsmen are some of the forward linkages of vegetable cultivation.

A study (Shrestha and Paudel 1989) conducted in Dhading District shows that vegetable farming resulted in the increase in the net cash income of farmers. Moreover, it shows that vegetable production provides significant employment opportunities in cultivation, portering, selling, and marketing the produce. Another study (APROSC 1982) shows that 2.3 per cent of the total income of farm households is generated by vegetable sales. Several studies show the impact of vegetable farming in terms of increasing the net cash income of farmers and employment of additional labour (DFAMS 1984).

### Scope/Constraints

The production of vegetables in Nepal is constrained by numerous factors. Most people do not realise the importance of vegetables in their daily diet and therefore are not motivated to cultivate vegetables

even in areas where they can be grown. Farmers are unaware of improved varieties. The present extension service is poor and unable to provide adequate technical support to growers. Unavailability of improved seeds and fertilisers is an additional problem. Lack of irrigation facilities, lack of credit facilities, and poor transportation hamper vegetable farming on a commercial scale. In areas where vegetable farming has picked up, such as Dhading near the Kathmandu Valley, farmers lack organised marketing channels. As a result the benefit is being received more by middlemen than by farmers.

Because of the wide range of climatic variations in the Nepalese hills, numerous kinds of vegetables and vegetable seeds can be grown in different seasons at different places in the country. An opportunity to commercialise vegetable production in the hills stems from the growing demand for vegetables inside the country. Production of off-season vegetables in areas with road access also provides export possibilities, particularly in the urban centres of the *terai* and the Indian Plains. Seed potatoes already have a considerable market in India.

### *Medicinal Plants*

In Nepal, only about 20 per cent of the populace benefit from modern health services. Most rely on traditional remedies using medicinal plants. The main sources of such plants are the hill forests. However, a number of medicinal plants are also found and used in the tropical zone of Nepal.

Studies show that about 31 per cent of the medicinal and aromatic plants in Nepal grow in the tropical and subtropical zones. The temperate zone produces about 55 per cent, and about 14 per cent of all medicinal plants are produced in the subalpine and alpine zones (Malla 1982).

Traditionally, medicinal and aromatic plants have been collected from the wild. However, commercial use of medicinal plants has been encouraged and has greatly improved with the establishment of the Royal Drugs Research Laboratory (RDRL). A number of species (300) have been screened by RDRL and the products extracted are diosgenin, reserpine, alkaloids of belladonna, glycosides of digitalis, lemongrass oil, rosin turpentine, menthol, etc. Similarly, different types of herbs have been used by the "Singha Durbar Vaidyakhana", an ayurvedic drug establishment, in the preparation of ayurvedic drugs derived from medicinal plants rather than from synthetic chemicals.

### Linkages with other Sectors

The collection and production of medicinal and aromatic plants have a direct and positive impact on employment generation, particularly for rural collectors in the remote areas of the hills and mountains. At present, the Government has a few centres in the hill/mountain region where medicinal plants are cultivated. With a coordinated set of incentives and extension services, mountain households can be encouraged to take up the cultivation of medicinal plants.

Medicinal plants in their raw forms are an important export item. However, the value-added is insignificant from such exports. Processing of medicinal plants in the hills can provide additional employment as well as an increase in the value-added from such exports. In the fiscal year 1988-1989, about 13.7 million rupees worth of herbs were exported to India.

The trade in medicinal plants alone generates considerable seasonal employment in the collection, transportation, processing, and in local and wholesale dealership, although the exact magnitude of such employment is not known.

## Scope/Constraints

Although the collection of medicinal plants provides gainful employment, a number of factors have inhibited its development. Inadequate transportation facilities, lack of technical know-how, lack of organised marketing channels, and lack of processing facilities in rural areas are some of the problems hindering the development of such activities. Indiscriminate harvesting of medicinal plants is reported to be a problem in some areas.

There are also a number of factors favourable to the development of medicinal plant-related activities. These include a wide range of climatic conditions, the potential for exporting raw or processed medicinal plants to neighbouring countries, the labour-intensive nature of the activities, and so on. Initiatives need to be taken in the processing of medicinal plants within the country. Many medicinal plants can be cultivated by farmers in a sustainable manner and can be more remunerative than traditional crops. Extension and support services need to be provided for their development.

### *Handmade Paper*

Handmade paper-making from the fibre of Lokta bark (Danphe) is an important traditional cottage activity in many hill and mountain areas of Nepal. This industry, at present, provides direct employment to about 1,500 persons, mostly from very poor families living in remote and backward areas (FINNIDA 1988).

Lokta shrubs grow wild in the altitudinal zone from 1500-3000 metres mostly as undergrowth in oak, fir, and rhododendron forests. There has been very little work done on the silviculture of Lokta in Nepal. The Forest Survey and Research Office (FSRO) of the Department of Forests conducted a survey on Lokta vegetation in 1984. The survey found that a total of 110,479 tons of growing stock of Lokta are distributed throughout 53 districts. The survey results are summarised by development region in Table 3.24 and the districts with more than 100 tons of sustainable yield are shown in Figure 3.4. Table 3.24 reveals that over-exploitation of Lokta (bark) has taken place in the Central and Western Development regions and the Lokta remains underutilised in other regions.

The paper and its products have both domestic and export demands. In the year 1988/89, 1.81 million rupees worth of paper and paper products were exported from Nepal to overseas countries (TPC 1989).

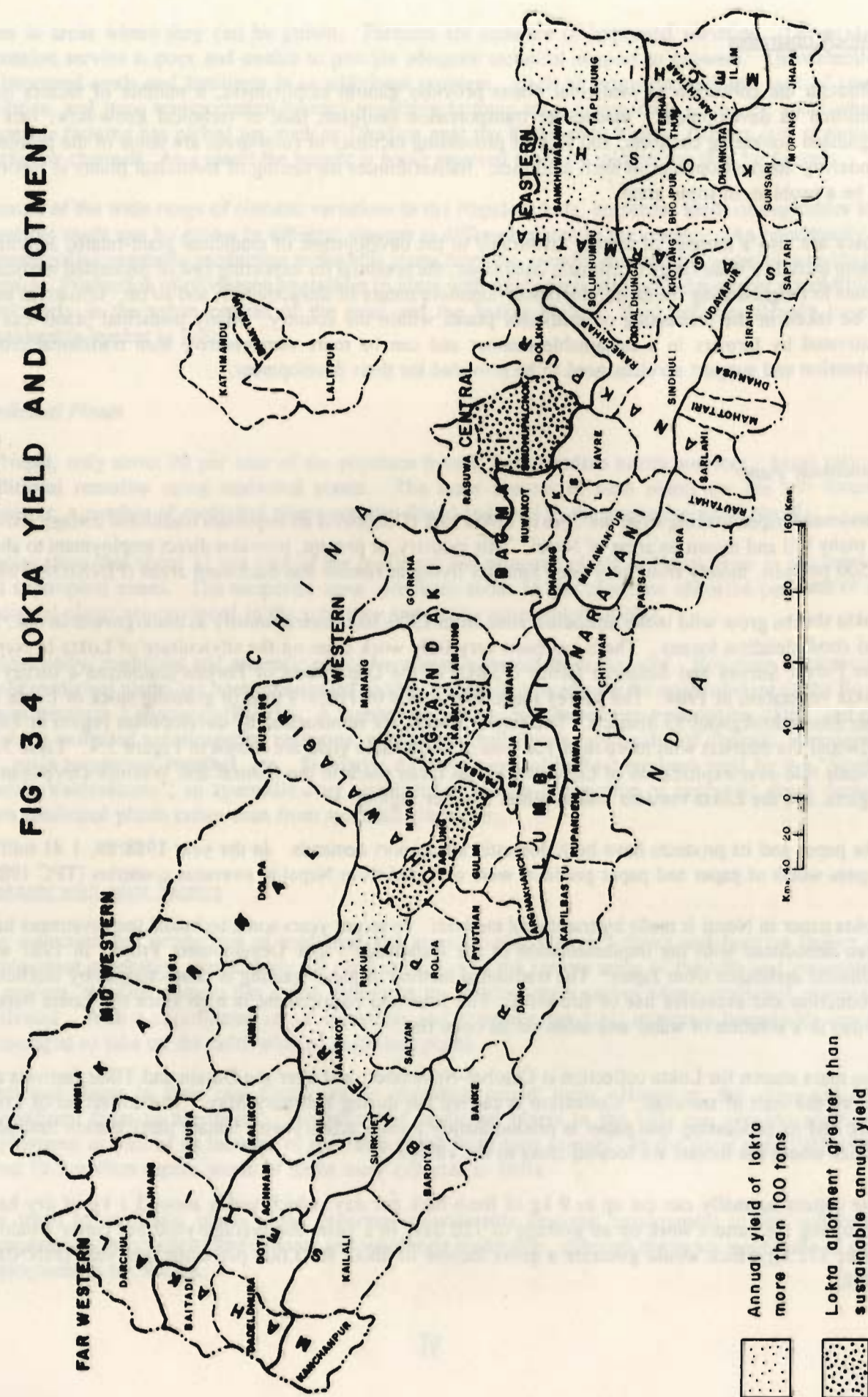
Lokta paper in Nepal is made by traditional methods. In recent years some technical improvements have been introduced with the implementation of the Handmade Paper Development Project in 1981 with technical assistance from Japan. The traditional method of paper-making is characterised by inefficient production and excessive use of firewood. The firewood requirement is high since the Lokta bark is boiled in a solution of water and ashes on an open fire.

The main season for Lokta collection is October-November, just after the Dasain and Tihar festivals and before the start of snowfall. Collection is carried out during February-May. The collection of Lokta bark and its processing into paper is predominantly a male activity with female participation limited to places where the forests are located close to the village.

The cutters normally can cut up to 9 kg of fresh bark per day, which yields about 3.1 kg of dry bark. Assuming the cutters work on an average of 120 days in a year, the average yield per cutter would be about 372 kg which would generate a gross income of about Rs 3,600 per cutter per year (FINNIDA 1988).

# NEPAL

## FIG. 3.4 LOKTA YIELD AND ALLOTMENT



## Implications for the Resource Base

As stated, the traditional method of processing Lokta bark uses enormous amounts of firewood both for digesting the bark and drying. The high consumption of fuelwood is the principal negative impact of this activity. It is estimated that approximately 800 kg of firewood are required for making 200 sheets of paper (Acharya 1976:81). Another study estimates that 20 kg of fuelwood are required to produce 1 kg of paper (FINNIDA 1988). Hence handmade paper-making has the potential to damage the environment through over-exploitation of forest resources. The existing regulations for Lokta collection recommend a 6 year cycle for its extraction from a given area, but such regulations are probably not adhered to by the Lokta collectors in the absence of effective monitoring by the forest office. The improved methods of Lokta processing, popularised by the Handmade Paper Development Project, are the use of chemicals and improved stoves; the latter is reported to have reduced firewood requirements by as much as 75 per cent. Such technical innovations include the use of caustic soda, calcium, lime, and sodium hydroxide and the use of alternative sources of energy, e.g., electricity and kerosene. In most paper-making areas in Nepal, alternative sources of energy are non-existent and the chemicals are not readily available. Most areas do not have road access.

**Table 3.24: Estimates of Lokta (bark) Growing Stock, Sustainable Annual Yield, and Allotment to Hand-made Paper Industries**

| Development Region | Growing Stock of Lokta in Tons |                     | Total Stock (in tons) | Sustainable Annual Yield <sup>1</sup> (in tons) | Annual Lokta Allotment (in tons) | No. of Allotments (in tons) |
|--------------------|--------------------------------|---------------------|-----------------------|-------------------------------------------------|----------------------------------|-----------------------------|
|                    | Elevation 1500-2300            | Elevation 2300-3000 |                       |                                                 |                                  |                             |
| Eastern            | 8,598                          | 58,667              | 67,265                | 1,897                                           | 53                               | 11                          |
| Central            | 28                             | 2,320               | 2,348                 | 59                                              | 250                              | 17                          |
| Western            |                                | 1,228               | 8,288                 | 9,516                                           | 269                              | 11                          |
| Mid-Western        |                                | 5,638               | 16,555                | 22,193                                          | 696                              | -                           |
| Far-Western        |                                | 2,589               | 6,568                 | 9,157                                           | 294                              | 19                          |
| Total              |                                | 18,081              | 92,398                | 110,479                                         | 3,215                            | 596                         |
|                    |                                |                     |                       |                                                 |                                  | 44                          |

Source: FINNIDA 1988

- 1/ At elevations between 1,500m and 2,300m, the assumed harvesting rotation is 10 years and between 2300m and 3000m, 20 years, which gives the sustainable yield as 10% and 5 % of the growing stock respectively. To allow for restricted accessibility the figures have been further reduced by 50%.

## Employment Generation

Lokta collection provides off-farm employment to the low-income households living in the high hills and mountains. In most of these areas, paper-making is often the only source of off-farm income to supplement agricultural income. It is estimated that about 344,000 mandays are spent annually in hand-

made paper production (FINNIDA 1988). In terms of employment generation, Lokta collection and paper-making have further potentials for expansion. The estimated total sustainable yield (3215 mt/yr) is much higher than the current quota allocated (596 mt/yr). However, the domestic market is limited and the export market needs to be broadened before increasing production of handmade paper.

### Scope/Constraints

The main problem with handmade paper-making in the hills is the use of fuelwood and the potential over-exploitation of Lokta bark through the lack of proper management and monitoring. The high consumption of fuelwood for boiling the fibres and in making ash in traditional paper-making has been mentioned earlier. The technique of paper-making has, therefore, to be improved in terms of fuel consumption. It is also equally important to revive traditional techniques to make the finest quality paper.

The high cost of transport of Lokta bark from cutters to paper-makers, which varies from about Rs 1.25 to Rs 9.2/kg, according to distance, is another constraint to the development of the handmade paper industry.

### Sericulture

The science of producing, processing, and making silk fabrics is collectively known as sericulture. Silk fabrics are known under different names such as mulberry silk, tussah silk, muga silk, and eri silk. Among these, mulberry, tussah, and muga silk are secreted into filament yarn and eri silk is secreted into staple yarn. Mulberry silk accounts for almost 98 per cent of the total global silk output.

Sericulture is a relatively new agro-based rural industry in Nepal. It involves the pre-cocoon activities of mulberry cultivation and silkworm rearing and the post-cocoon activities of processing and making silk fabrics. Mulberry, the specific food plant of the silkworm, is native to Nepal. This plant exists in numerous species and varieties from the *terai* to the mid-hills. Mulberry could also be cultivated on slopes and unproductive marginal lands. The agro-climatic and socioeconomic conditions in Nepal are favourable for the development of sericulture. Sericulture is a labour-intensive industry requiring low capital investment and is ideal in the Nepalese context.

In Nepal, efforts to develop sericulture started in the early 1970s. A nucleus station to promote sericulture was established by the Government at Khopasi in Kavrepalanchok District in 1975. In recent years, sericulture has begun to gain momentum. Mulberry plantation is estimated to cover about 300 ha in 14 districts (FAO 1989).

The number of farmers involved in mulberry cultivation is estimated to be 500, of which 300 are estimated to be in Ilam, 60 each in Kavrepalanchok and Syangja districts, and about 10 to 12 each in Sindhupalchok, Dhading, Tanahu, and Palpa districts. However, the number of farmers involved in the cocoon production stage is estimated to be only 160, mostly in Ilam (60), Kavrepalanchok and Syangja (30 each), and Dhading (about 10).

### Linkages of Sericulture with Other Sectors

Mulberry plants can be grown as low bushes or deep-rooted forest trees on marginal slope land. Thus mulberry can be used to prevent landslides and soil erosion problems. Mulberry bushes can be planted

as a single line fence around fruit orchards. Intercropping of mulberry with wheat or soyabean is also possible. Mulberry leaves provide nutritious fodder for livestock. The silkworm litter and droppings can be used for livestock feed.

Sericulture is an extremely labour-intensive industry, although the labour involved is not hard, making it suitable for family involvement. It is estimated that mulberry cultivation on one hectare of irrigated land can provide employment to 13 persons throughout the year in the various activities of mulberry cultivation, silkworm rearing, weaving, etc (FAO 1989).

Since sericulture does not require large investments, small and marginal farmers also can grow mulberry trees in their backyards and collect leaves for silkworms to produce cocoons. Thus, the development of sericulture can reduce seasonal out-migration from rural areas.

### Scope/Constraints

Several experts from Japan, Korea, and India have visited Nepal to study the potential for sericulture and have concluded that Nepal has great potential for sericultural development (Kuen Sup 1989). There is a substantial demand for raw silk in the international market. The development of local silk-weaving industries can reduce the import of silk yarn and silk fabrics. In 1988/89 about three million rupees worth of silk yarn and fabrics were imported into Nepal.

The major constraints to the development of sericulture are lack of trained manpower, lack of organisations to promote sericulture, lack of incentives, lack of adequate financial support for landless and marginal farmers, and lack of policies supporting the development of the industry.

### Beekeeping

Beekeeping is one of the oldest traditional activities in Nepal, although the total number of households engaged in beekeeping is not known. However, evidence shows that beekeeping is common among many rural households on a scale of one to four colonies in traditional hives.

The typical traditional beehive is a hollowed horizontal log which varies in length from 60 to 90cms and consists of an entrance hole of about 6mm in diameter in the middle of the log. The two ends of the log are closed with a piece of wooden plank by means of a mixture of cowdung and clay. The yield of honey from traditional hives varies from 3 to 7 kg per colony per year depending upon the size of the colony, climatic conditions, size of hive, etc. Honey is usually harvested twice a year from traditional hives. The harvesting time is from March - April, in spring, and from October - November during the autumn. However, honey can be harvested from modern hives 4-5 times a year.

The native honey bee in Nepal is known as *Apis cerana*. The European honey bee (*Apis mellifera*) was introduced but this species has not been very successful so far.

### Honey Hunting

Hill tribes in certain parts of Nepal engage in honey hunting from nests of wild bees known as *Apis dorsata* and *Apis laboriosa* during the honey seasons in spring and autumn. The number of honey hunters has decreased in recent years because of a decline in the availability of wild nests and the risks involved.

An estimate shows that earlier honey hunters used to harvest as many as 600 combs per year, but the number has dropped to 80 per year in recent years (Valli and Summers 1988). Honey hunting is a team effort involving many people, including a team leader as well as members to relay the equipment, smoke the comb, and filter the honey. Harvested honey is distributed among the participants in proportion to the risk involved and contribution of each member.

The brood comb collected by honey hunters is used for making wax. The beeswax is usually sold in Kathmandu where it is used in the bronze casting process.

### Linkages of Beekeeping with other Sectors

The important role of honey bees in the pollination of a large number of agricultural and horticultural crops is often underestimated or not understood in Nepal. Indeed, the main significance of honeybees and beekeeping is pollination, whereas hive products, such as honey and beeswax, are of secondary value (Verma 1990:23). It is well documented that bee pollination improves the size, shape, colour, and taste of apples. Cross-pollination by honey bees is important for many vegetable crops which are completely or partly self incompatible and incapable of pollinating themselves (Tiwari and Singh 1983). Vegetable flowers are excellent sources of pollen and nectar for bees.

Cardamon is one of the expanding cash crops in the eastern hills especially in the Ilam District of Nepal. It is also a cross-pollinated crop and depends upon honeybees for pollination. Buckwheat and several underutilised genetic crops in the hills are unable to self-pollinate and honeybees are essential for their cross-pollination. Livestock are a major asset, especially for the mountain people of Nepal. Livestock improvement depends upon improving the quantity and quality of fodder. Many fodder crops are either dependent on or benefit from by honey bee pollination.

### Beekeeping Development Efforts in Nepal

Many projects for the development of beekeeping have been undertaken with varying success in Nepal. At present a Beekeeping Training and Extension Support Project is being run by the Ministry of Agriculture, Nepal, in cooperation with the Netherlands Development Organisation. A project worth US\$ 862,100 is underway in 10 selected districts of the kingdom. About 1,700 modern bee-hives have been distributed to farmers by the project and honey production in the project area has been estimated at 28mt.

The Himalayan Bee Concern, a private beekeeping enterprise established in 1986, is also active in providing training programmes and in disseminating management practices, appropriate for beekeeping with the native *Apis cerana*, with modern hives. The concern has conducted 60 training programmes involving about 1000 trainees from various rural areas of Nepal with the help of agencies such as GTZ, Action Aid, KHARDEP, CARE, SFDP, and the Cottage Industries Department. The concern estimates a net profit of Rs 1,795 in the first year of operation from one *Apis cerana* colony.

### Scope/Constraints

Apiculture is a non-land based activity which can contribute substantially to the sustainable development of mountain agriculture. The attributes of apiculture match very well with mountain -specific conditions. Low-weight, high-value, and the non-perishable nature of the product is ideally suited for inaccessible areas. Apiculture is a non-competing resource user, requiring very low investment, and can be operated

on various scales. It is therefore well suited for fragile and marginal mountain areas. Apiculture is based on technology and skills to which mountain people adapt easily. It takes advantage of the diversity of the mountain habitat and at the same time helps to enhance the productivity level of agriculture, horticulture, and fodder seed crops. Apiculture does not compete with other traditional activities and can be taken as a part-time or full-time occupation.

Beekeeping is a potential income-generating activity for poor people. However, the skill and knowledge of beekeeping largely determine its success. Most rural people do not know proper and efficient methods of beekeeping and therefore training should be provided in honey harvesting methods, squeezing the combs, and extracting wax from old combs. Training should also provide knowledge about the hazards of pesticides to bees and the problems of ants, wasps, hornets, and pine martens. Farmers should be encouraged to use modern frame hives instead of traditional logs. Training and follow-up are basic to the success of apiculture (BETRESP 1990a and 1990b).

## Conclusions

Several types/categories of off-farm activity, both in the formal and the informal sectors, were identified and briefly examined in this chapter on the basis of available data. It attempted to explore the nature and magnitude of current employment and the potential contribution specific activities could make in the promotion of off-farm employment in the mountains of Nepal.

While the general state and importance of off-farm activities emerge from the above analysis, a number of data gaps also become evident. First, the data-base on the off-farm sector in Nepal is limited to the formal sector, basically the manufacturing sector. Although the periodic manufacturing censuses provide some insights, the dynamism of the off-farm sector is rarely reflected in the census data. Second, because of the nature of formal sector employment, off-farm employment data pertain mostly to urban areas. Third, data on the informal sector are not only scarce but also inconsistent. The major problem with off-farm employment data in the context of data on the nature and duration of employment and income derived from such employment. Little is known, for example, about the number of mandays devoted to off-farm activities per household per year in rural areas. Income derived from off-farm work and the contribution it makes to the household's total income in specific regions are other areas for which the currently available information is far from satisfactory.

Although the types and categories of off-farm activities discussed above are far from exhaustive, it is nonetheless indicative of the types of prominent and potential off-farm activities that can be promoted in Nepal. Among the most prominent off-farm activities in the formal sector are garment and carpet manufacturing, public construction, tourism, and formally organised trade and transport services. In the informal sector, carpet manufacturing and small businesses appear prominent. Among off-farm activities in the agricultural sector, only horticulture, vegetable farming, and, to a limited extent, livestock related-activities seem to be prominent in terms of the creation of employment. Not all of the currently prominent activities may, however, be sustainable in the long term, whether in an economic or environmental sense. Garments, for example, depend upon the external market and there is also the issue of who gets employed in garment manufacturing. Carpet manufacturing has potentials but the use of fuelwood has to be substituted by other energy forms. Mountain tourism creates problems of environmental degradation as well as the problem of the lack of retention of benefits in tourist areas, and so on.

Some off-farm activities appear to have considerable potential in the Nepalese hills although these are not prominent activities in any sense at the present. Skill and craft-based activities of various types,

medicinal herbs, paper-making, sericulture, and beekeeping are some of the most notable among potential activities.

In view of the prominent and potential activities indicated above, in Chapters Five and Six an attempt has been made to apply a particular analytical framework to the further analysis of some of these activities on the basis of secondary data. The analytical framework consists of two major and interrelated approaches for looking at off-farm activities. Following the first approach, mountain tourism and sericulture are analysed from a broader perspective. This involves looking at these prominent/potential activities in terms of their implications for the natural resource base of the mountains, their demographic and spatial development connotations, their linkages with farming systems, the overall employment implications, and the implications of the activities for marginal and small farmers and for women. This forms the core of Chapter Five.

Following the second interrelated approach, in Chapter Six, an activity/enterprise-level analysis is made for two other prominent off-farm activities, namely carpet-making and vegetable farming. The enterprise/activity level analysis involves looking at four major components: organisation and management, technical innovation and technology, marketing, and extension and support services. The themes identified for enquiry in the context of the broader as well as the specific context are also used to look at aspects of the "success" and "failure" of these activities in the mountain context.

Given this background, the policies that have a bearing on off-farm employment are reviewed in the next chapter.

## POLICY REVIEW

### Evolution of Development Strategies

The increasing pressure of population on land has made the search for employment outside of agriculture a major concern in Nepal's development strategies. This is particularly true in the case of the hills and mountains where the specific conditions obtaining there make the dependence on land an increasingly critical issue. Creation of off-farm employment (OFE) opportunities, to achieve sustained growth in per capita income without impinging on local environmental resources, is a primary requirement of planned development. This section traces the history of planned development efforts in Nepal with special emphasis on policies and programmes that have a bearing on the promotion of off-farm employment opportunities.

#### *Planned Development in Nepal*

The history of planned economic development in Nepal is not a long one. Before 1951 some development activities were undertaken but their scope was limited to the provision of power and drinking water facilities in Kathmandu, health programmes in a few districts, a few roads, and some small-scale irrigation projects with limited off-farm employment implications. Transport infrastructure in the whole country totalled a mere 376 km of road, including 5 km of black-topped and 85 km of gravelled roads. During a century of Rana oligarchy (1846-1951), the country remained isolated from the outside world. The economic stimulus of World War II, however, led to the establishment of some modern industrial units mostly in the southern *terai* region. Many such ventures failed to survive the immediate post-war period because of poor management and lack of skilled manpower. The first significant development programme in the post-war period was the Village Development Programme (VDP) started in 1953 with US and Indian Assistance. Serious efforts to plan economic development took place after the establishment of a Planning Board in 1955 which prepared the country's first ever five year plan covering the period from 1956-1961.

#### Periodic Plans

To date, seven development plans have been implemented in the country. Tables 4.1 and 4.2 provide a picture of the priorities and outlays of the periodic plans.

Priority in the first and the second plan was given to the development of a transport and power infrastructure. The transport sector alone accounted for a little less than one third of the total planned public sector outlays of Rs 330 million. The first plan also included the Rapti Valley Multi-Purpose Development Programme which opened the door to massive resettlement in the Rapti Valley. The first plan did not include an employment target in the off-farm sectors.

The employment situation was also not analysed, probably due to lack of data on the subject. The first plan also accorded priority to Village Development Programmes (VDP). Such programmes covered about

2.25 million villagers in 3,800 villages through its Nucleus Programme, *Dehat* Development Programme, and Village Development Units. The programme aimed to contribute to the promotion of agriculture, village industries, and to bringing about changes in the attitude of the villagers (Himalayan Studies Centre 1981). The major thrust in the Second Plan remained similar to that of the First Plan with a few changes.

**Table 4.1: Development Priorities and Outlays in Different Plan Periods**

| Plan                     | Total Outlay<br>(Rs in Million) | Major Thrust                              |
|--------------------------|---------------------------------|-------------------------------------------|
| First Plan (1956-61)     | 330                             | Transport, Power                          |
| Second Plan (1962-65)    | 600                             | Transport, Power                          |
| Third Plan (1965-70)     | 2,500                           | Land Reform,<br>Transport & Communication |
| Fourth Plan (1970-75)    | 3,530                           | Regional Development                      |
| Fifth Plan (1975-80)     | 9,197                           | Area Planning (SADP)                      |
| Sixth Plan (1980-85)     | 22,300                          | IRDPs                                     |
| Seventh Plan (1985-1990) | 50,410                          | Basic Needs                               |

The emphasis on the creation of a transport and power infrastructure continued well up to the Fourth Plan. VDP however was dropped after 1965 and was substituted instead by the Panchayat Programme, albeit with a much reduced outlay for rural development. It may be noted that the Panchayat System of Government was introduced in 1961 after the King staged a coup d'etat against the democratically elected government. A ban was imposed on political parties which lasted until 1990. The Panchayat Development Programme confined itself to public work activities such as the construction and maintenance of trails, bridges, drinking water projects, school buildings, etc. These programmes provided some off-farm employment opportunities to a limited set of beneficiaries because of the small size of the programmes and the requirement of voluntary labour contributions for development.

The emphasis on physical infrastructure was maintained in the third plan but the major thrust was the introduction of the Land Reform Programme with the twin objectives of eradicating absentee landlordism and increasing productivity through land distribution to the poor and landless. A ceiling on landholdings was also introduced. The Third Plan (1965-70) introduced the Panchayat Development and Land Tax (PDLT) in 12 Village Panchayats of the Morang and Jhapa districts. In the hills, the Jiri Multipurpose Development Project (JMDP) was started on a pilot basis with Swiss assistance. Local development programmes under a new initiative called the Remote Areas' Development Programme was started in the Fourth Plan. The first integrated hill development project (IHDP) was also initiated in the penultimate year of this plan. A regional approach to development was the major strategic initiative of the Fourth Plan.

Table 4.2: Planned and Actual Outlay in the Public Sector in Different Plans

| Sector                                      | Third Plan<br>1965-70 |                    | Fourth Plan<br>1970-75 |                    | Fifth Plan<br>1975-80 |                    | Sixth Plan<br>1980-85 |                     |
|---------------------------------------------|-----------------------|--------------------|------------------------|--------------------|-----------------------|--------------------|-----------------------|---------------------|
|                                             | P                     | A                  | P                      | A                  | P                     | A                  | P                     | A                   |
| 1. Agriculture<br>Irrigation and<br>Forests | 377.5<br>(21.7)       | 255.8<br>(15.6)    | 662.8<br>(26.0)        | 824.6<br>(24.6)    | 1,839.7<br>(29.5)     | 2,349.7<br>(26.5)  | 6,600<br>(30.4)       | 4,353.5<br>(27.9)   |
| 2. Industry, Mines<br>and Electricity       | 125.0<br>(7.2)        | 239.5<br>(14.6)    | 470.0<br>(18.5)        | 481.5<br>(14.3)    | 1,380.7<br>(22.4)     | 1,679.2<br>(18.9)  | 5,600<br>(25.8)       | 3,379.6<br>(21.7)   |
| 3. Transport and<br>Communication           | 875.0<br>(50.3)       | 788.5<br>(48.1)    | 1,050.0<br>(41.0)      | 1,392.5<br>(23.2)  | 1,432.8<br>(26.8)     | 2,380.6<br>(19.4)  | 5,600<br>(19.3)       | 3,009.0             |
| 4. Social Services                          | 292.5<br>(16.8)       | 204.4<br>(12.5)    | 352.5<br>(13.8)        | 577.7<br>(17.2)    | 1516.8<br>(24.6)      | 2,461.1<br>(27.8)  | 5,160<br>(23.7)       | 4,436.8<br>(28.5)   |
| 5. Others                                   | 70.0<br>(4.0)         | 150.9<br>(9.2)     | 14.7<br>(0.6)          | 80.8<br>(2.4)      | -                     | -                  | 160<br>(0.7)          | 403.9<br>(2.6)      |
| Total                                       | 1,7400.0<br>(100.0)   | 1,639.1<br>(100.0) | 2,550.0<br>(100.0)     | 3,357.1<br>(100.0) | 6,170.0<br>(100.0)    | 8,870.6<br>(100.0) | 21,750.0<br>(100.0)   | 11,582.8<br>(100.0) |

Note: P = Planned Outlay, A = Actual Outlay

Source: 1. National Planning Commission, Various Plan Documents.

2. M. Banskota "Sectoral Allocation of Investment and Its Productivity, CEDA, Nov, 1990:29.

The Fifth Plan (1975-80) was a turning point in the development process in Nepal. Agricultural and social sectors received higher priorities in terms of investment allocations relative to physical infrastructure for the first time. The emphasis was on implementing a people-oriented production programme and the maximum utilisation of available manpower. The Small Area Development Programme (SADP) was introduced as an element of regional development strategy by this plan. Bilateral and multilateral assistance began pouring in for the initiation of several integrated rural development programmes (IRDPs). These rural development programmes carried with them packages of activities that were intended to create sizeable OFE opportunities in the rural areas.

The Sixth Plan (1980-85) marked a significant revival of emphasis on rural development. Promotion of people's participation was adopted as a guiding policy. The major thrust of the Seventh Plan was to create the basis for the fulfillment of the basic minimum needs of the population, as above 45 per cent of the population in the hills and over 60 per cent of the population in the mountains were estimated to be below the line of absolute poverty.

The development efforts in all these plans were constrained by the existence of an inefficient bureaucratic and political structure that was ill-equipped for efficient implementation of the development programmes in accordance with the country's needs and priorities. There was a wide gap between intent and achievement. In sharp contrast to the objective of mobilisation of domestic resources for the country's development, the dependence on external sources for financing development expenditure increased over time. It may be noted that the First Plan was entirely funded through foreign assistance. The contribution of foreign aid to the Second, Third, Fourth, Fifth, Sixth, and Seventh plans was 80, 47, 41, 45, 64, and 70 per cent respectively.

The country's experience with development planning has to be evaluated against the backdrop of the country's political system (Panchayat System) that remained in force well up to the end of the Seventh Plan. After the political change of 1951, which saw the overthrow of the Rana regime, successive governments initiated institutional changes to bring about agrarian reforms in the country. *Birta*, *Jagir*, *Rakam*, and *Rajya* tenures were abolished during the period from 1951-64. The *Birta* Abolition Act, 1959, changed the status of all *Birta* lands into taxable *Raikar* land, thereby eliminating the class of intermediary owners between the State and the actual cultivators. The Tenancy Rights Security Act, 1951, took the first step in recognising tenants' rights and providing security to tenants against unlawful eviction by landowners. The enactment of The Land Act, 1964, made provision for various measures such as imposition of ceilings on land ownership and tenancy holdings; abolition of the Jamindari system; fixation and regulation of rents; and security of tenancy. The maximum ceiling on ownership of agricultural land per family was fixed at 16.4 ha in the *terai*, 2.7 ha in the Kathmandu Valley, and 4.1 ha in the hills other than the Kathmandu Valley. An additional amount of 2 ha in the *terai*, 0.4 ha in the Kathmandu Valley, and 0.8 ha in the hills was permitted as a homestead. Similarly, tenants could operate a maximum of 2.5 ha in the *terai*, 0.5 ha in Kathmandu, and 1 ha in the hills.

The land reform programme, implemented after 1964, however, did not make a significant impact on land redistribution owing to weaknesses in its implementation, resulting from a lack of the necessary political will. The actual redistribution of land to tenant farmers and landless households was an insignificant 23,588 ha, which represented a mere 1 per cent of the total cultivated land, (K.C. 1986:7). A survey conducted to assess the changes in the pattern of landholdings in rural Nepal, almost a decade after the land reforms, revealed a highly unequal distribution of landholdings (Zaman 1982:90). The land reforms, apart from provisions for granting security of tenancy rights to sitting tenants, did not have any concrete programme for drastic reforms in the tenancy structure. The present tenancy structure has led to 'dual ownership' as both tenants and landowners have ownership rights on land. There has been a lack of motivation on the part of the landowner to invest in land improvements as he is only entitled to a fixed

rent from the tenant as stipulated by law. The tenants, on the other hand, lack the necessary resources to invest in land, adopt new technologies, and increase land productivity. The agricultural system has, therefore, suffered due to the anomaly created by the tenancy structure. It may be noted that productive agriculture can provide the basis for the promotion of off-farm employment activities.

The Fourth Plan for the first time highlighted the issue of regional disparity between the three geographic regions, viz., mountains and hills, *terai* and inner *terai*, and the Kathmandu Valley. The disparities were prominent from the point of view of economic and social indicators and were perpetuated by the unbalanced share of development expenditure going to different geographical regions. The Fourth Plan document notes that the Kathmandu Valley has received over one-third of all development projects implemented since the beginning of the planning process (NPC 1970: 284). Hence, reduction of interregional disparities and integration of the national economy were outlined as two of the major objectives of regional planning. The regional development strategy proposed a series of north-south roads (growth axis or development corridors) linking the diverse regions. Such an infrastructure was envisaged to allow for a process of urbanisation, introduce product specialisation, and create the basis for effective economic give and take between the different geographical regions of the country. The off-farm employment implications of the regional development strategy were significant, but these were neither articulated well nor translated into implementable programmes.

The Fifth Plan emphasised the need to encourage the development of specialised modes of production in different regions of the country, so that each region might be able to produce, at competitive prices, goods to be exported to other regions within the country, or to other countries. The idea was to exploit the resource advantages of each development and ecological region. In accordance with this policy, emphasis was to be given to the development of cereal crops, tropical fruits, and vegetables in the *terai*. In the hills, apart from the development of cereal crops, fruit cultivation was to be promoted on marginal lands. The development of animal husbandry, handicrafts, and cottage industries received emphasis as a means of reducing seasonal unemployment and the pressure of population on agriculture. Similarly, in the mountain region, intensive cultivation (giving due consideration to the limited cultivable land), herb production, livestock, husbandry, and tourism development received emphasis. The location-specific details of these policies, however, were never worked out and implemented.

A major emphasis in the Fifth Plan was with respect to population. Population projection up to the year 2000 showed that Nepal's population (Census of 1971) was likely to double by the year 2000 AD. The main objective of the population policy was to strike a balance between physical resources and the country's population growth, leading to the optimal utilisation of human resources and growth in the living standards of the people (NPC 1975: 42).

While family planning (FP) programmes were emphasised, the population policy also included control of immigration and regulating hill-*terai* and rural-urban migration. Intensive cultivation of land in the *terai*, especially the western *terai*, and development of small towns from a regional development perspective, were other policies specified in the Fifth Plan.

Around the middle of the Sixth Plan (NPC 1983), HMG reframed the population strategy based on the recommendations of the National Commission on Population (NCP). The target of the new strategy was the reduction of the Total Fertility Rate (TFR) from 6.3 to 2.5 and the annual population growth rate from 2.6 per cent to 1.2 per cent by the year 2000. The principal objective of the new strategy was to strike a balance between population growth and economic development. This was to be achieved by the expansion of family planning (FP) services by incorporating population elements into development programmes, by increasing female literacy through ensuring the active participation of local level institutions (including NGOs) in the population education programme, and by controlling immigration.

In spite of these policy pronouncements the impact of population policy and programmes has yet to be reflected in the fertility behaviour of households. In Nepal, particularly in the hill-mountain regions, poverty and high fertility have been mutually reinforcing processes. While the employment implications of a rising population are well-articulated in the plan documents, the proposed programmes for OFE expansion rarely match the scale of the task.

Each plan document emphasised the fact that the traditional agricultural sector cannot bear the brunt of an increasing population and economically active labour force. The need for creating off-farm employment opportunities, through the expansion of cottage industries based on traditional skills, the need for an increase in vocational training, the need for expansion of agro-based industries, etc are all expressed as inherent elements of employment policies in all the plan documents.

With this brief overview, some of the explicit and implicit policies related to OFE will be discussed in the following section.

### **Explicit/Implicit Policies Related to OFE**

The major policies affecting OFE are policies with respect to trade, tariffs, industries, and subsidies. Unfortunately independently of India, Nepal does not have much leverage in dictating these policies because of the presence of a long and open border.

#### *Trade and Tariffs*

Pursuing a right trade policy can go a long way to fostering OFE. The geopolitical context of Nepal requires that some industries and products be protected from outside competition, even though such a protectionist trade policy may be relatively inefficient. A long open border with India has been a single influential factor in Nepal's inability to provide the required protection to such products of national interest.

#### Structure of Trade

India is Nepal's major trading partner, although the share of Nepal-India trade to total trade volume decreased to 25.8 per cent in 1988/1989 compared to 82.2 per cent in 1974/75. Over the years, Nepal has been able to diversify its trade relationships with other countries by reducing dependency on India for both its import and export trade. However, although trade statistics in terms of values show remarkable diversification, the dependence on India for essential consumer goods, intermediate raw materials, and capital goods remains pretty much intact.

Nepal has been following a preferential trade regime with India, apart from during the Nepal-India trade and transit impasse (March 1989-July 1990), and trade on the basis of the Most Favoured Nations (MFN) Clause with third countries.

#### Trade Relationships between Nepal and India

The 1950 treaty between India and Nepal stipulated that the export and import duties of Nepal would be at the same level with those of India with regard to third country goods. This treaty basically

safeguarded India's interest and limited the development of certain export goods based on imported raw materials.

Nepalese stainless steel and synthetic textile products in the early 1960s, based on imported raw material, penetrated the Indian market as they were of better quality than the products of India. This was not acceptable to India. Therefore the Indo-Nepal Trade Treaty of 1971 provided conditional access of Nepalese manufactured goods to India. Only those goods containing at least 90 per cent of Nepalese (or Indian and Nepalese) raw materials were given access to the Indian market while India's exports to Nepal were ensured protection through excise refunds in Nepal in lieu of charging no customs duties. In 1978, for the first time, two separate treaties (trade and transit) were signed. Although, the 1978 trade treaty was not fundamentally different from the preceding one, it granted concessions to Nepalese manufactured articles containing not less than 80 per cent of Nepalese and/or Indian materials.

With the expiry of both treaties on March 23, 1989, and the resulting impasse, Nepal's export to India came to a standstill as customs' duties imposed by India reached 145 per cent for most primary products on which there was no duty before the impasse (APROSC 1990b:29). The impasse created severe problems in Nepal's overall trade situation with a serious shortfall in POL products and industrial inputs and materials. There was a clear setback in industrial output and in employment.

In April 1990, the interim Government under the new multiparty system was able to restore the *status quo ante* situation with India and the detailed understandings were left to be worked out between India and the elected Government. The point to note is that for a land-locked country, trade and transit arrangements can have a significant bearing on off-farm employment.

### Tariff Structure and Protection

Nepal conducts trade with countries other than India on the basis of the MFN Clause, apart from some barter trade with the Tibetan Autonomous Region of China. Nepal's tariff structure shows that there is a wide difference between the tariff rates with India and the tariff rates imposed on third country imports.

The gross nominal protection at the sectoral level shows that the overall tariff to third countries is 52.0 compared to 18.5 per cent for India (Table 4.3). The tariff differential is shown to be the lowest in the case of wood and wood products (0.62 per cent) and highest in the case of electronic products (assembled in Nepal) (55 per cent). This shows that Nepalese industries are protected against third country products but not against Indian products. The lack of effective protection discourages productive investment and encourages the kind of trade that is not very productive from the employment perspective.

The tariff structure in Nepal seems to be guided by the Government's revenue-generating objective. This is evident from the high tariff rates on vehicles and electronic goods, most of which are not produced within the country.

The protection structure of the major investment sector at the product level has been shown in Table 4.4. The level of protection provided to an individual producer reflects the incentives provided in terms of tax privileges, lower input tariffs, and other concessions.

The Effective Rate of Protection (ERP), which is calculated as value-added at domestic prices as a per cent of value-added at world prices, varies widely across different industrial products ranging from -44.94 per cent in the case of *bidis* (indigenous cigarettes) to 786.42 per cent in the case of jute and jute goods.

**Table 4.3: Gross Nominal Rate of Protection by Sector**

| Particulars                              | Third Country Tariffs | Indian Tariffs | Differential |
|------------------------------------------|-----------------------|----------------|--------------|
| Food and Beverages                       | 30.63                 | 13.87          | 16.75        |
| Leather, Textiles and Apparel            | 49.82                 | 17.47          | 32.35        |
| Chemical & Allied Industries             | 52.10                 | 17.84          | 34.25        |
| Paper and Paper Products                 | 57.89                 | 16.91          | 40.98        |
| Wood and Wood Products                   | 23.24                 | 22.62          | 0.62         |
| Mineral-based Products                   | 36.94                 | 11.16          | 25.78        |
| Metal and Metal Products                 | 51.41                 | 16.78          | 34.64        |
| Electronic Products (assembled in Nepal) | 105.00                | 50.00          | 55.00        |
| Export-oriented Industry                 | 84.04                 | 38.09          | 45.95        |
| Total Sector                             | 52.02                 | 18.48          | 31.57        |

Source: ADB 1990b

### *Industrial Policy*

The Industrial Enterprises Act, 1973, which was enacted for the implementation of industrial policies, classified industries into four categories: cottage (with fixed investments of up to Rs 200,000), small industries (with fixed investments of up to Rs 1 million), medium industries (with fixed investments up to Rs 5 million) and large industries (with fixed investments exceeding Rs 5 million). The Industrial Enterprises Act included various provisions relating to simplification of licensing and registration procedures and incentives in terms of income tax holidays, low customs' duties on the import of machinery and raw materials, and full exemption from excise duty for a one year period to cottage industries. Cottage industries were accorded highest priority in the provision of convertible foreign exchange. The spirit of the Act, however, could not be translated into action as intended and therefore the large OFE potential remained unexplored.

The industrial sector, despite a liberal policy, could average an annual growth of only 6.7 per cent during the Fifth Plan period (NPC, Sixth Plan: 29). The growth in industrial production was basically due to the high growth in production achieved by distilleries, leather, stainless steel, and synthetic textile industries during the Fifth Plan period (1975/76 - 1979/80). The Sixth Plan document notes several factors responsible for the lack of adequate investment from the private sector. These include: power shortage, shortage of raw materials, lack of markets, lack of skilled manpower, lack of capital, landlocked situation, and limitations imposed by the open border in providing effective protection to domestic industries (NPC 1983: 29).

**Table 4.4: Ordering of Industrial Activities by ERP**

| Activities                          | Effective Rate<br>of Protection |
|-------------------------------------|---------------------------------|
| <u>Low Level of Incentive</u>       |                                 |
| <i>Bidi</i>                         | -44.94                          |
| Noodles                             | 1.09                            |
| Flour & Bran                        | 9.14                            |
| Wood and Wood Products              | 11.72                           |
| Rice and Bran                       | 12.67                           |
| Cotton, Textiles                    | 18.67                           |
| Dairy Products                      | 30.10                           |
| Sugar and Molasses                  | 38.76                           |
| <u>Moderate level of Incentives</u> |                                 |
| Animal Feed                         | 44.87                           |
| Incense Sticks                      | 47.15                           |
| Pashmina (Shawls)                   | 50.03                           |
| Stone Products                      | 51.75                           |
| Bakery and Confectionery            | 55.55                           |
| Matches                             | 57.61                           |
| Synthetic Yarn                      | 66.84                           |
| Paint                               | 68.29                           |
| Wax Candles                         | 69.24                           |
| Spices                              | 75.95                           |
| Medicine                            | 79.50                           |
| <u>High level of Incentives</u>     |                                 |
| Dhaka Cloth & Products              | 89.26                           |
| Bricks                              | 94.26                           |
| Iron and Steel Products             | 98.36                           |
| Chalk                               | 101.20                          |
| Cement Blocks                       | 107.33                          |
| Leather & Leather Products          | 121.48                          |
| Plastic Ware                        | 139.89                          |
| Soaps and Detergents                | 142.57                          |
| Brass, Aluminum, & Copper Goods     | 155.36                          |
| Vegetable Oil                       | 158.83                          |
| Plastic Pipes                       | 161.93                          |
| Ceramic Tiles                       | 176.98                          |
| Silk Fabrics                        | 181.44                          |
| Catchu (Dyed Flour)                 | 191.83                          |
| Hand Pumps                          | 194.23                          |
| Paper and Paper Products            | 194.36                          |
| Synthetic Textiles (Mainly)         | 195.56                          |
| Footwear                            | 457.21                          |
| Cushions and Mattresses             | 538.62                          |
| Steel Furniture                     | 585.75                          |
| Electronics Assembly                | 642.05                          |
| Alcohol                             | 761.05                          |
| Jute & Jute Products                | 786.42                          |

Source: ADB 1990b

In 1981, HMG/N introduced a new industrial policy which was followed by the enactment of the Industrial Enterprises Act 1982 (amended in 1987). The introduction of the new industrial policy in 1981 achieved some degree of success as far as attracting investments in the industrial sector was concerned. However, several distortions also became evident in the process of the actual implementation of the policies. There was a wide variation in the effective protection granted to industries. Some industries were found to have received as much as 200 per cent protection, whereas those industries which were to be promoted on a priority basis received disproportionately low protection. To remove such disparities, HMG/N introduced the new industrial policy in 1987. The basic objectives of the 1987 industrial policy are stated to be: effective protection, regional balance, local resource mobilization, and priority to agro-based industries.

The industrial policy pursued by HMG/N grants several facilities, concessions, and protection. Procedures have also been simplified for the licensing and registration of industries. The requirement for licenses has been waived for cottage industries and also for small and medium industries that do not require convertible foreign exchange to purchase their main raw materials. Uniform protection at a level of 30 per cent was granted to industries through the medium of import duties. The export of industrial products is fully exempted from sales' tax and excise duty. Similarly, the maximum level of customs' duty has been fixed at 1 per cent for goods to be exported from Nepal. An income tax holiday is granted to manufacturing cottage industries for a period of 5 years from the date of commencement of production. Other incentives include full remission of income tax for 5 years to units using local resources and tax concessions for energy-based and mineral-based industries that have been given a national priority status.

The effect of these policies should have been manifest in the overall growth of industries and a consequent increase in employment which is solely off-farm in nature. The achievement to date, however, has been far less from satisfactory.

### *Subsidy*

Subsidy programmes of HMG/N are primarily aimed either at providing incentives for agricultural investments or at transport subsidies to compensate for the high cost of inputs in the hill and mountain areas of the country. The subsidy programmes adopted by HMG/N can be regarded as an intervention to offset some of the difficulties associated with inaccessibility, fragility, and marginality which are the major mountain specificities. The major subsidy programmes, such as food subsidies and fertiliser subsidies, are intended to benefit the remote hill and mountain areas.

### Food Subsidies

HMG's food subsidy policy is aimed at distributing foodgrains at subsidised prices to consumers in remote, food-deficit areas. Foodgrain procurement and distribution are carried out by the Nepal Food Corporation (NFC). Total subsidies to NFC during the period from 1979/80 to 1988/89 have generally been in the range of Rs 40-50 million (APROSC 1990b:61).

The food distribution pattern on a regional basis over the years shows that about 50 per cent of NFC's food distribution has gone to the hill areas of the Central Development Region followed by the eastern hill areas (about 14%). The major beneficiaries of the foodgrain distribution programme have been the urban residents of Kathmandu Valley and civil servants in remote areas. People living in the remote areas probably receive less than 25 per cent of the subsidised food thus distributed (World Bank 1990:92). The lack of a targetted approach in foodgrain distribution results in benefits being distributed regardless

of the income of recipients and the amount of land owned by them. This contradicts the equity consideration, the very grounds on which subsidies are justified. Higher income people often purchase cheaper NFC distributed food not for home consumption, as it is inferior in quality, but for (a) resale (mainly to the poor) when local market prices are high, (b) payment of labourers when grain is scarce, (c) sale for brewing, or (d) trading/smuggling (APROSC 1982:78).

The procurement of foodgrains, such as paddy, millet, rice, wheat, or maize, by NFC is also of limited significance in the context of effective price support to producers and as a means of market stabilisation. The support prices of NFC are generally lower than market prices and the actual volume procured is too low. Hence, the present price-support or procurement programmes have limited impact in providing production incentives to farmers in the *terai* to increase foodgrain production in order to produce a surplus for distribution to the food-deficit areas in the hills and mountains. One major limitation to effective price incentives in the *terai* has been the dominant influence exerted by Indian market prices on foodgrain prices in the Nepalese *terai*.

The subsidy on foodgrains is a disincentive to foodgrain producers in the hill and mountain regions as this subsidy tends to depress the farmgate prices of foodgrains. This subsidy, therefore, could be instrumental in promoting OFE by diverting activities away from crop production. However, if food-deficit households cannot gain access to subsidised food, such OFE possibilities will not arise.

### Fertiliser Subsidies

Fertiliser subsidies provided by HMG consist of two elements, namely, the transport subsidy and the price subsidy. The transport subsidy, which is financed each year through budgetary provisions, provides the cost of transporting fertiliser up to the district headquarters. A price subsidy is granted in order to sell fertiliser at below cost prices by providing budgetary grants to the Agricultural Inputs Corporation (AIC), the sole agency responsible for fertiliser import and distribution in the country. The amount of fertiliser subsidy given to AIC went up from Rs 5.1 million in 1979/80 to Rs 139.4 million in 1987/88.

The transport components of fertiliser subsidies are meant to remove the disadvantages created by the inaccessibility factor in the hills and mountains. Fertiliser is an important input in the adoption of improved varieties of cereal crops and cash crops and for horticultural development in the hills. Fertiliser subsidies may be needed in the prevailing situation in the hills and mountains where inaccessibility is a major constraint to the supply of agricultural inputs. If productivity is not increased on existing cultivated land, through the increased use of fertilisers, then it is feared that farming will extend on to marginal and ecologically fragile lands. Moreover, the current high level of fertiliser subsidies is being used in the *terai* in absolute terms although in per unit terms it is higher in the hills and mountains. HMG/N has already started to deregulate fertiliser distribution and reduce subsidies.

The price and transportation subsidy on fertilisers has the potential to boost OFE in the hills and mountains through (a) providing forward and backward employment linkages for increased production, and (b) facilitating the production of subsistence needs on less farm acreage, thus releasing more time for OFE.

### Credit Subsidies

Credit subsidies in the form of capital and interest subsidies are provided to finance various activities such as irrigation, biogas, and cash crops. HMG/N has been providing financial support to ADB/N to provide

reliant development by improving the service delivery system, building confidence, and educating small farmers to receive services and effectively use them. The SFDP operates through the sub-project offices (SPOs) in each project area, which usually cover 2-3 Village Development Committees. The group organiser (GO), who is an ADB/N functionary, plays a key role in organising small farmers into homogeneous groups, normally consisting of 5-12 members and organised around some economic activity aimed at raising the income level of the members. Loans are provided to groups and individual activities on a group guarantee basis. A number of community-level activities with the collaboration of NGOs have been introduced in the SFDP groups, as well as direct income-raising activities initiated through the credit component.

**Table 4.6: SFDP Operations Until 1987/88**

| Particulars                | Hill and Mountain Districts | Terai Districts | Total  |
|----------------------------|-----------------------------|-----------------|--------|
| No. of SPOs                | 215                         | 131             | 346    |
| No. of Groups              | 4,532                       | 4,656           | 9,188  |
| of which:                  |                             |                 |        |
| Women's Groups             |                             |                 | 1,188  |
| (percentage)               | n.a.                        | n.a.            | (14.8) |
| No. of Members             | 39,490                      | 39,028          | 78,518 |
| of which:                  |                             |                 |        |
| Women's Members            |                             |                 | 10,943 |
| (percentage)               | n.a.                        | n.a.            | (13.9) |
| Avg. No. of Groups per SPO | 21                          | 36              | 27     |
| Avg. Members per Group     | 8.7                         | 8.4             | 8.5    |
| Avg. Members per SPO       | 184                         | 298             | 227    |

Source: IDS 1989

### Impact of SFDP

Evaluation studies conducted so far (APROSC 1989) show a favourable impact of SFDP by raising the income and employment of participating small farmer households. The final evaluation of the IFAD-assisted SFDP Phase I, conducted by APROSC in 1987, reports an increase of 13-14 per cent in average gross farm income (mainly cottage industries) compared with the baseline period. An overall increase of 28 per cent in gross household income, with an annual average growth of more than 5 per cent at 1981/82 prices, is reported to have been achieved by the SFDP. The sub-sectoral activities are shown to have significantly increased labour utilisation, thereby reducing the underemployment of active workers in the family. The underemployment of small farmers in programme areas was found to be 48.3 per cent before participation in the programme and 24.6 per cent after participation (APROSC 1989: 75). In sample hill districts, lower underemployment was found in the case of cottage industries (a sharp reduction from 49.8% before participation to 1.3% after participation) compared to other sub-sectors such as foodgrains, cash crops, and livestock. Cottage industries seem to be more effective in increasing labour use. However, the share of agro- and cottage industries in the annual total loan investment has remained low, i.e., in the range of 5-10 per cent over the years.

According to the IFAD mid-term evaluation of SFDP-I, the programme increased the income of participating small farm households by 20-30 per cent. Operation of the project led to an increase in demand for labour and there is evidence that the project has led to increases in real wages (IFAD 1984).

#### (b) Production Credit for Rural Women (PCRW)

The PCRW project was implemented in 1982, through the Women's Development Section (WDS) under the Ministry of Panchayat and Local Development (now Ministry of Local Development), with the close collaboration of Nepal Rastra Bank, ADB/N, two commercial banks (Nepal Bank Ltd. and Rastriya Banijya Bank), UNICEF, SNV (Netherlands Development Organisation), and PCV (American Peace Corps Volunteers). The programme reflects two main objectives on the part of WDS, namely, those of integrating women in development and of meeting the basic minimum needs of the people. With the help of UNICEF, the programme has been able to provide basic services to women and children through community involvement. Increase in the productive employment and income-earning potential of women has implications in raising women's status in the family and also in increasing the well-being of children. The Status of Women in Nepal Study found that 60 per cent of women's income was directly spent on children and in meeting family food consumption needs, while 18 per cent went into savings or productive investment.

#### Objectives

The unique feature of PCRW lies in its approach to enhancing women's productivity by increasing the opportunities for cash income generation. The specific objectives of PCRW are much the same as in SFDP except that the major focus here is on the upliftment of rural women.

#### Approaches and Impact

Credit is an integral part of the PCRW programme which is designed to uplift the domestic status and socio-economic conditions of the disadvantaged and poor women's groups. Credit is provided through the commercial banks (Nepal Bank Ltd. and Rastriya Banijya Bank) under the Intensive Banking Programme (IBP) which is a special programme to provide credit in the priority areas of agriculture, cottage industries, and services. The lending operations are based on group formation. These groups usually consist of 4-10 women members who elect a group leader from among them. Credit for the activities of various individuals is provided against group collateral. Group cohesiveness is ensured by forming groups with members residing in the same area and having a similar socioeconomic background. To date 1,320 groups have been formed and total loans of Rs 1.4 million have been disbursed. Most of the loans disbursed have gone into livestock production (73 per cent), followed by agricultural production (18 per cent), services (5 per cent), and cottage industries and handicrafts (4 per cent) (CWD-UNICEF 1989:31). The impact evaluation of PCRW, conducted by CWD-UNICEF, shows that income generation by economic activities of sample households has increased following the introduction of the PCRW programme. The credit component was found to have exerted influence on the income increase of sample households, particularly in agriculture, livestock, cottage industries, and the service sector. The beneficiaries of PCRW have mostly been small landholders. Landless participants also have experienced a considerable change in their income levels after involvement with PCRW (CWD-UNICEF 1989:123). It thus seems that PCRW can be effective in reaching the most disadvantaged section of the small landholding and landless households. Currently, the programme is operating in 44 of the 75 districts in the country.

## Integrated Rural Development Projects (IRDPs)

The history of systematic efforts in rural development in Nepal goes back to the 1950s when the country first experienced the 'Tribhuvan Village Development' model. In the sixties efforts were made to implement land reform and develop cooperatives. The approach, however, was largely sectoral and lacked the necessary coordination among agencies for programme implementation. The search for a new development strategy, in a regional development context with an integrated area focus, led to the introduction of Integrated Rural Development Projects. The implementation of the Integrated Hill Development Project (IHDP) in 1974, with Swiss assistance, and the Rasuwa-Nuwakot (RN/IRDP) in 1975, with World Bank assistance, were initial efforts in this direction. Currently there are nine IRDPs in operation covering 28 of the 75 districts in the country. Some of the IRDPs have already entered subsequent phases. The main sectoral composition of the IRDPs in Nepal are agriculture, cottage industries, forestry and soil conservation, power and irrigation, social services, and institution building. Although IRDPs are not specifically designed as poverty alleviation projects, their operation in remote, backward mountain areas ensures that the majority of intended beneficiaries are poor and small landholders. Most IRDPs have found the SFDP programme of ADB/N to be a perfect complement to the programme. Under the IRDPs, so far, a total of Rs 1464.5 million has been invested and the total number of beneficiaries is estimated to be 4,416,000 (Baral and Koirala 1989:73).

### Sectoral Allocation of Resources under IRDPs

There is a considerable variation in the pattern of sectoral allocation of financial inputs in the IRDPs (Table 4.7). The agricultural sector accounts for the highest allocation (ranging from 25-37 per cent) in the four IRDPs, namely, the Rasuwa-Nuwakot (RN), the Mahakali Hills (MH), the Rapti (R), and the Integrated Hill Development Project (IHDP). The Sagarmatha (S/IRDP) and the Kosi Hill Area Rural Development Project (KHARDEP) have accorded highest priority to infrastructure-oriented works, such as irrigation, roads, power, etc., whereas the Karnali-Bheri (K-BIRD) emphasises institutional development.

Cottage industries (an important off-farm activity) have received the least priority in most of the IRDPs with the exception of KHARDEP. Administrative costs are shown to be high (14-16%) in three IRDPs namely, MH/IRDP, K-BIRD, and IHDP. There are considerable discrepancies between appraisal estimates, budget allocations, budgets sanctioned, and actual expenditure. The actual expenditure in comparison to appraisal estimates in the case of the RN-IRDP (between 1970-77 and 1980/81) was 78.7 per cent, the discrepancy being most significant in the case of agricultural inputs which happened to be one of the top priority areas of the project (DRCG 1982).

### Off-farm Employment in IRDPs

A general lack of evaluation studies with an employment focus makes it difficult to assess the impact of IRDPs in the generation of off-farm employment.

The bilateral agreement between Nepal and the Swiss Government on the IHDP specifies that one of the four main objectives of the project will be non-agricultural development in the fields of cottage and small scale industries and tourism. Generation of employment opportunities in these sectors was expected to relieve the increasing pressure of the population on land and also decrease seasonal out-migration from the area. The initiation of road construction activities in the IHDP area provided some off-farm employment opportunities for local people.

Table 4.7: Financial Allocation in Different IRDPs and Their Sectoral Weightages

| IRD Project | Popula-<br>tion<br>Coverage | Per<br>Person<br>Invest-<br>ment<br>NRs | Appraisal Report Cost Proposal<br>Cost Breakdown in % of Total |                  |                                         |                                             |                       |                |                               |                                        |                          |                              |
|-------------|-----------------------------|-----------------------------------------|----------------------------------------------------------------|------------------|-----------------------------------------|---------------------------------------------|-----------------------|----------------|-------------------------------|----------------------------------------|--------------------------|------------------------------|
|             |                             |                                         | Irri-<br>gation                                                | Agri-<br>culture | Roads<br>Power &<br>Communi-<br>cations | Forests<br>and<br>Soil<br>Conser-<br>vation | Cottage<br>Industries | Educa-<br>tion | Various<br>Social<br>Services | Institu-<br>tional<br>Develop-<br>ment | Tech-<br>Assis-<br>tance | Adminis-<br>trative<br>Costs |
| RN/IRDP     | 191,000                     | 712                                     | 28                                                             | 13               | 12                                      | 13                                          | 1                     | -              | 14                            | 6                                      | 7                        | 6                            |
| MH/IRDP     | 333,000                     | 784                                     | 25                                                             | 11               | 12                                      | 5                                           | 3                     | 2              | 16                            | 2                                      | 11                       | 14                           |
| S/IRDP      | 848,000                     | 526                                     | 8                                                              | 35               | 30                                      | 11                                          | 5                     | 2              | 4                             | 2                                      | 2                        | 2                            |
| R/IRDP      | 850,000                     | 475                                     | 27                                                             | 13               | 11                                      | 12                                          | 4                     | 4              | 8                             | 5                                      | 10                       | 0                            |
| KHARDEP     | 549,000                     | 165                                     | 25                                                             | 8                | 28                                      | 8                                           | 12                    | 5              | 9                             | 3                                      | 12                       | 2                            |
| K-BIRD      | 385,000                     | 405                                     | 16                                                             | 2                | 19                                      | 4                                           | 3                     | 2              | 6                             | 21                                     | 11                       | 16                           |
| IHDP        | 250,000                     | 311                                     | 37*                                                            | NA               | 10                                      | NA                                          | 2                     | 7              | 16                            | 11                                     | NC                       | 16                           |
| DDDP        | 250,000                     | 380                                     | NA                                                             | NA               | NA                                      | NA                                          | NA                    | NA             | NA                            | NA                                     | NA                       | NA                           |
| NA          | Na                          |                                         |                                                                |                  |                                         |                                             |                       |                |                               |                                        |                          |                              |

Source: Baral and Koirala 1989

\* includes agriculture, forests and irrigation

Note: NC = Not NA = Not available

In the context of the objective of encouraging off-farm employment outside traditional agriculture, it was found that the project had still a long way to go (IDS 1982). In the IRDPs for which information is available, there has been virtually no change in the occupational structure of the population in the project areas. There is also no evidence to show that IRDPs have been successful in reducing the out-migration rate in the case of the hill districts of the Rapti Zone (PADCO 1985). In Rasuwa-Nuwakot, the benefits from additional job opportunities created by infrastructural development did not necessarily go to the project households (DRCG 1982) and a sizeable proportion of such opportunities is reported to have gone to large-scale farmers (Acharya 1982).

The Rasuwa/Nuwakot IRDP, Sagarmatha IRDP, Rapti IRDP, and KHARDEP have explicitly included employment generation as one of the project objectives. Road and trail construction and improvements have been a feature of almost all IRDPs, although in varying proportions. These public works' activities have created a significant amount of OFE for local people in the short run. The road construction programme under KHARDEP, including the Dharan-Dhankuta road, has employed three million mandays of local labour in public works, although there was a decline in the proportion of portering.

Delays in project implementation have been a characteristic of all IRDPs. For example, the Rasuwa/Nuwakot IRDP was able to create only 18,500 man-months of employment against a target of 30,000 man-months (DRCG 1982). Baral and Koirala (1989) report that the employment situation is not significantly affected by IRDPs, and, according to most evaluations, the creation of off-farm employment has been much below target. In the KHARDEP area, before the project began, a typical family spent on an average 26 weeks per economically-active person on the family farm, 6 weeks on others' farms, one week on cottage industries, and the rest of the time was spent idly or in other non-remunerative activities. No change in the employment situation was found as a result of the KHARDEP project. In Rasuwa/Nuwakot also, the trend of permanent migration to other areas seems to have continued even after the implementation of the IRD. The objective of developing cottage industries and tourism in the IRDP was proposed mainly to relieve the continuing pressure of population on the land and to discourage seasonal migration from the area. The project was found to have initiated some activities in cottage industries, and knitting in some selected areas. Some off-farm employment avenues were opened by road construction and some small trading centres were started in small towns. Slate mining also emerged as an important activity. The opening of new off-farm employment avenues was limited to the above with little or no positive impact on the migration rate. It is doubtful whether these avenues for OFE will be sustained in the future.

Available evidence shows that the IRDPs in Nepal have not been able to make any discernible impact on the socioeconomic status of rural people. The World Bank/UNDP study, on the basis of a review of six IRDPs, concludes that none of the IRDPs could claim to have been very successful, either in promoting rural employment in general or in meeting the needs of the rural poor in particular (World Bank 1990:94).

### *Promotion of Rural Industries*

#### Cottage and Village Industry Development Board (CIDB)

The CIDB was established in the F.Y. 1980/81, under the Development Committee Act, to provide support to the development of cottage industries in an integrated manner. Its functions include skill development training, entrepreneurship development training, technical assistance, management training, and product development. The programme coverage of CIDB includes the following districts.

| Project                | Major Donors<br>(Financial Support) | Districts Covered<br>by CIDB                   | Population<br>Covered |
|------------------------|-------------------------------------|------------------------------------------------|-----------------------|
| Rasuwa-Nuwakot<br>IRDP | World Bank                          | Rasuwa, Nuwakot                                | 191,000               |
| KHARDEP                | O.D.A                               | Dhankuta, Terhathum,<br>Bhojpur, Sankhuwasabha | 554,104               |
| Rapti-IRDP             | USAID                               | Dang, Salyan, Rolpa<br>Rukum, Pyuthan          | 850,000               |
| Sagarmatha-IRDP        | ADB                                 | Siraha, Saptari, Udayapur                      | 847,900               |
| K-BIRD                 | CIDA                                | Jumla, Surkhet, Dailekh                        | 385,000               |
| Mahakali-IRDP          | World Bank                          | Darchula, Baitadi                              | 333,000               |
| CSI Project            | World Bank                          | Bagmati and Gandaki Zone                       | NA                    |
| IHDP                   | SATA                                | Dolakha, 23 VDCs of<br>Sindhupalchowk          | 210,500               |
| DDDP                   | GTZ                                 | Dhading                                        | 250,000               |

CIDB has been implementing its programmes through the district offices of the Cottage and Village Industries Department in those districts where CIDB has not established its own branch offices.

The Board has been composed to facilitate the implementation of various activities in a coordinated manner. It has representatives from all the concerned ministries, public sector agencies, and the private sector involved in cottage industry development in Nepal.

### Services Provided by CIDB

The main services provided by CIDB include the preparation and dissemination of viable cottage industry investment schemes, technical consultancy services, design development and dissemination, and skill development training. Specific skill development training, offered by CIDB, and the duration of training are presented on the next page.

### Special Training Programme

Training programmes of different duration on different trades, e.g., yarn dyeing, carpentry, handmade paper, pottery, beekeeping, food-processing, handicrafts, etc are also organised by CIDB from time to time. Under the Entrepreneurship Development Programme (EDP), training is arranged to foster local entrepreneurial talent. Management training is provided to established cottage and rural industries to improve their efficiency, productivity, and profitability.

| Training Subject                                             | Duration |
|--------------------------------------------------------------|----------|
| 1. Textile weaving by handloom                               | 6 months |
| 2. Textile weaving by semi-automatic loom and power loom     | 3 "      |
| 3. Dhaka cloth weaving                                       | 3 "      |
| 4. Woollen hosiery                                           | 3 "      |
| 5. Ready-made garments and tailoring                         | 3 "      |
| 6. Silkworms                                                 | 3 weeks  |
| 7. Woollen handwoven carpets                                 | 3 months |
| 8. Bamboo handicrafts                                        | 3 "      |
| 9. Metal crafts (wax images, rubber moulds, engraving, etc.) | 3 "      |

### Product Development Centre

CIDB has established 4 Product Development Centres (PDC) in remote districts under the CSI project. The PDCs have specialised units such as textile PDCs. The PDCs provide training to upgrade skills, help in establishing household production units, help in securing loans from financing institutions, sell machinery and equipment, stock and sell raw materials, provide marketable designs and technical knowhow, and also to help by purchasing the output of cottage industries.

CIDB has also established pilot industrial projects for demonstration to boost the interest of investors. It has collaborated in establishing the 'Gandaki Rangai Udyog' in Pokhara to supply yarn to local textile industries. The aim is to eventually hand over such enterprises to private entrepreneurs.

Most training offered by CIDB provides skills that the trainee can use in establishing their own enterprises rather than being employed by others. Over 4,000 persons were trained by CIDB in various parts of the mountains between 1985/86 and 1989/90 (Table 4.8). The contribution to OFE could have been substantial had all these trainees been practising the skills that they learned. However, as a result of constraints, such as the unavailability of capital equipment and raw materials, the problems of marketing, and the inadequacy of training, the number of trainees practising the skills learned is very low. Although no objective assessment of CIDB has been made, the contribution does not appear to be very significant.

### Cottage and Small Scale Industries (CSI)

The CSI project is similar in spirit to the CIDB, except that it is focussed on a limited geographical area in the hills (Bagmati and Gandaki zones only), is financed by the World Bank, and is quite intensive in its coverage.

**Table 4.8: Skill Development Training Provided by CIDB (1985/86 - 1989/90) in the Mountains**

| Subject Area                           | Eastern Mountains | Central Mountains | Western Mountains | Mid-western Mountains | Far-western Mountains | Total       |
|----------------------------------------|-------------------|-------------------|-------------------|-----------------------|-----------------------|-------------|
| Textiles (Semi-automatic and handloom) | 81                | 585               | 682               | 351                   | 195                   | 1894        |
| Sewing and Cutting                     | 53                | 188               | 181               | 183                   | -                     | 605         |
| Carpet Weaving                         | 15                | 120               | 89                | 77                    | 50                    | 351         |
| Hosiery and Knitwear (incl. Acrylic)   | 45                | 101               | 195               | 169                   | 189                   | 699         |
| Bamboo Nigalo                          | 15                | 80                | 72                | 15                    | 26                    | 208         |
| Dhaka Weaving                          | -                 | 33                | 30                | 50                    | 25                    | 138         |
| Metal Handicrafts                      | -                 | 33                | 10                | -                     | 7                     | 50          |
| Bhimal Thread and Rope                 | -                 | -                 | -                 | 17                    | -                     | 17          |
| Mechanical                             | -                 | -                 | -                 | 10                    | -                     | 10          |
| Textiles, Colouring, Printing          | -                 | 13                | -                 | 25                    | -                     | 38          |
| Beekeeping and Honey-processing        | -                 | 31                | -                 | -                     | -                     | 31          |
| Woollen Thread-making                  | -                 | 126               | 22                | 40                    | -                     | 188         |
| Ginger Processing                      | 16                | -                 | -                 | 20                    | -                     | 36          |
| Carpentry                              | -                 | 10                | -                 | 13                    | 14                    | 37          |
| Pottery                                | -                 | 10                | -                 | 10                    | -                     | 20          |
| Handmade Paper                         | -                 | 10                | 38                | -                     | -                     | 48          |
| Automobiles                            | -                 | -                 | -                 | 14                    | -                     | 14          |
| Woollen Knitwear                       | -                 | -                 | 48                | 27                    | -                     | 75          |
| Allo-processing                        | -                 | 7                 | -                 | -                     | -                     | 7           |
| Handicrafts                            | -                 | 48                | 14                | 24                    | -                     | 86          |
| Blacksmiths                            | -                 | 44                | -                 | 6                     | -                     | 50          |
| Food-processing                        | -                 | 48                | -                 | -                     | -                     | 48          |
| <b>Total</b>                           | <b>225</b>        | <b>1487</b>       | <b>1381</b>       | <b>1051</b>           | <b>506</b>            | <b>4650</b> |

Since most of the programmes or projects lacked an integrated approach towards the development of Cottage Industries (CI), it was considered necessary to launch a specific project that could effectively integrate various aspects related to the development of cottage industries such as institutional credit, technical assistance, training, and marketing. The CSI project was launched with the following objectives (ESC 1990:7).

- To build an institutional framework and capabilities in key commercial, public, and banking institutions to provide effective services to viable CSIs.
- To implement product-specific schemes in the pilot project area (3 districts of the Bagmati Zone and 6 districts of the Gandaki Zone).
- To provide/tap marketing know-how and appropriate training and commercial services to CSIs.

The selection of the Kathmandu Valley and the Gandaki Zone in Phase-I was influenced by the fact that these two areas not only had the most potential for the development of CSIs but also that these areas had

the largest concentration of CSIs in the country. The importance of these two areas in terms of CSIs is evident from the fact that Kathmandu alone accounted for about 70 per cent of the export of carpets and garments. The remainder came from the Gandaki Zone and other rural areas. Kathmandu Valley also accounted for about 90 per cent of the total production of metalware (ESC 1990:7).

The financial and employment achievements of the CSI Project have been summarised in Tables 4.9 and 4.10. These show that the employment effect of the CSI is considerable and the picture of the loan recovery ratio is not discouraging either. Wool-based activities show higher loan disbursements as well as employment.

### *Priority Sector Programmes*

#### Intensive Banking Programme (IBP)

The Intensive Banking Programme (IBP) in the priority sector is a national level credit programme that has been in operation since 1981. The programme is focussed on extensive lending in the priority sectors of agriculture, cottage industries, and services with a view to increasing the income and employment status of low-income households. The programme was introduced in 1981 by Nepal Rastra Bank (the Central Bank) as a catalyst to augment the effective growth in priority sectors. In 1981, the IBP was introduced in three rural branches of the commercial banks. The programme was extended to 46 branch offices of the commercial banks in the following year. Nepal Rastra Bank (The Central Bank) issued a directive in 1985 to the commercial banks to invest at least 25 per cent of the total investment in production-oriented activities and not less than 8 per cent in the priority sectors. The IBP has, over the years, undergone rapid expansion covering all the 75 districts of the country. Under this programme, credit is provided for the priority sector projects, either against individual security or group security. At least 60 per cent of the total credit is given to small-scale farming families. The performance of such family units is found to be relatively better.

**Table 4.9: The Cumulative Credit Position of Participating Credit Institutions under the CSI Project (Mid-July 1982 to Mid-Oct 1990)**

| Particular                      | NBL   | RBB    | ADB/N | Total  |
|---------------------------------|-------|--------|-------|--------|
| Number of Sub-projects Financed | 995   | 1411   | 1666  | 4072   |
| Number Employed                 | 12950 | 17557  | 12775 | 43282  |
| Loan Sanctioned                 | 85383 | 114929 | 82526 | 282838 |
| Loan Disbursed                  | 82357 | 108940 | 75894 | 267191 |
| Loan Collection                 | 65402 | 74554  | 51833 | 191789 |
| Loan Outstanding                | 47284 | 65388  | 48131 | 160803 |
| Principal                       | 38265 | 57919  | 40193 | 136377 |
| Interest                        | 9019  | 7469   | 7938  | 24426  |
| Loan Recovery Rate (%)          | 68.2  | 77.1   | 69.9  | 71.9   |

Source: Nepal Rastra Bank, CSI Project Office  
 NBL = Nepal Bank Ltd.  
 RBB = Rastriya Banijya Bank  
 ADB/N = Agricultural Development Bank, Nepal

**Table 4.10: No. of Sub-Projects, Employment and Loan Disbursement under CSI Project by Sector (Mid-July 1982 Mid-Oct 1990)**

| Sector          | No of Sub-Projects | Employment (No)   | Loan Disbursed |
|-----------------|--------------------|-------------------|----------------|
| 1. Cotton 900   | 6,560<br>(22.1)    | 16.8<br>(15.1)    |                |
| 2. Wool         | 1,137<br>(27.9)    | 18,576<br>(42.9)  | 28.9           |
| 3. Metal        | 323<br>(7.9)       | 2,680<br>(6.2)    | 9.4            |
| 4. Forest-based | 627<br>(15.4)      | 4,516<br>(10.4)   | 18.5           |
| 5. Others       | 1,085<br>(26.6)    | 10,950<br>(25.3)  | 26.4           |
| 6. Total        | 4,072<br>(100.0)   | 43,282<br>(100.0) | 100.0          |

Source: Nepal Rastra Bank, CSI Project Office

Note: Figures within parentheses indicate percentage to total.

The hill and mountain districts of the country are adequately covered by IBP with an average of over 3 bank branches lending in the priority sector under the IBP per district (Table 4.11). The districts are served by a total of 179 bank branches, 155 of which are rural.

**Table 4.11: No. of Bank Branches under the IBP in the Hill and Mountain Districts by Development Region, 1989/90**

| Region           | Rural | Urban | Total |
|------------------|-------|-------|-------|
| Eastern (7)      | 23    | 2     | 25    |
| Central (16)     | 53    | 16    | 69    |
| Western (13)     | 38    | 3     | 41    |
| Mid-western (12) | 22    | 2     | 24    |
| Far-western (7)  | 19    | 1     | 20    |
| Total (55)       | 155   | 24    | 179   |

Note: Figures in parentheses indicate number of districts.

Commercial banks have significantly increased lending operations in the priority sectors over the years. The total loans granted in priority sectors by commercial banks had reached a level of Rs 1,123 million in 1989/90 from a level of Rs 4.6 million in 1981/82. Cottage industries have received the largest share (43.6%), followed by agriculture (40.5%), and services (15.9%) in the total loans disbursed during the period from 1981/82 to 1989/90.

A recent impact evaluation of the IBP (APROSC 1989) shows a favourable impact of the project's financial schemes in facilitating income generation and employment creation in participating households. In the hill district of Palpa, the average, per family net cash benefit from the scheme was observed to be Rs 31,807 for the urban and Rs 11,492 for the rural areas. In terms of employment, in the same sample areas of Palpa, it was observed that in urban areas 3.53 person years of employment were generated by the IBP-financed enterprises. This consisted of 2.3 person years of family labour and 1.23 person years of other labour. In rural areas, the contribution to employment generation was much lower, i.e., 1.78 person years, of which family labour was 1.76 person years, and other labour 0.02 person years (APROSC 1989:38-40). The programme was, however, largely benefitting large-scale farming households as more than 70 per cent of loan disbursements were provided to such households. Furthermore, the recovery rate was observed to be low (44 per cent). For agricultural and service purpose loans the repayment rate was 60 per cent. Loans on cottage industries, the largest component of priority sector credit, had only a 38 per cent repayment rate. The employment generated by the programme is, therefore, likely to have been more land-based than off-farm based. The low repayment rate has been attributed to poor supervision and follow-up on the part of the loaning institutions and weaknesses in project identification. The enterprises also faced problems of irregular input supplies and restricted access to markets.

### *Employment-oriented Programmes*

#### Special Public Works' Programmes

This is a small-scale employment programme sponsored by ILO. It focusses on small, labour-intensive irrigation projects. The progress to date is the employment of about 2,000 rural people in various construction works for various durations. Under this scheme, about 56 per cent of the total expenditure is reported to have gone to labour. This was achieved through intensive supervision and support for very small, local petty contractors. The programme itself is too small to have made any significant impact on off-farm employment.

#### Food for Work Programme

This currently provides 1 million mandays of employment per year (6,600 full-time equivalent jobs) to the hill & mountain people. The activities mostly take place during the dry season when other employment opportunities are scarce. The activities are mostly in road and trail construction and other public works.

### **Responsiveness and Sustainability Implications of Policies and Programmes**

Mountains have certain specific conditions that facilitate or constrain the implementation of certain types of development interventions. These important mountain characteristics, called mountain specificities by Jodha (1989), are inaccessibility, fragility, marginality, diversity or heterogeneity, 'niche' - or comparative advantages, and human adaptation mechanisms in mountain habitats. It is suggested that development programmes in mountain areas should give adequate attention to these specific mountain conditions. If development programmes and policies are responsive to mountain specificities they have a better chance of being sustainable than otherwise. An elaborate discussion of the mountain specificities can be found in "Economic Development in the Himalayas: The Missing Mountain Perspective" by N.S.

Jodha (1990). In this section, current development policies and programmes are identified in terms of their response to these specificities.

The operational implications of the objective conditions prevailing in the mountains and the responsiveness or otherwise of the existing policies and programmes to these conditions are summarised in Table 4.12.

The issue of subsidies, particularly for food and fertilisers, appears self-contradictory. Subsidies are provided for commodities such as food, fertilisers, and agricultural credit which are in short supply. Access to scarce commodities is generally provided for privileged areas, thus defeating the very intention of the subsidies. The subsidies for supply-deficit commodities are also likely to promote rent-seeking behaviour.

Subsidies should be gradually phased out. In subsidising the supply-deficit commodities, arrangements for quota or rationing have to be made so that subsidies can be made accessible to target groups.

Another major issue in Nepal is the lack of sufficient leeway in designing and implementing independent economic policies. This is due to the long open border with India. The 1989 trade impasse is an example of this phenomenon.

**Table 4.12: The Implications and Responsiveness of Policies in the Context of Mountain Specificities**

| Mountain Specificity  | Implications                                         | Responsiveness of Policies/Programmes                                                                                 |
|-----------------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Inaccessibility       | Potential for high-value, low-weight/volume products | Vegetable seed production in IRDs and SPOs, apple peeling and drying in Mustang and Jumla                             |
|                       | Products based on traditional skills                 | Handmade paper in Dolakha, Baglung, and Solukhumbu, other cottage industry activities                                 |
|                       | Transportation subsidies                             | NFC food distribution, AIC fertiliser sales; institutional credit                                                     |
|                       | Road and trail construction                          | Road and trail construction by IRDs focussing on infrastructural development (Rapti, KHARDEP, IHDP)                   |
| Fragility             | Conservation by non-use                              | Langtang Wildlife Reserve                                                                                             |
|                       | Optimal mix of use and non-use                       | Community forestry                                                                                                    |
|                       | Appropriate conservation                             | Community forestry, watershed projects, technology biogas plants under credit; improved smokeless ovens in SFDP areas |
| Marginality           | Poverty alleviation programmes                       | SFDP, PCRW, IBP                                                                                                       |
|                       | Big-push approach                                    | Hydropower plants in Marshyangdi, Trishuli, Kulekhani, Sunkoshi, Panauti                                              |
| Diversity             | Diversity at the aggregate level                     | SFDP                                                                                                                  |
|                       | Diversity as 'niche'                                 | Diverse and specialised farming systems                                                                               |
| 'Niche'               | Tracing comparatively advantageous activities        | Vegetable seed production under IRDs and SPOs                                                                         |
| Adaptation Mechanisms | Tradition based activities                           | Handmade paper in Dolakha and cottage crafts                                                                          |

## ANALYSIS OF PRINCIPAL/CATEGORIES OF OFF-FARM EMPLOYMENT

This chapter attempts to assess the critical issues and options with respect to some prominent and potential off-farm employment activities. The analysis focusses on the broader context, i.e., the implications of the activity on the environment, resource base, and demographic and spatial processes; the linkages of the activity with the farming system; and the implications of the activity for the poor and for women. Three activities, namely, mountain tourism, sericulture, and the dairy industry have been analysed. While the first is a prominent activity at present, the latter two are potential activities.

### Mountain Tourism

Mountain tourism is an important and growing component of the tourism sector in Nepal. The two constituents of mountain tourism are trekking and mountaineering. In 1988, of the total number of tourist arrivals of 265,943, about 14 per cent (36,937) reported trekking and mountaineering as the main purpose of their visits (Table 5.1). With its unique natural grandeur and majestic Himalayan peaks, including Mt. Everest (8848 m), the highest peak on earth, Nepal has been attracting an increasing number of visitors for mountain tourism. The number of trekking permits issued increased from 13,891 in 1976 to 61,273 in 1988 (Table 5.1). It is also evident that the number of trek permits issued is consistently higher than reported by tourist questionnaires. If the number of trekking permits issued was taken as a gauge, the average annual growth rate in mountain tourism between 1978 and 1988 would come to 10.8 per cent. A number of characteristics distinguish mountain tourism in Nepal.

**Table 5.1: Tourist Arrivals for Trekking and Mountaineering (T & M) and Trek Permits Issued**

| Year | Total Arrivals | Arrival for<br>T & M | Trek Permits<br>Issued |
|------|----------------|----------------------|------------------------|
| 1976 | 105,108        | 11,706               | 13,891                 |
| 1977 | 129,329        | 13,382               | 17,231                 |
| 1978 | 156,123        | 17,304               | 21,919                 |
| 1979 | 162,276        | 18,270               | 19,868                 |
| 1980 | 162,897        | 19,302               | 27,460                 |
| 1981 | 161,669        | 21,668               | 29,500                 |
| 1982 | 175,448        | 23,507               | 32,332                 |
| 1983 | 179,405        | 24,198               | 32,298                 |
| 1984 | 176,634        | 15,010               | 41,206                 |
| 1985 | 180,989        | 28,707               | 32,730                 |
| 1986 | 223,331        | 33,609               | 49,575                 |
| 1987 | 248,080        | 36,164               | 47,275                 |
| 1988 | 265,943        | 36,937               | 61,273                 |

Source: Department of Tourism 1988

## Seasonality

Mountain tourism has remained a season-specific activity. October-November and March-April are the two peak seasons for tourist arrivals. Mountaineering activities are carried out in three seasons, viz., spring (March-May), autumn (September to Mid-November), and winter (December - Mid-February).

It is evident from Table 5.2 that the autumn season is the main season for mountaineering activities, followed by spring and winter. In 1989, a total of 1,053 mountaineers belonging to 125 teams attempted different Himalayan peaks. This provided seasonal employment to 10,984 persons. The average number of seasonal jobs generated per mountaineer was 18.5 in 1979, and this came down to 10.4 in 1989.

**Table 5.2: Mountaineering Teams: Number of Mountaineers, Employment Generated, Royalties and Expenditure of Mountaineering Teams, 1979 and 1989**

| Year/Season | Number of | Number of | Seasonal | Royalty | Expenditure |
|-------------|-----------|-----------|----------|---------|-------------|
| <u>1979</u> |           |           |          |         |             |
| Spring      | 21        | 213       | 5,250    | 242     | 5,092       |
| Autumn      | 26        | 255       | 3,474    | 320     | 6,103       |
| Winter      | 1         | 20        | 292      | 15      | 566         |
| Total-1979  | 48        | 488       | 9,016    | 577     | 11,761      |
| <u>1989</u> |           |           |          |         |             |
| Spring      | 48        | 426       | 5,625    | 2,816   | 25,224      |
| Autumn      | 60        | 496       | 4,652    | 3,537   | 31,109      |
| Winter      | 17        | 131       | 707      | 869     | 7,643       |
| Total-1989  | 125       | 1,053     | 10,984   | 7,222   | 63,976      |

Note: Royalty and expenditure figures are rounded off

Source: HMG 1990

In 1988, about 21 per cent of the trek permits were issued in October, followed by November (10.7%) and April (10.5%). About 60 per cent of the total trekkers and mountaineers to Nepal come in October-November and March-April (Table 5.3). May through August is observed to be the lean period for trekking and mountaineering activities. These three months accounted for less than 10 per cent of the total trekking permits issued in 1988 (Table 5.3).

**Table 5.3: Total Number of Trekking Permits Issued, 1988**

| Trekking Routes                  | Jan.  | Feb.  | Mar.  | Apr.  | May   | Jun. | Jul. | Aug.  | Sept. | Oct.   | Nov.   | Dec.  | Total  |
|----------------------------------|-------|-------|-------|-------|-------|------|------|-------|-------|--------|--------|-------|--------|
| Everest Trek<br>11,366           | 394   | 816   | 1,697 | 1,001 | 428   | 56   | 48   | 178   | 649   | 2762   | 2,007  | 1,330 |        |
| Helambu/Langtang<br>Valley Trek  | 809   | 412   | 1121  | 1005  | 392   | 90   | 75   | 153   | 425   | 1940   | 1410   | 591   | 8423   |
| Kanchenjunga Trek                |       |       |       |       |       |      |      |       |       | 65     | 18     | 4     | 87     |
| Annapurna, Manang<br>Jomsom Trek | 2,934 | 2,758 | 4,754 | 4,224 | 2,108 | 674  | 337  | 545   | 1,684 | 7,603  | 6,388  | 3,893 | 37,902 |
| Others                           | 202   | 323   | 523   | 217   | 146   | 111  | 61   | 308   | 621   | 442    | 410    | 131   | 3495   |
| Total                            | 4,339 | 4,309 | 8,095 | 6,447 | 3,074 | 931  | 521  | 1,184 | 3,379 | 12,812 | 10,233 | 5,949 | 61,273 |

Source: Department of Tourism 1988

**Regional Distribution**

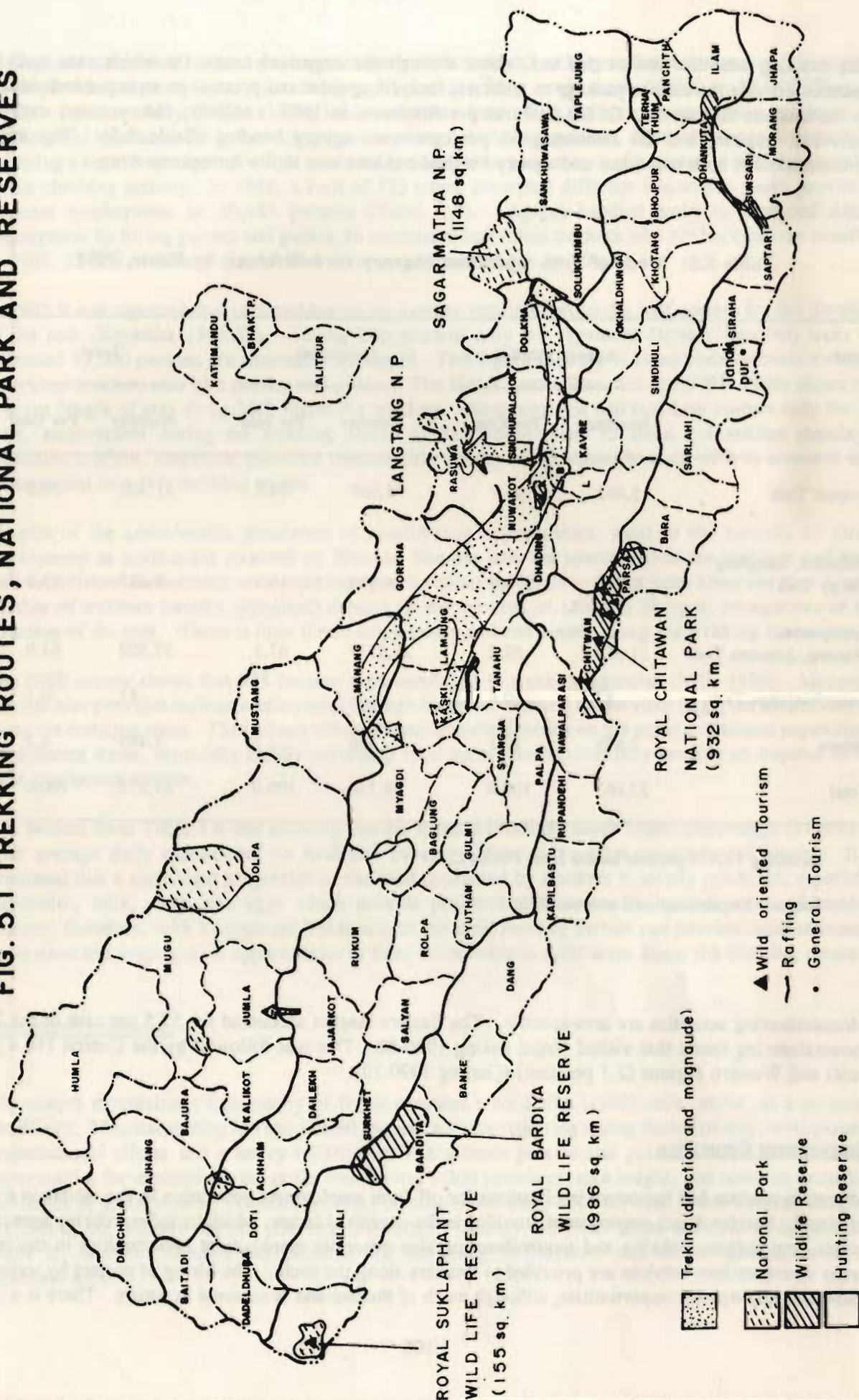
Trekking tourism in Nepal is highly concentrated in three major trekking routes, viz., the Everest trek, the Helambu-Langtang Valley trek, and the Annapurna-Manang-Jomsom trek (Fig. 5.1). In 1980, the Annapurna-Manang-Jomsom trek accounted for 52.2 per cent of the total trekking permits, followed by the Everest trek (21.3 per cent), the Helambu-Langtang trek (15.0 per cent), and others (11.6 per cent). The relative importance of the three major trekking routes has remained unchanged. the Annapurna-Manang-Jomsom trek was the most frequented, accounting for 61.9 per cent of the trek permits issued, followed by the Everest trek (18.5 per cent), the Helambu-Langtang trek (13.7 per cent), and others (5.8 per cent) as can be seen from Table 5.4.

**Table 5.4: Number of Trekking Permits Issued by Area (1980-88)**

| Year | Everest<br>Trek | Helambu<br>Langtang<br>Valley<br>Trek | Annapurna<br>Manang<br>Jomsom<br>Trek | Kanchenjunga<br>Trek | Other | Total  |
|------|-----------------|---------------------------------------|---------------------------------------|----------------------|-------|--------|
| 1980 | 5,836           | 4,113                                 | 14,332                                | -                    | 3,179 | 27,460 |
| 1981 | 5,804           | 4,488                                 | 17,053                                | -                    | 2,155 | 29,500 |
| 1982 | 6,240           | 4,535                                 | 19,702                                | -                    | 1,855 | 32,332 |
| 1983 | 6,732           | 4,030                                 | 21,119                                | -                    | 417   | 32,298 |
| 1984 | 7,724           | 4,792                                 | 25,422                                | -                    | 3,268 | 41,206 |
| 1985 | 8,347           | 4,610                                 | 18,960                                | -                    | 813   | 32,730 |
| 1986 | 9,900           | 5,250                                 | 33,620                                | -                    | 805   | 49,575 |
| 1987 | 8,998           | 6,107                                 | 30,914                                | -                    | 1,256 | 47,275 |
| 1988 | 11,366          | 8,423                                 | 37,902                                | 87                   | 3,495 | 61,273 |

Source: Dept. of Tourism 1980

FIG. 5.1 TREKKING ROUTES, NATIONAL PARK AND RESERVES



The trekking activities are carried out, either through the organised sector (in which case trekking agencies provide the service package to trekkers, including guides and porters) or arranged individually by the trekkers themselves. Of the total trek permits issued in 1988, a majority (64 per cent) were for individual trekkers and the remaining 36 per cent were agency handled (Table 5.5). The major concentration of both individual and agency-handled trekkers was in the Annapurna Area.

**Table 5.5: Mode of Trek Operation (Agency vs. Individual) by Route, 1988**

| Route                          | Agency handled |          | Individual |          | Total  |          |
|--------------------------------|----------------|----------|------------|----------|--------|----------|
|                                | Number         | Per Cent | Number     | Per cent | Number | Per Cent |
| Everest Trek                   | 5,668          | 25.7     | 5,698      | 14.5     | 11,365 | 18.5     |
| Helambu, Langtang Valley Trek  | 2,125          | 9.6      | 6,298      | 16.1     | 8,423  | 13.8     |
| Annapurna, Manang, Jomsom Trek | 11,524         | 52.2     | 26,378*    | 67.3     | 37,902 | 61.9     |
| Kangchanjunga Trek             | 87             | 0.4      | -          | -        | 87     | 0.1      |
| Others                         | 2,659          | 12.1     | 836        | 2.1      | 3,495  | 5.7      |
| Total                          | 22,063         | 100.0    | 39,210     | 100.0    | 61,273 | 100.0    |

\* Including 12,476 permits issued from Pokhara.

Source: Department of Tourism 1988

Mountaineering activities are area-specific. The Eastern Region accounted for 57.5 per cent of the 285 mountaineering teams that visited Nepal during 1986-88. This was followed by the Central (40.4 per cent) and Western regions (2.1 per cent) (Gurung 1990:19).

### Employment Generation

Mountain tourism has important implications for off-farm employment generation in the mountain areas of Nepal. Besides direct employment provided in the organised sector, which includes trekking agencies, hotels, and lodges, trekking and mountaineering also generates employment opportunities in the rural areas where various services are provided to trekkers along the route. The hiring of porters by trekkers increases employment opportunities, although much of the demand is seasonal in nature. There is a lack

of detailed information on total employment generation through trekking and mountaineering. Estimates of people annually employed in trekking and mountaineering range from 46,000 to 72,000 (Gurung 1990). Another study (CEDA 1989) has estimated a total of 66,000 people seasonally employed in trekking and mountaineering, including those working in trekking agencies. Mountaineering is an activity requiring a lot of organisation which needs the services of large numbers of porters for the total duration of the climbing activity. In 1989, a total of 125 teams attempted different Himalayan peaks providing seasonal employment to 10,984 persons (Table 5.2). Agency-handled trekkers provided direct employment by hiring porters and guides, in contrast to individual trekkers who are backpackers usually. In 1988, 22,063 or 36 per cent of all trekkers were handled by agencies.

In 1985 it was reported that each trekker on an average required two and a half porters for the duration of the trek (Kayastha 1985:52). Taking into account only the organised (agency handled) treks an estimated 55,000 persons are seasonally employed. This figure is likely to be an underestimate as some individual trekkers also hire porters and guides. The Nepal Rastra Bank Survey (NRB 1989) shows the average length of stay to be 25.8 nights for trekkers. Assuming that trekkers hire porters only for 20 days, employment during the trekking season (1988) would come to about 1.1 million mandays. Mountain tourism, therefore, provides considerable employment, although much of it is seasonal and concentrated in a few trekking routes.

In spite of the considerable generation of employment opportunities, most of the benefits of direct employment as porters are received by Khumbu Sherpas who are specialised in the business and have well-established connections with trekking agencies (Sharma 1989a). It has been observed that a large number of trekkers (mostly organised) depend on the services of Khumbu Sherpas, irrespective of the direction of the trek. There is little direct employment of local people along the trekking routes.

The NRB survey shows that 978 persons were employed in trekking agencies (NRB 1989). Mountain tourism also provides indirect employment through increased demand for services (e.g., tea shops, lodges) along the trekking route. The indirect effect on employment depends on the pattern of tourist expenditure on different items, especially locally purchased food items which potentially provide an impetus to the local production system.

It is evident from Table 5.6 that trekking tourists spend a relatively much higher percentage (31.9%) of their average daily expenditure on food and beverages than many other categories of tourist. It is presumed that a significant proportion of the food consumed by trekkers is locally produced, especially vegetables, milk, meat, and eggs which provide production incentives to local farmers. Mountain tourism, therefore, with its apparent linkages with the local farming system can provide indirect income generation and employment opportunities to farm households in rural areas along the trekking routes.

### Potentials/Constraints

The unique mountainous topography of Nepal provides what Jodha (1989) calls 'niche' as a mountain specificity. Mountaineering is a specialised tourism activity requiring a long period of stay, well-planned organisational efforts and a heavy reliance on high altitude porters and guides. Nepal offers unique opportunities for mountaineering as the country has 1,300 prominent spot heights and summits exceeding elevations of 6,000 metres, of which 37.3 per cent lie in the East, 33.4 per cent in the Central, and 29.6 per cent in the Western regions (Gurung 1990:20). Presently, only 109 peaks are open to expeditions. There is, therefore, tremendous potential for increasing employment and income-generation in the mountain areas.

**Table 5.6: Itemwise Distribution of Average Per Capita/Day Tourists Expenditure by Purpose of Visit**

(in per cent)

| Purpose of Visit | Accommodation | Food and Beverages | Sight-seeing and Trekking | Shopping    |         |          |        | Local Transport | Taxes and Fees | Miscellaneous *** |
|------------------|---------------|--------------------|---------------------------|-------------|---------|----------|--------|-----------------|----------------|-------------------|
|                  |               |                    |                           | Handicrafts | Carpets | Garments | Others |                 |                |                   |
| Pleasure         | 29.9          | 23.1               | 9.5                       | 7.5         | 2.3     | 4.4      | 0.6    | 3.5             | 5.1            | 14.1              |
| Trekking         | 20.7          | 31.9               | 17.5                      | 6.0         | 3.4     | 2.2      |        | 4.5             | 5.6            | 8.2               |
| Business         | 38.1          | 22.4               | 4.2                       | 5.8         | 1.9     | 6.4      | 0.6    | 4.6             | 4.4            | 11.6              |
| Official         | 42.0          | 21.9               | 2.7                       | 3.0         | 1.9     | 7.3      | 0.5    | 5.9             | 3.7            | 11.1              |
| Diplomacy        | 32.7          | 21.2               | 3.8                       | 6.1         | 1.2     | 9.7      | 1.3    | 8.3             | 2.9            | 12.8              |
| Education        | 10.1          | 47.8               | 4.9                       | 3.4         | 3.7     | 15.7     | 0.4    | 3.7             | 4.9            | 5.4               |
| Pilgrimage       | 4.1           | 19.1               | 4.7                       | 7.6         |         | 19.6     | 26.7*  | 11.1            | 1.3            | 10.2              |
| Others           | 24.8          | 19.5               | 4.9                       | 4.5         | 0.2     | 16.8     | 2.0    | 6.6             | 6.1            | 14.6              |

\* Exclude International Air Fares

\*\* Include Jewellery & Curios

\*\*\* Include Expenses on Telephone, Tips, Laundry, Books, Freight & Insurance, etc.

# Include expenditure on Textiles, Cosmetics, Blankets, Umbrellas, Electronic Goods, etc.

Source: Nepal Rastra Bank 1989:129

Mountain tourism has the potential to provide employment opportunities to mountain people locally, thereby reducing the imperatives for seasonal and/or permanent migration to the *terai*. For example, the growth of tourism in the Khumbu Region has reduced the Sherpas' imperative to migrate seasonally to Darjeeling (India) in search of employment (Sharma 1989a:20).

Mountain tourism, however, can also induce migration. Upadhaya (1984) shows that seasonal migration has increased to meet the growing demand for porters in the Khumbu Region. Young men are attracted by the prospect of higher income from portering through employment as high altitude guides. The local people's receptivity to new ideas and values has increased leading to wider adoption of family planning practices and an observed decline in the fertility rate among the Sherpas (Fisher 1986).

Exploitation of these potentials, however, does not guarantee that the benefits accrue fully to the local people or that the distribution of benefits is equitable. Available evidence shows that the beneficiaries from trekking have been people far from the actual trekking routes (Roberts and Johnson 1985). Also the benefits have been reaped by relatively well-off households through the sale of agricultural and livestock products (Sharma 1989a).

While harnessing the potentials of mountain tourism depends upon a number of factors, such as development of basic service infrastructures and improved access, it also has an impact on the fragile mountain ecosystem. Several studies have shown that increased consumption of firewood by trekkers and porters is beginning to adversely affect the environmental balance in the trekking areas. Burger estimated

that on an average each member of an organised trek consumed 11 kg of fuelwood per trekking day in the year 1978. The Khumbu Region Tourism Study (1978) showed that the quantity of fuelwood used depended upon the type of trekker, the large or organised groups using more fuelwood than individual trekkers. The concentration of tourists in specific mountain areas greatly increases the total fuelwood demand, resulting in destruction of the forests. Jones (1988) has shown that at Ghorepani (along the Pokhara - Jomsom route), which had a local population of 250 and an annual tourist flow of over 10,000, forest depletion was taking place at the rate of one hectare per year. The same study shows that the fuelwood requirements of a tourist lodge were much higher (220 kg per day) than the average requirements of a subsistence household (22 kg per day) (Sharma 1989a).

Similarly, mountain tourism is reported to have resulted in overgrazing, caused by the increased movement of pack-animals in trekking areas (Friend 1983); environmental pollution, caused by the dumping of bio-nondegradable garbage; and littering, especially along the major mountaineering routes. Such resource-extractive activities have severely damaged the sustainability of the mountain agro-ecosystem. Gurung (1990) has shown that, by 1995, in the heavily-treked Annapurna area, the number of trekkers would greatly exceed the carrying-capacity of the area if the present trends continue.

### Implications of Mountain Tourism on Some Basic Issues

The contribution of mountain tourism to the generation of rural employment generation will depend on enhanced linkages with the farming system, for example, by the development of specialised modes of production, e.g., horticulture, livestock, poultry, etc. The processing of horticultural produce, such as fruit juice and alcoholic beverages for tourists, and regional markets are well-established in the Myagdi and Mustang areas along the Annapurna route. Such linkages enhance the employment potential of mountain tourism. Employment effects will be significant only if mountain tourism is integrated with local, resource-based development strategies.

The implications of mountain tourism in the context of the Nepalese hills and mountains are summarised in Table 5.7. It also gives indications of the potential for the success and failure of mountain tourism as an off-farm employment activity.

### **Sericulture**

Sericulture is an agro-based industry which includes the pre-cocoon activities of mulberry cultivation and silkworm rearing and the post-cocoon activities of processing and making silk fabrics. Although efforts to introduce sericulture into Nepal began as early as the 1940s, it is only recently that the development of sericulture has gained momentum following the establishment of a nucleus sericulture station at Khopasi in Kavrepalchanchok District near the Kathmandu Valley in 1975. The Centre has 6.25 ha of land, including a mulberry plantation. A sub-centre has also been established at Syangja in the western hills.

The agro-climatic and socioeconomic conditions of Nepal are favourable for the development of sericulture. All the geographical regions of Nepal have promising potentials for sericulture (FAO 1989:2). Mulberry, the specific food plant of the silkworm, is native to Nepal and exists in numerous species, varieties, and strains right from the *terai* up to 2500m in the mid-hills. Nepal, however, has no native silkworm species. Currently, Nepal is importing commercial (F1) silkworm hybrid eggs from Korea of which the bivoltine hybrids such as J107xJ108, J111xJ112, J119xJ120 and J121xJ122 are most common (Kafle n.d.: 6).

**Table 5.7: Indicators of Success/Failure of Mountain Tourism in the Mountain Context**

| Concerns                                          | Positive                                                                                                                                                                                                                                      | Negative                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Environment/<br>Resource                       | Relieves population pressure on land by providing alternative employment and income opportunities                                                                                                                                             | Deforestation caused by increased consumption of fuelwood and over-grazing caused by increased movement of animals for load carrying in trekking and mountaineering areas<br><br>- Environmental pollution caused by dumping of bio-nondegradable garbage and littering along the trekking and mountaineering trails |
| 2. Demographic/<br>Spatial                        | Reduces necessity of seasonal or temporary migration; may lead to growth of small towns, market centres                                                                                                                                       | Seasonal migration of males for portering increases the burden on and family responsibilities of women                                                                                                                                                                                                               |
| 3. Linkages with<br>Farming System                | Increases the demand for fruit, vegetables, and livestock products, thereby encouraging diversification in farming                                                                                                                            | The effect is highly seasonal                                                                                                                                                                                                                                                                                        |
| 4. Linkages with<br>Other Sectors                 | Increases demand for handicrafts and cottage industries, thereby encouraging production of raw materials needed for these industries<br><br>Leads to the growth of essential infrastructural services, and markets along major trails         | Increased demand for milk, eggs, fruit, etc by trekkers reduces their availability for the local people, particularly the children and the poor                                                                                                                                                                      |
| 5. Local<br>Employment                            | Employment in processing of fruits, vegetables, and livestock products<br><br>Generates employment to meet increased demand for handicraft and cottage industries<br><br>Increases employment in portering and services along trekking routes | Seasonal nature of employment                                                                                                                                                                                                                                                                                        |
| 6. Effect on Small-Scale Marginal Farmers & Women | Induces sideline activities - vegetable gardening, horticulture, fruit processing) thus enhancing income and employment                                                                                                                       | Increases the burden on women as they have to take care of other chores in addition to lodge-keeping and similar tourist-related activities                                                                                                                                                                          |

## Production

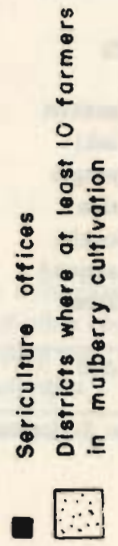
The distribution of mulberry saplings to outgrowers by the Khopasi farm was started in 1976/77. Between 1976/77 and 1989/90 about 3.8 million saplings were distributed to farmers. Most of the saplings were planted on rainfed marginal lands, and hence had low productivity (about 15 tons per ha/year). As a result of the lack of proper attention and failure to carry out timely pruning the mortality rate of plants was very high. Out of a total of 778 ha of marginal hill slopes, on which mulberry saplings were planted, only 300 ha have a standing crop. Only about 50 ha give any leaf yield. The plantation areas are scattered over 8 districts (Fig. 5.2) in the Eastern, Central, and Western development regions of which the major areas are to be found in Ilam, Kavre, Sindhupalchok, and Syangja districts (Table 5.8). The total number of farmers involved in sericulture in Nepal, at present, is roughly 500 and Ilam alone accounts for almost 60 per cent of these. However, silkworm rearing is carried out by only about 157 farmers in 15 districts of the Eastern, Central, and Western development regions. In Ilam, the growing popularity of sericulture has been the result of promotional activities, launched by the Lutheran World Service through the local Women's Association in 1985, that included the provision of plantations, materials, grant aid, and interest-free loans to farmers.

**Table 5.8: State of Sericulture in the Hill and Mountain Districts of Nepal, 1989/90**

| Districts      | Mulberry Cultivation |           | No. of Households Involved<br>in the Cocoon Production Stage |
|----------------|----------------------|-----------|--------------------------------------------------------------|
|                | No. of<br>households | Area (ha) |                                                              |
| <b>Eastern</b> |                      |           |                                                              |
| Ilam           | 300                  | 7.0       | 60                                                           |
| Dhankuta       | 10                   | 5.0       | 4                                                            |
| Bhojpur        | 1                    | 0.5       | 1                                                            |
| <b>Central</b> |                      |           |                                                              |
| Kavrepalanchok | 60                   | 100       | 30                                                           |
| Sindhupalchok  | 12                   | 12        | 4                                                            |
| Nuwakot        | 7                    | 3         | 2                                                            |
| Dhading        | 12                   | 10        | 10                                                           |
| Lalitpur       | 5                    | 2         | -                                                            |
| Bhaktapur      | 3                    | 0.5       | 1                                                            |
| Sindhuli       | 1                    | 0.5       | 1                                                            |
| Dolakha        | 3                    | 1         | -                                                            |
| <b>Western</b> |                      |           |                                                              |
| Tanahun        | 10                   | 5         | 4                                                            |
| Kaski          | 5                    | 1         | 2                                                            |
| Syangja        | 60                   | 60        | 30                                                           |
| Palpa          | 10                   | 10        | 5                                                            |
| Gorkha         | 1                    | 0.3       | -                                                            |
| Lamjung        | 1                    | 0.2       | 1                                                            |
| Parbat         | 4                    | 1         | 2                                                            |
| Total          | 505                  |           | 157                                                          |

Source: Sericulture Station, Khopasi, 1989/90

### FIG. 5.2 SERICULTURE ACTIVITIES



Silkworm rearing is usually practised during three seasons, viz., spring, summer, and autumn, in the mid-hills. Rearing starts in Mid-March/April and continues until October/November enabling 3-5 rearings in a year. During the period from 1986/87-1989/90, the average annual production was 12.5 tons (Table 5.9).

**Table 5.9: Mulberry Saplings Distributed, Area Covered, and Cocoons Produced**

| Years           | Saplings Distributed (000) | Area (ha)    | Seeds Distributed (in kg) | Cocoons Produced (tons) |
|-----------------|----------------------------|--------------|---------------------------|-------------------------|
| 1976/77 - 80/81 | 1310.0                     | 160.0        | 1.25                      | 4.3                     |
| 1981/82 - 85/86 | 860.0                      | 264.0        | 20.0                      | 26.0                    |
| 1986/87 - 89/90 | 1616.0                     | 354.0        | 45.5                      | 50.0                    |
| <b>Total</b>    | <b>3786.0</b>              | <b>778.0</b> | <b>66.75</b>              | <b>80.3</b>             |

Source: Kafle n.d.: 8

### Marketing and Post-Cocoon Activities

The marketing system for cocoons is undeveloped. Presently, procurement of cocoons is carried out only by the Khopasi farm which has its own limitations in terms of budget. The Government has fixed the cocoon prices at Rs 50 per kg for fresh and Rs 140 per kg for dried cocoons. All the cocoons produced in the country are procured by the Khopasi Centre in sun-dried conditions and reeled on pedal-type, 3-end cottage basins with very primitive techniques. The Khopasi Centre has recently installed a modern multi-end (20-end type) reeling plant with cocoon driers, pressurised cooking plants, and re-reeling and testing units for quality control with Korean technical assistance. The capacity of this plant is about 3 tons of raw silk annually (as against the present output of 300 pf kg raw silk). Currently, the country lacks silk-twisting and silk-weaving programmes. There are only a few handloom units in Kathmandu for the production of shawls. These generally use spun silk imported from India, for warp, and handspun Pashmina yarn for weft.

### Income Distribution and Employment

Sericulture has the distinct potential for resource transfer from rich urban consumers of silk to the poor primary producers who are able to retain a large part of the sales' earnings. The income derived from the sale of silk articles (sarees for example) is estimated to be distributed as given below.

|                   |                |
|-------------------|----------------|
| Farmers (growers) | 57.0 %         |
| Reelers           | 7.0 %          |
| Twisters          | 9.0 %          |
| Weavers           | 10.5 %         |
| Traders           | 16.5 %         |
| <b>Total</b>      | <b>100.0 %</b> |

Sericulture is a labour-intensive activity, therefore the whole family can be employed. It is estimated that one hectare of (irrigated) mulberry provides employment to 13 persons throughout the year in the various activities of mulberry cultivation, silkworm rearing, reeling, and weaving. Sericulture can reduce seasonal underemployment, unemployment, and the migration of rural people to urban areas in search of jobs. Landless labourers can also benefit by growing mulberry in their backyards and embankments and by collecting leaves for silkworms.

### Environment

Mulberry plants can be grown as low bushes or as deep-rooted trees. Mulberries can be used in afforestation of land and in anti-erosion programmes. They also help soil-retention through the growth of foliage. Mulberries can be cultivated on slopes or other marginal lands which are otherwise not productive. The pruned stock of the mulberry can be used as a firewood substitute in rural areas.

Sanitation habits are likely to be adopted by local people when they involve themselves in silk-worm raising because certain sanitary practices must be followed (such as washing the hands with disinfectant before touching the silkworms).

### Farming System

Intercropping of mulberries with wheat, maize, or soyabeans is possible. Soyabeans as an intercrop have the additional benefits of nitrogen fixation which enhances soil fertility and reduces fertiliser requirements. Mulberries are reported to have been effective as single line fences around fruit orchards. Mulberry plantation has special advantages for livestock-raising by farm households. The slogan 'Silk and Milk' could become popular since bed refuse, silkworm litter, and droppings can be used as cattle feed. Mulberry also ranks very high in terms of nutrition value and therefore, as fodder. The potential linkages of sericulture with the farming system are therefore strong. It is supportive of the farming system as a whole.

### Gender Issues

Women play a major role in various sericultural activities. In Nepal 60 per cent of the labour requirements for sericulture are met by women (FAO 1989:2). The increasing commercialisation of rural economic activities in sericultural enterprises will have a direct impact on the decision-making situation in the family. It has the potential to enhance the social and economic status of women.

### Potentials and Constraints

Sericulture is potentially an important off-farm employment activity in the mid-hills of Nepal. Because of the labour-intensive nature of the activity it could contribute to an increase in labour use in farm households. The recent experiences in Ilam have shown that sericulture can be developed in the mid-hills provided necessary inputs and support services are made available to the farmers.

The FAO has completed a report on the development of sericulture in Nepal under its technical cooperation programme (TCP/NEP/8854 (A)), demonstrating the possibilities of expanding sericulture in Nepal through an integrated programme covering research, breeding, extension services, and post-

cocoon activities. It has been envisaged that, within a 5-year period, mulberry cultivation will cover about 500 ha producing about 40 metric tons of bivoltine raw silk worth about Rs 60 million. One half of the raw silk can be exported to earn foreign exchange. On the basis of the gains in the first phase, the proposed first five year project could be extended to the next stage. By 2,000 AD mulberry acreage could be about 1,000 ha and silk production could reach 100 metric tons (FAO 1989:11). In terms of employment generation, the proposed programme, if fully realised, could provide 13,000 person years of employment in the mid-hill districts by the year 2000 AD.

There is a high export demand for raw silk. Table 5.10 presents the export/import situation for silk products and shows that the development of the local silk-weaving industry could also lead to the import substitution of silk fabrics. Indicators of the success and failure of sericulture are presented in Table 5.11.

**Table 5.10: Import/Export of Silk Products in Nepal**

(value in '000 Rs.)

| Commodity/Year | 1985/86 |        | 1988/89 |        |
|----------------|---------|--------|---------|--------|
|                | Import  | Export | Import  | Export |
| Silk Yarn      | 913.0   | 8      | 914.0   | 30     |
| Silk Fabrics   | 110.0   | 64     | 2138.0  | 422    |
| Total          | 1023.0  | 72     | 3052.0  | 452.0  |

Source: HMG 1985/86 and 1988/89

## Dairy Industry

Although the per capita cattle population in Nepal is one of the highest in the world, milk production is considered of secondary importance, the primary importance being bullocks and manure production. Oxen, in particular, are important sources of draft power for ploughing and farm transportation.

Although some cows and buffaloes are kept in most farm households, the dairy industry was not developed in the public sector until 1950. The Dairy Development Section was established under the Ministry of Agriculture in 1958 and this later became the Dairy Development Corporation (DDC) in 1969. The DDC's activities have mainly concentrated on the development of urban markets.

## Products and Production

Milk and milk products are produced both in the formal and the informal sectors. The formal sector includes the Dairy Development Corporation and a small group of private dairies. The informal sector consists of individual households. The main products in the formal sector are milk, cheese, butter, yoghurt, and ice-cream. Butter, *chhurpi*, *curds*, *ghee*, *chhena*, and *khoa* are produced in the informal sector.

**Table 5.11: Indicators of Success/Failure of Sericulture in the Mountain Context**

| Concerns                                           | Positive                                                                                                                                                                                                     | Negative                                                                                                                                                                                |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Environment/<br>Resource Base                      | Improves management of marginal lands (most mulberry plantations located on hill slopes with gradients of 40-50 %), increased supply of fuel-wood from mulberries                                            | Increased use of chemical fertiliser, at greater rate of harvesting 300:100:16 kg of N:P:K per ha is required compared to the current application rate of 100:40:60 kg of N:P:K: per ha |
| Demographic/Spatial<br>Implications                | Reduces seasonality of labour demand, increased post-cocoon activities following infrastructural development, likely to reduce out-migration as employment and income-earning opportunities increase locally | Likely to affect birth control programme since family labour is needed for this enterprise                                                                                              |
| Linkages with<br>Farming System                    | Increased supply of fodder to sustain livestock, increased supply of animal feed from bed refuse, droppings, etc, incropping with soyabean increases soil fertility                                          |                                                                                                                                                                                         |
| Employment                                         | Highly labour intensive, Implications production by masses instead of mass production                                                                                                                        |                                                                                                                                                                                         |
| Focus on Poor/<br>Marginalised Groups<br>and Women | Small, marginal farmers and landless households are main beneficiaries, increases women's employment, skill enhancement in various aspects of sericulture, including silkworm raising, reeling, and weaving  |                                                                                                                                                                                         |
| Income Redistribution                              | Silk is an expensive commodity mostly consumed by very rich people, whereas its production is labour intensive, thus income transfer likely from rich to poor                                                |                                                                                                                                                                                         |

The informal sector has been estimated to account for 90-95 per cent of the total milk production. Most of the farmers produce ghee and milk. The total production of ghee in Nepal was estimated at 11,700 tons in 1987/88 (TPC 1989). Milk production in Nepal for 1987/88 was estimated to be 808,000 mt of which 30 per cent was cow's milk. Buffalo milk constitutes 70 per cent of the total milk production (ADB 1990). It is estimated that the growth rate in milk production has risen from 1.3 per cent per annum between 1974/75 - 1984/85 to 2.5 per cent per annum during 1984/85 - 1987/88. It should be noted that these figures are based on the extrapolation of estimated production per milch animal and should be viewed with caution.

The Dairy Development Corporation (DDC) produces 20-25 million litres/year of pasteurised milk. Of the total milk produced, some 55 per cent is from raw milk and the rest is produced from skimmed milk powder and butter oil provided by the World Food Programme. It is estimated that the milk obtained from the DDC comprises 3.2 per cent of the total milk production. The other dairy products from the DDC include cheese (100-130 tons/year), butter (150-200 tons/year), yoghurt (0.3-0.4 million litres/year), and ice-cream (0.2-0.3 million litres/year).

The first-milk processing plant was established at Lainchaur, Kathmandu, in 1959. Later, four other plants were established at Biratnagar, Hetauda, Balaju, (Kathmandu), and Pokhara in 1974, 1975, 1977 and 1980 respectively. The first cheese plant was established by FAO in Langtang (Rasuwa District) in 1953. Currently, there are 16 small cheese plants producing around 120 tons of cheese and 50 tons of butter annually (Table 5.12).

**Table 5.12: Dairy Development Corporation : Cheese and Butter Production Centres**

| Name of Centre | District       | Remarks            | 1987/88<br>Production (in mt) |        |
|----------------|----------------|--------------------|-------------------------------|--------|
|                |                |                    | Cheese                        | Butter |
| Pashupatinagar | Ilam           | Cow's Milk         | 19.3                          | 1.3    |
| Ouje           | Solukhumbu     | Yak/Chauri         | 4.2                           | 1.2    |
| Takshindu      | "              | "                  | 2.2                           | 0.7    |
| Kyama          | Ramechhap      | Chauri Milk        | 17.1                          | 5.3    |
| Thodung        | "              | "                  | 15.1                          | 5.1    |
| Chordum        | Dolakha        | "                  | 15.1                          | 5.1    |
| Chankhu Hulak  | Sindhupalchok  | "                  | 4.2                           | 1.3    |
| Kayangsingh    | "              | "                  | 8.5                           | 2.9    |
| Gosainkunda    | Rasuwa         | "                  | 8.0                           | 2.6    |
| Langtang       | "              | Yak/Chauri<br>Milk | 5.5                           | 1.6    |
| Gatlang        | "              | "                  | 2.6                           | 0.8    |
| Kalinchowk     | Kavrepalanchok | Buffalo Milk       | 1.4                           | 3.8    |
| Pauwa          | "              | "                  | 1.0                           | 10.6   |
| Deorali        | "              | "                  | -                             | 2.0    |
| Nagarkot       | "              | "                  | 14.8                          | 3.8    |
| Trishuli       | Nuwakot        | "                  | -                             | 0.5    |
|                |                |                    | 120.4                         | 48.6   |

Source: ADB 1990a

## Distribution and Marketing

The distribution and marketing system for milk and milk products remains highly unorganised and undeveloped, particularly in rural Nepal. Presently, four milk supply centres with different dealers in urban areas of Kathmandu, Hetauda, Biratnagar, and Pokhara are operating under the DDC. Some private dairies are also operating in the urban areas of Nepal. The market structure for dairy products can be classified into three categories. The traditional component consists of those who are residing in remote areas and are producing dairy products mainly for home consumption. Some of their dairy products, such as ghee, are sold in the neighbouring markets and villages at low prices for cash income. Lack of market opportunities is the main constraint. The urban component consists of the consumption of dairy products in households, in restaurants, and in hotels. This component is organised to some extent and hence cash income generation is relatively higher than in the traditional component. The third component is the export market component, mostly for ghee. The ghee is exported to the towns and cities of northern India. In 1987/88, 8,500 tons of ghee were exported from Nepal to India.

## Employment Generation

Most farm households in rural Nepal possess some cattle and/or buffaloes. Livestock rearing is labour intensive so it can provide additional employment to farm households and help in generating additional cash income. Generation of additional employment opportunities in their own village areas would help to reduce the migration of mountain and hill people to the *terai* and/or India. The small and landless households can also benefit from such activities.

## Farming Linkages

Livestock are an integral part of farm inputs in Nepal. The animals are kept not only for milk production but also for farm manure. Therefore, dairy development will also enhance the productivity of different crops, particularly in the mountain/hill areas where chemical fertilisers are seldom available. However, attention needs to be given to the microclimatic conditions and the breed of livestock raised for milk. The quality of livestock has to be improved to make milk production and dairying an important off-farm activity.

## Environment

Development of livestock in the hills and mountains will adversely affect the forests and pastures if stall-feeding is not practised. Overgrazing is already a severe problem in the Nepalese hills.

## Gender Issues

In Nepal, 98 per cent of the women are engaged in agriculture and related activities. Women and children spend 4-6 hours a day, particularly in the mountains and hills, looking after the cattle. They wash them feed them, take the animals to graze, milk them, and take the milk to collection centres where it is sold. The increasing commercialisation of dairy activities will provide rural women with full-time employment and will also generate additional income. Livestock-rearing for milk is, however, likely to increase the work load and burden of women.

## Potentials and Constraints

Table 5.13 summarises some of the indicators of success and failure with regard to dairy activities in the hills and mountains of Nepal. A wide range of climatic conditions, particularly the availability of fodder in hill forests, makes the development of livestock rearing attractive, particularly if forest and pasture resources are managed properly. There is a lot of scope for increasing livestock production, both for home consumption to improve the nutritional standards of rural people and for fulfilling the growing demand in the local, regional, and international markets. Given the situation in the hills, livestock complement the existing farming system, by absorbing the unemployed and underemployed labour force and providing opportunities for increasing the cash income of households.

The unavailability of improved livestock breeds and the lack of technical know-how in improved livestock rearing are hindering dairy development in inaccessible areas. Most people are unaware of the nutritive value of livestock products in their diet and hence they seldom bother about improving livestock fodder. The marketing of livestock products is also a major problem. Increasing deforestation and overgrazing have limited the availability of sufficient fodder for livestock in several hill mountain areas. Dairying is more suited to specific attributes of mountain areas in comparison to traditional crops. Dairy development has several positive features, especially in the case of Nepal, because of the high man/land ratio, the predominance of small-scale and marginal farmers, and climatic conditions. Many dairy products can be locally processed into high-value, low-weight products which are ideally suited to the context of inaccessibility in the mountains. Processing milk into ghee or cheese is one example.

However, land use intensification and the emphasis on cereal crops have adversely affected the livestock sector. Similarly, emphasis on food grain crops with a low stalk-grain ratio reduced the production of straw or fodder needed for dairy animals over the years. This has introduced distortions in the integrated farming system and has made mountain agriculture less sustainable.

**Table 5.13: Indicators of Successes/Failures of the Dairy Industry in the Mountain Context**

| Concerns                                | Positive                                                                                                                                                                                                                                                            | Negative                                                                                                                                    |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Environment/<br>Resource                | Contributes to local resource supply such as energy-manure, food, helps input recycling such as bedding materials and fodder into manure                                                                                                                            | Overgrazing and increased demand for fodder leads to deforestation                                                                          |
| Demographic/Spatial                     | Uses spatial and temporally variable resources, generates employment and outputs all year around, reduces seasonality of labour demand                                                                                                                              | Problem of marketing in remote areas                                                                                                        |
| Linkages with<br>Other Sectors          | Animals such as sheep, <i>chauri</i> are also used for transportation purposes<br><br>Produces bullocks for draft power in agriculture complements traditional agriculture, increases upland-lowland linkages such as transhumance, by providing means of transport |                                                                                                                                             |
| Focus on Poor<br>Marginalised<br>Groups | Reduces inequities resulting from land disparities, as the activity can be undertaken even with limited manpower                                                                                                                                                    | High investment requirements for improved breeds, prohibits poor farmers from undertaking improved animal rearing for production efficiency |
| Gender Focus                            | Increases the role of females in households, may enhance income of and decision-making authority of women                                                                                                                                                           | Increases the work load of women                                                                                                            |

## ACTIVITY LEVEL ANALYSIS

Based on field experiences of particular cases, two prominent off-farm activities will be analysed in this chapter. These activities are carpet-weaving and vegetable-growing. The first enterprise discussed is the Annapurna Carpet Industry of Baudha, Kathmandu, and the second relates to household-level vegetable growing activities in Naubise, Dhading.

### Carpet Weaving

#### *Type and Scale*

The Annapurna Carpet Industry is one of the few large manufacturers and exporters of Nepalese carpets. It is a well-managed manufacturing unit with a clearly worked out organisational set-up. The unit is divided into five functional departments, namely, the production department, the order department, the dyeing department, the yarn supply department, and the sales' department. Currently it owns and operates 117 looms of various sizes. In the year 1989/90 alone, the industry produced 47,000 sq.m. of carpet of which 46,000 sq.m. were exported abroad.

#### *Technology*

The most important and acknowledged quality of Nepalese carpets is that they are completely handmade. The traditional Tibetan weaving technique, blended with the Nepalese style of rug-making, which incorporates religious and traditional symbols, produces Nepalese carpets of unique distinction.

Of late, however, new and modern designs and dyeing techniques have been applied to carpet-weaving in Nepal to suit the changing tastes of buyers. The manufacturers use highland Tibetan sheep wool and blend it with the superior quality wool imported from New Zealand. The wool is washed, either in a running stream or in special water tanks to remove the dirt, grease, and other foreign materials. After dyeing the wool, hand-carding and hand-spinning are carried out. Hand-spinning is generally carried out through means of a hand-driven spinning wheel or by using the traditional method with a spindle resting and revolving in a bowl. The spun woollen yarn is then dyed and turned into balls. As everything is done by hand, Nepalese carpet-making is an extremely labour-intensive enterprise offering significant employment opportunities.

Wooden looms are commonly used by small and petty manufacturers, while the bigger manufacturers generally own and operate steel looms. New techniques are gradually being introduced. For example, vegetable dyes are being replaced by chemical dyes imported from Switzerland and India. To finish the job of dyeing at speed and in volume, huge copper vats that contain some 400 litres of dyeing materials are being used at the Annapurna Carpet Industry. Wool carding, which used to be done by hand, is now done by machine. The enterprise has a machine with the capacity to card 80 kg of wool per hour. Compared to the manual carding rate of 5 kg of wool per day, the efficiency of the carding machine is

several-fold higher. Labour costs for manual carding come to Rs 8 per kg while it costs only Rs 4.25 to card by machine. Similarly the manual washing of finished carpets is also being carried out by machine. Machine washing costs Rs 130 per sq.m. whereas it costs Rs 150 if done manually. Some trade-offs between employment and cost efficiency are therefore taking place in the industry.

Concerning the dyeing of wool, fuelwood is used for this. It was reported that almost 21 kg of fuelwood is required to dye an amount of wool needed for one sq. m. of carpet. No technological innovations have been introduced in this area.

### *Production Costs*

The production costs of carpets are scale neutral insofar as there is not much difference in the cost of production per unit between large and small industries. Because of the high demand for handspun/hand-knotted carpets from Nepal abroad, and particularly in Europe, skilled labour is in high demand in these industries. Labour wages do not vary among industries because of the competitiveness. The cost of preparing one sq. m. of carpet, computed on the basis of information received from the Annapurna Carpet Industry is presented in Table 6.1.

**Table 6.1 Variable Cost Items Per Square Metre of Carpet**

|     | Items             | Quantity | Cost        | Labour Time |
|-----|-------------------|----------|-------------|-------------|
| 1.  | Raw Wool          | 8        | 800         | -           |
| 2.  | Spinning/ Carding | -        | 150         | 2 days      |
| 3.  | Fuel for Dyeing   | 21       | 75          | -           |
| 4.  | Dyeing Colour     | -        | 50          | -           |
| 5.  | Dyeing Labour     | -        | 30          | 2 hours     |
| 6.  | Winding           | -        | 33          | 8 hours     |
| 7.  | Weaving           | -        | 97          | 2 days      |
| 8.  | Cutting           | -        | 32          | 6 hours     |
| 9.  | Washing           | -        | 150         | -           |
| 10. | Managerial        | -        | 32          | -           |
| 11. | Miscellaneous     | -        | 16          | -           |
|     | <b>TOTAL</b>      |          | <b>1490</b> |             |

The finished carpet costs around Rs 2,200 per sq.m. thus giving a gross profit per sq.m. of around Rs 710. The value-added in the carpet-weaving industry is extremely high.

### *Employment and Wage Structure*

The carpet manufacturing process is mostly manual and hence it has tremendous potential to increase employment in different stages of the production process. It has been estimated that more than 300,000 labourers are employed in carpet industries in the country. The estimates, based on the information in Table 6.1 (Items 5, 6, 7, and 8), show that one labourer needs 4 days to weave one sq. m. of carpet.

For the carpets exported abroad in the FY 1989/90, amounting to 1.2 million sq.m. of carpet, the total labour days needed on the above basis would have been 4.8 million mandays for weaving alone.

Annapurna Carpet Industry has been providing food and lodging facilities to its labourers in addition to cash wages. Inclusive of these facilities, the wages of the labourers involved in different processes are shown in Table 6.2.

**Table 6.2: Percentage of Male, Female and Child Labour Employed by Type of Work, Piece Rate and Equivalent Daily Wage**

| Type of Work | Percentage of Male/Female/Child Labour |   |     | Piece Rate   | Equivalent Daily Wage (Rs./day) |
|--------------|----------------------------------------|---|-----|--------------|---------------------------------|
| Spinning     | Male                                   | = | 30  | Rs 15/kg     | 30                              |
|              | Female                                 | = | 70  |              |                                 |
| Winding      | Male                                   | = | 100 | Rs 3/kg      | 25                              |
| Weaving      | Male                                   | = | 10  | Rs 270/sq.m. | 34                              |
|              | Female                                 | = | 50  |              |                                 |
|              | Children                               | = | 40  |              |                                 |
| Cutting      | Female                                 | = | 75  | Rs 25/sq.m.  | 30                              |
|              | Children                               | = | 25  |              |                                 |

Source : Field Survey

The labourers in the industry are employed both on regular and casual terms. Regular labourers are employed mainly in managerial jobs. Casual labourers are mainly involved in weaving. One special feature of these casual labourers is that they are all from outside the Kathmandu Valley. Most of them are from Jhapa, Morang, Sunsari, Sarlahi, and Bara. The Dhimal community from Jhapa and Morang, who are also traditional weavers, have found their way into carpet weaving easily.

As can be seen from Table 6.2, child labour is quite prevalent in weaving and cutting operations in the carpet industry.

There is frequent movement of skilled weavers and labourers from one factory to another whenever some slight advantages are provided by one factory over another. Moreover, the labourers also return to their villages during festivals and peak agricultural periods to sow or transplant maize and paddy. About 30 per cent of the labourers return to their respective villages during the peak agricultural season.

It has also been seen that the factories also procure labour through contractors. In such cases, the contractor provides Rs 500 per month to the labourer along with lodging and three meals a day. For unskilled, new entrants, the contractor provides food and lodging but no salary until the workers become skilled, and this usually takes about four months.

It has also been found that most of the labourers hired by the manufacturers and contractors are females and children coming from marginal and landless families. There is, therefore, considerable exploitation of labour. Because weaving involves the inhalation of wool dust, the probability of developing respiration-related health problems is quite high among weavers, particularly females and children.

### *Extension and Support Services*

The extension and support services provided by government line agencies are very nominal. The CIDB trained labourers comprise a very small proportion of the total labour currently working in the industry.

HMG/N has permitted all interested parties to import raw wool under an Open General License (OGL) system. The export duty is only 0.5 per cent of the total cost. The export price of carpets has been fixed at US \$ 65 per sq. m. for unwashed carpets and US \$ 72 per sq. m. for washed ones. One very important and significant motivating factor for industrialists is that the income that accrues to them in lieu of carpet exports is totally tax free.

Earlier, finished carpets used to be exported directly by air. Six months ago, however, delivery parties opened units in Kathmandu and deliveries are being made through them. The delivery costs are US \$ 4 per kg by ship and US \$ 10 to 14 per kg by air. However, the costs are not borne by the manufacturers.

### *Sustainability Aspects of the Carpet Industry*

The sustainability of the carpet industry seems to be dependent upon a number of important factors: (i) easy availability of raw materials, particularly fuelwood, for the technology in its present stage, (ii) uninterrupted supply of raw wool and chemicals, (iii) efforts to produce wool locally in the long run, (iv) stable government policies, particularly with regard to the continuation of incentives, and (v) cost efficiency in production so that it remains competitive. In the case of fuelwood, very little is being done to find alternatives. If hearth fires could be replaced by an effective alternative, it would save fuelwood. Some 30,000 mt of fuelwood were consumed by the carpet industry in the FY 1989/90 alone. A yield calculation from unmanaged natural forests for different ecological regions in Nepal has been estimated by one study (APROSC 1986a) as follows:

|      |                     |   |                 |
|------|---------------------|---|-----------------|
| (i)  | terai               | - | 2.05 mt/ha, and |
| (ii) | hills and mountains | - | 1.88 mt/ha.     |

It thus shows that the carpet industries of Nepal alone need more than 14,634 ha of renewable forest each year to satisfy their demands for fuelwood.

Slurry of chemicals as a result of dyeing is another problem. No government guidelines exist concerning the safe limits of chemical sewerage released by the carpet industry. If this is not controlled immediately the problem could assume unmanageable proportions in the near future.

### *Indicators of Success/Failure*

The carpet industry in Nepal is successful to the extent that it has benefitted from comparative advantages based on traditional skills, and to the extent that it has provided various job opportunities to mountain

people. But its present concentration in Kathmandu seems to have encouraged rural to urban migration with mixed consequences. The implications of the carpet industry in various concerns are summarised in Table 6.3.

**Table 6.3 Some Implications of the Carpet Industry**

| Implications                                       | Positive                                                                                                                                                                                                        | Negative                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Environment/Resource                               |                                                                                                                                                                                                                 | Heavy consumption of fuelwood for dyeing - one sq. m. of carpet needs 21 kg of fuelwood, chemicals used in washing carpets pollute water as some carpet washing industries discharge water into the river without treating it.                                                                                                                                                                                             |
| Demographic/Spatial                                | Reduces seasonality of labour demand, reduces unemployment and underemployment, highly labour intensive, small-scale carpet industries possible along roads                                                     | heavy employment of children (aged 10 to 15 yrs) prohibits them from schooling; 40 per cent of the labour involved in weaving and 25 per cent of the labour in the cutting process were found to be child labour.<br><br><ul style="list-style-type: none"> <li>- Large-scale carpet industries increase migration to urban areas.</li> <li>- Mechanisation has oriented the industry more towards urban areas.</li> </ul> |
| Linkages with the Farming System and Other Sectors | Does not conflict with agricultural activities, complements them through additional income required for seeds, fertilizers, etc., has the potential to encourage sheep-rearing for wool production in the hills |                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Employment Effects                                 | Has the potential to absorb a larger proportion of the labour force, particularly in the slack agricultural season,                                                                                             | Health hazards resulting from wool dust                                                                                                                                                                                                                                                                                                                                                                                    |
| Implications for the Poor and Women                | Activity is not land-based so has positive implications for the poor, enhances income-earning opportunities for women                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                            |

## Vegetable Cultivation, Dhading

### *Type and Scale*

Vegetable cultivation is another activity which is extremely labour intensive, right from the preparation of the fields and sowing of seeds/plants to harvesting and marketing. Thus it has immense employment potential. There are mainly two types of activity involved in vegetable growing, namely, the production of seeds or saplings for sale and the bulk production of fresh vegetables. Both activities are undertaken in Dhading on a sizeable scale.

Most of the vegetable growers in the area are Brahmins and Chhetris. It was found that the area of land under vegetable cultivation per household was 9 ropanis, while the average size of total cultivated land was 34 ropanis. Vegetable cultivation accounted for almost 25 per cent of the total cultivated land of vegetable-growing households. According to an official at HMG's horticultural farm in Khanikhola, about 350 families in the Naubise Area are involved in vegetable cultivation. The total area under vegetable cultivation in the area is about 2,000 ropanis.

The farmers involved in vegetable farming were producing vegetables all year round by following a strict calendar of production. The year is divided into the summer, monsoon, post-monsoon, and winter seasons. They produce tomatoes, eggplants, fresh beans, squash, cucumbers, and sweet peppers in summer; eggplants, tomatoes, ladyfingers, french beans, and chillies in the rainy season; tomatoes in the post-monsoon season; and cauliflowers, cabbages, radishes, broad-leaved mustard, onions, garlic, peas, and potatoes during the winter season. The farmers are so motivated that they have begun to cultivate vegetables with a view to selling the produce almost one month before the regular season in order to fetch higher prices. Off-season vegetable production is, therefore, emerging as a major activity.

Farmers from the Naubise Area identified proximity to the road, quality of land, irrigation facilities, price of the products, availability of family labour, and easy availability of credit as important factors influencing the growth in vegetable farming. However, it was found that the extra land that could be made available for household vegetable cultivation was only about 3 ropanis.

The credit disbursement statistics of the ADB/N branch office at Khanikhola revealed that the number of borrowers for vegetable cultivation in the Naubise Area was rising (Table 6.4).

**Table 6.4: Credit Disbursement for Vegetable Farming**

| Year              | No. of Borrowers | Total Amount Borrowed |
|-------------------|------------------|-----------------------|
| 1986/87           | 43               | 515                   |
| 1987/88           | 119              | 2366                  |
| 1988/89           | 110              | 2290                  |
| 1989/90           | 120              | 2360                  |
| 1990/91<br>(Half) | 49               | 777                   |

Source : ADB/N Field Office, Naubise

The production costs and returns associated with vegetable cultivation show that the per ropani input cost ranged from Rs 1001 for ladyfingers to Rs 2213 for cucumbers. In terms of labour requirements, bean production was the most labour intensive (60 man days per ropani) and garlic the least (21 man days per ropani). Tomatoes were reported to fetch a maximum profit per ropani.

The farmers involved in vegetable farming use their own household as labour for all planting, weeding, and harvesting operations. Intensive farming technologies are adopted by local vegetable producers. In terms of labour intensity, altogether 250 mandays of field work was necessary to produce tomatoes, eggplants, beans, cucumbers, pumpkins, cauliflowers, cabbages, potatoes, onions, ladyfingers, and chillies from one ropani of land. On an average area of 9 ropanis, altogether 2,250 mandays of work were necessary throughout the year. A crude calculation suggests that a farm family with 5 working members can allocate 1,825 mandays of family labour in one year (300 days) for vegetable cultivation, leaving 425 mandays for wage labourers. It thus suggests that 850,000 mandays equivalent of employment is being generated annually in Naubise alone.

There are also a number of problems that are apparent. Farmers lack organization to ensure the timely delivery of inputs as well as for marketing their produce. As a result, a relatively large share of the profits is taken by middle men and wholesalers. Also, the potential for introducing technological innovations, particularly for processing and canning has not been explored. Similarly, extension and support services also need to be strengthened.

### *Linkages with the Farming System*

The farmers in Naubise Area are shifting their traditional agricultural emphasis from staple crops to vegetables. Vegetable stubs and by-products provide good fodder for livestock. Farmers are also replacing low-quality livestock with new and high-yielding breeds. Since the farmers are more involved in high income vegetable farming, their demand for fuelwood is gradually being replaced by alternative sources of energy such as kerosene. The income effect is clearly seen in agricultural as well as non-agricultural areas. As vegetable production increases, it can also encourage processing activities.

### *Employment*

As mentioned earlier, 2,833 man years' equivalent of additional employment opportunities are being generated in Naubise village of Dhading District alone. As there is potential to add 6,000 ropanis of land for vegetable cultivation, the scope to provide additional employment.

The additional employment opportunities are being used by poor people from the adjoining villages. As sowing, weeding, and harvesting jobs need tender handling, women are the natural beneficiaries of such job opportunities. The labourers, hitherto unused to vegetable cultivation, are acquiring skills while working in others' fields.

**Table 6.5: Some Implications of Vegetable Farming**

| Implications                                                  | Positive                                                                                                                                                                                                                                                        | Negative                                                                                                                                                                        |
|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Environment/<br>Resource<br><br>environment and resource base | Vegetable cultivation through the use of organic fertilisers contributes to sustainability                                                                                                                                                                      | Intensive cultivation of the higher slopes could induce soil use of chemical fertilisers and insecticides' 6 may pollute the water and damage the local flora & fauna, erosion. |
| Demographic/<br>Spatial                                       | High labour intensity and cropping intensity reduces the seasonality of labour demand and underemployment estimates suggest that vegetable cultivation on half a hectare of land requires 2,250 mandays a year, which is full-time employment for seven persons |                                                                                                                                                                                 |
| Linkages with<br>Other Sectors                                | Encourages agro-based industries for canning vegetables, vegetable by-products can be used to feed livestock, increases marketing activities and off-farm employment in transporting and selling vegetables                                                     |                                                                                                                                                                                 |

## CRITICAL ISSUES AND OPTIONS IN OFF-FARM EMPLOYMENT

The purpose of this chapter is to consolidate the main findings from the analyses of different sectors and provide an overview of the critical issues and options pertaining to the sustainable development of off-farm employment activities.

Empirical evidence from micro-studies, conducted in the hill and mountain districts of Nepal, reveals that off-farm activities are important in providing full or part-time employment to 30 to 60 per cent of the labour force and in contributing 20 to 60 per cent of the total household income. It was also indicated that off-farm employment is not always adequately remunerative in terms of income. None the less, hill/mountain people have no choice but to undertake these activities in view of their economic distress and the absence of other alternatives.

The analysis of the labour force structure in the context of the historical trends of population growth, urbanisation, migration patterns, and occupational structure shows that the transformation of the employment structure has been extremely slow. The projections of population and labour force indicate that the challenge of providing gainful employment will remain the single most important challenge of development in Nepal. The employment problem is compounded by the fact that the annual growth in the labour force (2.45%) in the hills/mountains has surpassed the corresponding population growth (1.62%), mainly due to the rapid increase in the female labour force participation rate between 1971 and 1981. The projection shows that there will be an addition of about four million people and of about two million to the labour force between 1990 and 2010 in the hills/mountains. This emphasises the need to create, on an average, 100,000 jobs annually in the hills/mountains only. The situation is even more staggering when it is noted that these projections may be conservative because of the assumptions explained earlier.

The rapid decline in mortality rate and the continuing high fertility rate have accelerated population growth in the last three or four decades. The population of the hills/mountains of Nepal increased from 5.3 million to 8.5 million between 1952/54 and 1981. However, a substantial proportion of the population increase in the hills/mountains has been absorbed by the *terai*, especially after the eradication of malaria. Almost half a million people had migrated from the hills and mountains to the *terai*, mainly to acquire agricultural land, between the 1971 and 1981 censuses. Now that the *terai* itself is becoming overpopulated, through migration from the hills and mountains and immigration from the south (India), it is no longer in a position to sustain this process.

The foremost issue is to check the population growth rate so that, over time, the growth rate as well as the growth of the labour force can be contained. The fact, however, is that even if the population growth rate is gradually reduced, the size of the population and the labour force will continue to grow for the next two decades or so.

The first policy option is to realise the employment of more labour by intensive cultivation through irrigation and improved varieties of seed. Productive agriculture, the literature suggests, can be the most

solid foundation for off-farm employment. The increased input will increase crop production and create surplus. The processing and marketing of surplus production will create employment and the cash income earned from surplus can be invested in other employment-generating activities. However, even if intensive cultivation is practised, it is unlikely that the low per capita area of cultivated land (0.11 ha) can fully absorb the labour force. Further, the question of safeguarding and maintaining a sustainable environment in the ecologically fragile hill and mountain areas of Nepal has also to be addressed.

The second option is to pursue policies that will help diversify current land use to facilitate the growth of horticulture, vegetable farming, and other uses that help maintain the natural environment while expanding employment opportunities. This will also expedite the process of urbanisation. The growth of small towns and market centres, based on the potential exchange and processing of local/regional products, can lead to the sustained establishment of off-farm opportunities.

The third option, to facilitate population control and enhance the opportunities and scope for OFE, is to pursue an effective human resource development policy. While the Government needs to strengthen and expand the delivery of both permanent and temporary methods of family planning, expansion of education, particularly among females, and training programmes need also to be vigorously pursued and deserve priority attention.

The second critical issue is the high underemployment rate in the agricultural sector and the seasonal variations in the intensity of agricultural work. It is estimated that the percentage of farm household labour utilisation in crop production is highest (85 per cent) in April, followed by July (72 per cent), and March (54 per cent). The percentage of labour utilisation in crop-production activities is less than 40 per cent in other months. This is the reason why underemployment is found to be higher in rural areas (47.2 per cent) than in urban areas (37.3 per cent). The estimates show that as many as 667 million mandays' equivalent were unutilised in 1990, and this is equivalent to 2.5 million full-time jobs.

The policy options here are to create conditions that will facilitate the generation of part-time or seasonal off-farm employment activities to reduce the seasonality of labour demand. This means that OFE policy has to be region- and resource-specific, and the prospects for OFE have to be seen in the light of the resource/skill base.

The third critical issue pertains to the expansion of employment opportunities, particularly in the manufacturing sector. The industrial policy introduced in 1973 made several provisions for the development of industries, especially cottage industries. The introduction of a new industrial policy in 1981 achieved some degree of success as far as attracting investments in the industrial sector was concerned. However, several distortions also emerged in the process of actual implementation of the policies. There were wide variations in the effective protection granted to industries. Some industries were found to have received as much as 200 per cent protection, whereas those industries which were to be promoted on a priority basis received disproportionately low protection.

The sustained growth in manufacturing output and employment has been confined to a few industries, primarily in Kathmandu and the Pokhara Valley. Other hill/mountain areas have largely remained outside the ambit of the expanded opportunities in the manufacturing sector because of the lack of infrastructural development and skilled manpower. Grain-milling units account for the largest proportion (48.0%) of manufacturing establishments. However, ready-made garments, carpets, and brick/tiles are the major industries in terms of employment. The growth of the carpet industry (more than garments) shows how income as well as employment can be increased through the comparative advantage derived in terms of design, skill, and quality. It also shows how an export-led strategy has possibilities in certain selected cottage industry areas.

The construction sector is the single biggest employer within the formal sector of off-farm activities. In view of the fact that more than 20 districts in the hills/mountains do not, at present, have motorable roads and other infrastructural facilities, this sector is likely to be a major employer for a long time. However, the large construction contractors are found to prefer Indian labourers because of their skill levels, wage demands, and work continuity. Thus, it may be necessary to protect Nepalese workers by imparting requisite skills and imposing restrictions on the use of foreign labour. Contractors can be discouraged from hiring foreigners when the same job can be done by indigenous workers. The Government meanwhile has to develop mechanisms through which the large-scale mobilisation of labour is facilitated, particularly for large construction projects within the country.

The fourth critical issue is in respect to mountain tourism. Tourism, especially mountain tourism, is a growing industry because of the unique mountain topography and scenic beauty of the country. It is estimated that the tourism sector, directly or indirectly, generates more than one million mandays of employment annually. However, any significant contribution of mountain tourism to the rural economy will depend upon improved linkages with the agricultural and service sectors. Moreover, this industry also impinges on the fragile mountain ecosystem and policy and programme safeguards have to be developed and implemented to mitigate the negative effects.

The policy option in the case of tourism is to determine the carrying-capacity of the major trekking areas and regulate the flow of tourists in such a way that it does not have a negative impact upon the resource base. Another area of concern is the development and promotion of alternative energy sources for fuelwood substitution and the requisite infrastructure to diversify the number of tourist destinations.

A number of issues emerge with respect to cottage industries and the informal sector. The rapid growth of government and semi-government sectors, transport, trade, and services has fuelled a considerable growth of local employment through increased commercial activities such as small businesses, tea shops, etc. While the government sector clearly has its own limits to growth, enough scope exists for the growth of the informal sector. In the informal sector category of off-farm activities, this study has examined cottage industries, skill-craft based activities, carpet, portering, and small businesses. Cottage industries account for about 96 per cent of the industrial labour force. About two-thirds of the people engaged in cottage industries are part-time workers involved mainly in catering to household needs and using traditional tools and local raw materials in unregistered cottage industries. A large number of registered cottage industries are believed to have ceased operations because of the lack of raw materials, inadequate promotional support, and poor technical assistance programmes. Since cottage industries are mostly located within the homestead, a greater proportion of the female labour force (about 36 per cent) is estimated to be engaged in these activities rather than in other off-farm activities.

The Cottage and Village Industry Development Board (CIDB) was established in the F.Y. 1980/81. The main services provided by the CIDB include the preparation of viable cottage industry schemes and their distribution, technical consultancy services, dissemination, and the provision of skill development techniques. Most of the training offered by the CIDB provides skills to the trainees to set up their own enterprise rather than being employed by others. The CIDB trained more than 6,000 persons during the four-year period from 1985/86-1989/90; a large enough work force to generate significant off-farm employment had all these trainees been using the skills that they learned.

Similar training programmes in different off-farm skills have been conducted by a number of government agencies, including the Department of Labour, Women's Development Training Centre, and so on. However, as a result of several constraints, such as the unavailability of capital and raw materials, the lack of markets for products, and narrow profit margins, the proportion of trainees pursuing the activities is very low.

The skill/craft-based activities are characterised by small production units with highly labour-intensive technologies. There is considerable potential for increasing production but improvement in the quality of products is required in order to compete in the export market. Technology and skill-development interventions could play a major role in promoting both the cottage and craft-based industries. Small business activities, such as small retailers, peddlars and hawkers, and catering, are important self-employment types of off-farm activity as they are labour-led. However, these mainly informal activities do not have access to credit, and this is a constraint to their development.

The major problem facing traditional activities is that, because their productivity is so low, they will continue to provide only distress employment for household consumption unless these activities are upgraded through improved technology. The introduction of new, appropriate, and upgraded technology is necessary not only to widen the market and face the competition from modern large-scale manufacturing industries but also to respond to the demands of the market. While the problem in the larger manufacturing sector may be different, the critical issues in the cottage industry and informal sector appear to be mainly those of access to credit, technology, and markets.

There are also a number of off-farm activities for which the potentials remain unrecognised by the population at large. Some of these potential activities, that can increase both employment and income are beekeeping, sericulture, and medicinal plants. There are also opportunities within agriculture, particularly in horticulture and vegetable growing. In the latter case, the lack of infrastructure and markets has often been an important limiting factor.

Several issues emerge in the context of government policies related to off-farm activities. The first is the issue of input and output subsidy. The Government has been heavily subsidising the distribution of some of the inputs (such as fertilisers and institutional credit) and outputs (such as food from NFC) for which there are severe supply deficits. The provision of subsidies for deficit goods is certain to foster rent-seeking behaviour, thus depriving the poor, who need these inputs most, of access to such goods. These subsidies have indirectly taxed rural agriculture by limiting the access to production-augmenting inputs. Food subsidies, on the other hand, have benefitted only the Kathmandu Valley and civil servants in remote districts. The food security sought by farmers, so that they can pursue their comparative advantages and employment-augmenting activities, has not been forthcoming. The options could be to remove *ad hoc* methods of in subsidy provision and introduce quota systems in subsidised but deficit goods, together with an effective distribution mechanism to reach the intended beneficiaries.

Employment-generating plans and programmes to date have been largely in the government domain. The magnitude and the nature of the problem have been such that the government bureaucracy has neither the capacity nor the zeal to take the programmes to areas where their benefits would be greatest. Further, the Government's capacity to formulate region and resource-specific programmes remains extremely limited. There is, therefore, the need to gradually involve the NGOs and the private sector.

Yet another issue relates to the promotion of industries that have the capacity to create off-farm employment. The lack of a long-term industrial policy and the complexities involved in registering industries have hindered investments in industries, thus restricting employment opportunities. The Government needs to devise a stable and remunerative industrial policy and to simplify registration, export, and import procedures.

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