

**HILL AGRICULTURE AND THE WIDER MARKET ECONOMY :  
TRANSFORMATION PROCESSES AND EXPERIENCE OF THE  
BAGMATI ZONE IN NEPAL**



**Mahesh Banskota**

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## ACRONYMS

ADBN	Agricultural Development Bank of Nepal
AM	Agricultural Marketing
AIC	Agricultural Inputs Corporation
CBS	Central Bureau of Statistics
CSI	Cottage and Small Scale Industries
DAO	District Agricultural Office
DFAMS	Department of Food and Agricultural Marketing Services
DRCG	Development Research and Communications Group
GKV	Greater Kathmandu Valley
HMGN	His Majesty's Government of Nepal
ICIMOD	International Centre For Integrated Mountain Development
IRDPA	Integrated Rural Development Programme
LRMP	Land Resources Mapping Project
ME	Manufacturing Establishments
NPC	National Planning Commission
NRB	Nepal Rastra Bank

## Acknowledgements

This present paper is an integration of the work I have been doing on off-farm employment and rural urban linkages. In order to reduce the population pressures on limited land resources, it has become essential to develop employment and income generating activities. However non-agricultural options for the hills are likely to remain very limited, so long as the bulk of the population remain engaged in subsistence agriculture. While the priorities of the hill farmer for food production is very understandable, the economic viability and environmental sustainability of many of these subsistence farming systems is becoming increasingly questionable. Linked with the question of hill farming is also the evidence of very limited impact of modern infrastructure. In order to ensure more effective use of available and planned infrastructure, as well as to provide better income earning opportunities for the hill family, it has been argued that agricultural transformation must lead the way. A poor hill farmer can neither provide adequate food for his family nor live in harmony with the fragile environment of the hills. The approach advocated here is not to encourage a "reckless expansion of cash crops" but to work together with the hill farmer to integrate hill agriculture with the wider market economy, in an environmentally sustainable manner. The major limitations in this respect appear not from the side of the hill farmer, the hill environment, or lack of appropriate technology, but from the organization and management aspects.

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# Chapter 1 . Hill Agriculture, Environment and Development

## 1.1 Introduction

The need for economically viable and environmentally sound development programmes and their effective implementation is clearly the major concern of sustainable mountain development strategies. Poverty, both economically and environmentally, is becoming more widespread across these mountains. More and more people living in mountain areas are finding fewer easily accessible resources to meet their needs of food, fodder, fuel, and fibre. If increasing poverty of the hill environment has made it more difficult to identify and organize economically viable development projects, it has also further accelerated the process of resource degradation. The array of problems in mountain areas is already formidable, long before development forces have had a chance to establish strong institutional roots.

Characterized by widespread micro-environmental diversity, the natural basis for agriculture and forestry varies to a much larger extent in the hills than in the plains. Changes in climate, soil, and relief over small distances clearly alter development potentials and sustaining capacities of different micro ecozones in the hills. As family holdings are the most common farming unit in the hills, the integration of family units widely dispersed over different altitudes creates major problems for generating, scale economies through specialization in hill farming. If conventional integration of agriculture, livestock, and forestry have developed strong economic and environmental complementarities, these systems have not only reached a productivity threshold, but are also beginning to disintegrate under the ravages of reckless exploitation and mismanagement. Inaccessibility has added substantially to the costs of development and has severely curtailed the adoption and diffusion of improved technology. At the same time, the historical isolation of mountain areas and its people has broken down. This has resulted in increasing penetration of manufactured goods and expansion of modern commercial forces that have gradually dislocated many traditional off-farm activities,

and adversely affected groups associated with these activities, particularly craftsmen and artisans. For centuries, the hill people have been migrating both seasonally and permanently in search of alternative economic opportunities across national borders to sparsely settled areas both in the hills and in the plains. Today these options are more or less closed. Another important aspect of mountain development, whose significance has yet to be properly understood, is the changing nature of hill-plain interaction. Economically there is a growing dependency of the hills on the plains. Many physical changes in the hills are said to be resulting in not only an increasing frequency of natural disasters in the hills, but also in serious downstream effects.

Mountain areas are confronted with a myriad of problems that require very careful but difficult choices. There are still many unquestioned assumptions about the nature of mountain development processes. The understanding of many aspects of change across these mountains is very poor. Data regarding many of these processes are more impressionistic than factual. The need to carefully evaluate and translate knowledge and experience into practical development programmes, that are economically and ecologically sound, has never been so acutely felt. While there exists a great deal of experience with the organization and management of development, it is also evident that these cannot be uncritically prescribed.

Economic development typically involves a number of closely related changes for the rural household : a shift from subsistence to market oriented production, from sale of primary produce to sale of semi-processed or processed goods, from self-employment to wage employment, and so on. At a macro level, there are structural changes in the economy as a whole, most notably a shift from agriculture to industry and services, often accompanied by migration from rural to urban areas. But such changes are gradual, and some of them may not be responses to increased economic opportunities, but to reduced viability of traditional activities.

Outmoded or unproductive activities do not disappear immediately. A series of gradual displacements in different sectors occur, resulting in lowered earnings followed by lower employment, decrease in assets, increasing debts and finally, movement towards wage-earning classes or becoming unemployed. Migration is an option for some, but not all, on account of institutional, social, and cultural factors. Adjustments are therefore slow, resulting in gradual economic deprivation because of limited economic opportunities and preferences for certain lifestyles.

The process of expansion, on the other hand, creates economic opportunities brought about by changes in activities that support a new demand and production structure. The expansionary effects of some sectors are also transmitted to conventional activities. Changes in the overall employment situation can be seen as both favourable and unfavourable, caused by external factors (demand for goods and services, technological change, supply of competing products) and internal factors (most notably, the pressure on agricultural land).

Besides increasing population growth and changes in land use, the growth and penetration of commercial forces also contribute to the economic problems of the hills. As mass-produced manufactured goods substitute local artisan produced goods, many producers of local goods are brought under increasing pressure to migrate and join the wage-earning class, or become unemployed. The cumulative economic effect is the gradual attrition of incomes and employment opportunities. It is this process of economic displacement that will increase the pace of out-migration from the hills. This situation is not unique to the hills of Nepal. Many economies have undergone these almost inevitable labour pains of development. The duration of initial difficulties depends upon the rate of growth and spread of the expansionary forces like productivity growth, diversification in production, infrastructure provision and development of human resources.

While the situation of each country is in various respects unique, the fact that many countries have sustained rapid growth in expansionary forces is worth noting. Some of these changes have occurred in circumstances almost similar to that in the hills of Nepal. The most recent success story of what may be

called explosive industrial development with relatively limited natural resources like land has been the case of South Korea and Taiwan. Both have followed an aggressive export promotion strategy, an alternative that at first appears to be quite far-fetched for remote hill areas. However, on closer examination it may not be so unrealistic when we consider the potentials for development of tourism, energy, and other activities that are distinctive in the hills and enjoy favourable demand in the plain areas. Many of these experiences in other areas and regions should be more carefully appraised for their relevance to hill development, particularly as they relate to the generation of employment and income.

## 1.2 Role of Hill Agriculture in Mountain Development

Hill agriculture is obviously the starting point in any discussion of hill development. Its importance emanates from three major considerations. First is its current role in the overall hill economy. Second is its strong relationship with the hill environment, where changes in agricultural practices lead to varied environmental outcomes. Thirdly, the significance of agriculture is also evident in terms of developing and widening non-agricultural or off-the-land options for the hill farmer.

### (a) Current Role of Hill Agriculture

The economic significance of hill agriculture in the overall hill economy is fairly evident. It continues to engage the majority of the labour force, both directly and indirectly. The relative contribution of agriculture to household income has remained significantly high. Bulk of exports from the hills is also primarily agricultural in origin. Particularly from considerations of employment and income, hill agriculture is likely to play a leading role for many decades to come.

### (b) Relationship with Environmental Change

Environmental changes in the hills are partly natural (intensive rainfall, mass wasting, glacial lake outbursts, etc.) and partly human-induced (deforestation overgrazing etc.). Insofar as the latter is concerned, it is clear that agricultural activities play a leading role. Pressure on forests and pastures, cultivation of marginal land, poor maintenance of terraces, and environmentally

unsound practices of water management account for a large part of the human-induced components of environmental deterioration in the hills. Obviously, there is also an increasing pressure from non-agricultural households in terms of their demand for firewood and some adverse effects from developmental activities in the hills. In relative terms, the significance of agriculture-related environmental changes has clearly been greater and, consequently, agricultural development options need to carefully consider associated environmental changes.

### (c) Off-Farm Employment Generation

The significance of hill agriculture which emerges from another important consideration is the development and expansion of non-land employment and income generating activities. As long as the incomes of hill agricultural households remain low, the development of non-agricultural sectors will be fairly limited. This enhances the possibilities for an urban-led development of the non-agricultural sector, which is already taking place to some extent, in various parts of the mountain areas. Without a strong rural sector to actively contribute to the growth in non-farm activities, this urban-based non-agricultural development may quickly degenerate into a polarized process of development, giving rise to a pronounced dualism and its associated characteristics. The most important of these is its unfavourable effect on rural and agricultural development. It is, therefore, essential that the stimuli for promoting non-farm activities come from both rural and urban areas, and that the enhancement of agricultural incomes provide a major opportunity for diversification of product demand and markets in the hills.

The alternatives look very bleak indeed. Development of non-agricultural activities that have no linkages with hill agriculture have been either difficult to sustain, or have had no multiplier effects upon the agricultural sector. While this option may appear viable in special cases, for a large number of hill areas, the development of non-agricultural and non-land options require almost as a prior condition, a dynamic hill agriculture. This is likely to be the most economical approach, in the context of existing factor endowments in the hills.

## 1.3 Integrating Hill Agriculture into the Wider Market Economy

Hill economies have been exposed to the wider market economy, but are not being integrated into it. If major changes in hill agricultural systems, in terms of the types of products, are not introduced, it is likely that the economically unfavourable effects of exposure to wider market economy, will exacerbate in the near future. It is time now to plan for a transition from mere exposure to systematic integration with the wider market economy. Integration must start first with suitable changes in the structure of hill production, moving from a basically subsistence mode to a commercialized production system. This cannot be left to the farmer or the market force. It has to be deliberately planned and organized with careful evaluation of the potentials for commercial production in different ecozones; provision of technical and support services required for such a system; development of post harvest technology, particularly agricultural processing and market support systems that provide increased opportunities for off-farm employment and an aggressive marketing strategy backed by a realistic pricing system and well organized farmer-based institutions. The institutional implications of the above requirements are very far reaching, and the extent to which effective institutions can be created will, to a large extent determine the success or failure of this approach. The effect of such development on food security, and on the environment is likely to be very positive. Food security is guaranteed through higher incomes, generated by a rapidly developing agriculture that focuses on production of crops in the hills, based upon their comparative advantage. Insofar as the environment is concerned, it is clear that the subsistence production mode is becoming economically prohibitive for hill farmers as it is a less productive economic system. A more productive economic system is likely to have a favourable impact on hill environmental management, where scarce resources like land are likely to be better maintained, simply because it is more economical to do so. Secondly specialization generated through an improved agricultural system is likely to develop more and better skills necessary for management and maintenance of specific hill resources. Thirdly, and probably most importantly, the integration of the hill farmers through specialized systems ensures a far stronger institutional base for organizing and managing agricultural and environmental resources of the hills.

Interestingly enough, whenever we think about integration with the market economy, the difficulties arising out of inaccessibility loom very large in our minds. While this is a complicated problem, it is not an insurmountable one. Overcoming limitations imposed by inaccessibility involves selecting products that are likely to have higher value-to-weight ratios and planning accessibility improvements in stages.

#### 1.4 Organization of the Study

Against this background, the study will attempt to examine some of the key questions underlying the development of hill agriculture, off farm employment, and the integration into the wider market economy. Chapter two outlines the dimension of economic demography of the mountain and hill areas of Nepal. Chapter three discusses some major problems in subsistence hill agriculture. Chapter four examines the arguments underlying the concept of integration of hill agriculture with the wider market economy. The effectiveness of a development strategy is likely to be critically influenced by the organization and management system. Where there are inappropriate organizational systems, development programmes will easily succumb to institutional and organizational weaknesses. It also discusses the modifications necessary to promote greater integration of hill agriculture into the wider market economy with some observations on the experience of the Bagmati Zone. Chapter five reviews some of the changes experienced in the Bagmati Zone regarding transformation of hill agriculture and economy including issues of spatial linkages. The last chapter tries to highlight some of the overall issues that have emerged.

Needless to say, the entire orientation of this study is reflective of the conditions facing the middle hills of Nepal. Given the heterogeneity of these mountain ecosystems, generalizations are always difficult. To the extent, however that problems and changes are similar in nature, the experience as it relates to Nepal, the arguments made for changes in hill agricultural development thrusts, and issues raised under off farm employment generation, may be broadly relevant. As a matter of fact, development across the hills seems to have suffered less from the unique problems of different mountains ecozones and more from common problems of organization, management, and implementation. Clearly from the point of view of development policy, an understanding of these common structural weaknesses in the organization and management of development programmes has as much to offer in terms of sustainable development, as the special characteristics of mountain ecosystems. The experience of other mountain areas such as Himachal Pradesh in India and SWAT in the North West Frontier Province (NWFP) in Pakistan clearly indicate that hill farmers have benefitted immensely from a more commercialized and market oriented hill agriculture. While apples have been the dominant crop in both areas, farmers have responded to other opportunities and specific problems that have arisen. These responses of hill farmers have been extensively supported in both the areas by various institutionalised services in the fields of extension, research, marketing and agroprocessing. Nepalese hill farmers and service institutions stand to benefit immensely from the experiences in these two hill areas in their integration with the wider market economy.

## Chapter 2 . Population and Employment Generation

### 2.1 A Review Of Past Trends

The purpose of this Chapter is to identify recent changes in population and employment generation, followed by some discussion on the potential for employment generation, particularly in off farm activities. While rapid growth in population has been amongst the most significant changes in the hill economy during recent times, the agricultural sector continues to be a major source of employment and income. Without some basic understanding of these two important areas, it is difficult to appreciate the significance of issues under-lying the overall development of employment in the hills.

The population of Nepal increased from 8.3 million in 1952/54 to roughly 15.0 million in 1981. With an annual average growth of about 3 per cent, Nepal's population will once again double by the end of this century, i.e. in another 15 years there will be 15 million more people. This high growth rate is attributable to both high fertility and decreasing mortality (Karki 1985).

The regional distribution of population also shows some interesting changes (TABLE 2.1). The southern plains have experienced rapid population growth and the Terai's share in total population increased from 35 percent in 1952/54 to 44 per cent in 1981. The increasing

growth of the Terai in contrast to the declining growth of the hills and mountains is mainly attributable to the out-migration from the hills and mountains. Despite declining growth rates, the hills and mountains continue to add a million or more people every decade.

The urban-rural distribution shows that the Nepalese population is predominantly rural and that the growth of urban population in the mountains and hills during the past decade has been relatively low compared to the Terai. While in 1952/54, the Terai had only 18 per cent of the total urban population, in 1981 this share increased to about 48 per cent. The volume of inter-regional migration has also increased significantly. Life-time migrants as a percentage of native-born population has increased from 4.54 to 8.60 per cent. Roughly speaking, if in 1961 one member of every four households migrated, in 1981 this increased to one of every second household. This movement is mainly out of the hills and mountains to the southern Terai plains (Sharma 1986).

The quality of labour force data on Nepal is poor. However, based upon the notion of economically active population used by the different censuses, a number of characteristics are identifiable. Between 1971 and 1981, the economically active population grew by 3.34 per cent

**TABLE 2.1 : PERCENTAGE DISTRIBUTION AND GROWTH RATES OF POPULATION BY REGION**

	Rural			Urban		
	Mountains & Hills	Terai	Nepal	Mountains & Hills	Terai	Nepal
1952/54	64.8	35.2	100	n.a.	n.a.	n.a.
1961	63.6	36.4	100	69.7	30.3	100
1971	62.4	37.6	100	69.4	30.6	100
1981	56.4	43.6	100	51.8	48.2	100
Inter-Censal Change (Annual growth rate)						
1952/54	1.42	2.04	1.64	-	-	-
1961-71	1.85	2.39	2.05	3.38	3.27	3.34
1971-81	1.61	4.11	2.62	4.35	11.83	7.28

Source : Central Brueau of Statistics (CBS), Kathmandu, 1985, Table 1.9, p.20

per annum, which is higher than the population growth rate for the same period. Growth in economically active males (2.59 per cent per annum) was however lower than growth in male population, 15 years and over (2.61 per cent per annum) from 1971 to 1981. In the case of the female population of 15 years and over, growth in economically active females was higher (4.97 per cent per annum) than the growth of female population (2.31 per cent).

The crude activity rate during the past decade has continued to decline, for both sexes (Table 2.2). This could be the result of factors such as changing age composition and increasing student population. It is difficult to segregate the importance of each factor, but one consequence of decreasing participation rates is to increase the economic burden upon the active labour force. The dependency ratio has increased remarkably during the past three decades. While in 1952/54, one economically active person supported roughly 1.1 individuals, in 1981 this had increased to 1.6 individuals: an increase of almost 50 per cent in dependency burden.

Another interesting characteristic is that unlike male activity rates, those of females tend to vary substantially by ecological belt, being highest in the mountains and lowest in the plains. According to the 1981 census, economically active females as a proportion of total females were 42, 40, and 25 per cent respectively for the mountains, hills, and Terai regions. This seems to be largely a function of cultural variation - the lowest female activity rates being associated with more orthodox Hindu religious traditions (Acharya and Bennet 1981).

There is also increasing participation by population in the ages of 10 to 14. In 1952/54, the economically active population in this group accounted for 28 per cent of total population in the 10 to 14 age group. This

**TABLE 2.2 : ACTIVITY RATES BY SEX FOR CENSUS PERIODS (PERCENT)**

Census Year	Total	Male	Female
1952/54	47.28	57.12	37.75
1961	45.75	55.30	36.48
1971	36.32	51.87	20.56
1981	39.12	50.89	26.77

Source : Central Bureau of Statistics (1985), Kathmandu

increased to 50 and 51 per cent in 1971 and 1981.

In general, the labour force (defined as 15 years and over) as a proportion of the total population is about 39 per cent, which is somewhat high compared to other South Asian countries where it is about 35 per cent (Islam 1983). This is explained by the much higher female participation rates in the hills and mountain areas of Nepal. According to the Seventh Plan of Nepal, population is forecasted to reach almost 19 million by 1990/91 and the labour force to about 8.60 million for the same period.

Due to difficulties involved in arriving at estimates of employment and unemployment even for countries with a better data base, the attempt here is to highlight some of the previous efforts at estimation. The successive censuses during the past three decades do not indicate any significant alteration in sectoral composition of the economically active population. The agricultural sector continues to be overwhelmingly dominant in terms of labour force absorption (Table 2.3). The share of the non-agricultural sector has registered small increases, which have been limited only to the Terai; the hills and mountain areas do not show any non-agricultural diversification in terms of labour force by sectors. In

**TABLE 2.3 : DISTRIBUTION OF ECONOMICALLY ACTIVE POPULATION BY INDUSTRY (PERCENT)**

Year	Agriculture	Non-Agriculture	Unspecified
	Total : Male : Female	Total : Male : Female	Total : Male : Female
1961	93.8 : 91.7 : 96.9	5.5 : 7.5 : 2.5	0.7 : 0.8 : 0.6
1971	93.7 : 92.0 : 98.0	6.3 : 8.0 : 2.0	- - -
1981	90.4 : 87.8 : 95.7	7.1 : 9.0 : 3.3	2.5 : 3.2 : 1.0

Source : CBS, Census Reports, 1961, 1971 and 1981

1977, a survey by the National Planning Commission attempted to provide estimates of employment and unemployment for rural and urban areas (NPC 1983). While there are many questions regarding the survey, major findings include:

- An unemployment rate for rural and urban areas of 5.57 and 5.98 per cent respectively
- Underemployment as shown in Table 2.4

An average of only 118 days/worker was found to be used gainfully in rural areas (NPC 1983). For a number of reasons, this may be an underestimation; some types of off-farm employment were not recognised, and furthermore, these figures are inconsistent with the high rates of labour force participation observed for Nepal.

A limited exercise conducted by ILO-ARTEP estimated the underemployment rate as 33 per cent for rural Nepal as a whole, with considerable variation by region: mountains (54 per cent), hills (37 per cent), and Terai (21 per cent) (Islam 1982). These figures are significantly lower than those reported by the Planning Commission and emphasise the need for a more careful examination of this issue.

The ILO-ARTEP estimates are also based upon modification relating primarily to the agricultural sector. The contribution of off-farm activities has not been considered.

Utilisation of the labour force varies by farm category in different ecological belts, so that overall notions of unemployment and underemployment may not be useful for an economy characterised by wide regional

variations. Among different farm categories, marginal farmers (about 26 per cent of the farm households) are engaged for the fewest days in crop production, even less than the landless groups. The landless groups account for maximum days in off-farm employment, followed by the marginal farmers. In general, group of farmers without access to irrigation show a higher number of days utilised than groups with irrigation facilities. Variations of this type become more pronounced as we examine different regions.

The remaining sections will discuss the nature of employment generation in the off-farm sectors in order to assess potentials for employment generation in those activities.

## 2.2 Off-farm Employment

Off-farm employment generation assumes great importance as a policy response to the situation facing Nepal. The most obvious reason is that, at least for those in the hills and mountains, expansion of employment on the farm is strictly limited. Indeed there is evidence that off-farm economic activities have been underestimated in official statistics, though the picture revealed by some regional and area studies is different. The Rapti baseline study (APROSC 1980) for five hill districts in Western Nepal has suggested that agriculture contributed only 23 per cent of the total income of farm households, while off-farm activities provided as much as 57 per cent of the total income. Among the major sources of off-farm cash income, services accounted for 19.4 per cent, followed by trade and business (14.3 per cent). There was substantial variation in the contribution of different off-farm activities in the five districts. While agriculture was the most important source in Dang, in Rolpa and Salyan, it was trade and business.

Household surveys in other districts of the hills have shown that the share of non-agricultural income is almost 50 per cent (DRCG 1982, Bhattarai 1984). Although agriculture tends to be the primary source of employment and income, secondary income sources are mainly off-farm activities. Another positive reason for promoting off-farm employment is that such an approach will particularly favour the lower income groups, for they are relatively more dependent on such activities. In Rapti Zone, while the contribution of agriculture was 32 per

**TABLE 2.4 : UNDEREMPLOYMENT IN DIFFERENT ECOLOGICAL REGIONS**

Region	Percentage of Days Unemployed	
	Males	Female
Mountain	57.23	65.58
Hill	62.04	67.80
Terai	53.97	72.01
Nepal	57.88	68.83

Source : NPC, 1983

cent and 21 per cent for the large and medium groups of farmers, it was less than 10 per cent for small, marginal, and sub-marginal groups (APROSC 1980). Bhattarai has noted that the relative share of off-farm income and employment declines in importance with increases in land holding, in both the hills and the Terai (1984). This has also been reported for other countries in the region (Islam 1982). It should be noted that while the relative significance of off-farm work is greater for poorer groups, the returns are not commensurate with their efforts (Amatya 1982; Bhattarai 1984). It is very important to find out why this is so and whether or not it is possible to raise their productivity. The experiences of the Small Farmer Development Project (SFDP) and the Cottage and Small Industries Programmes (CSI) in Nepal suggest this is not only possible but economically and financially viable (Shrestha 1985). In support of the thesis that this approach would contribute to reducing inequalities, there are some indications that off-farm income is more equitably distributed than farm income, and efforts to increase off-farm income are likely to contribute to reduction in the prevailing level of inequality in rural Nepal (Bhattarai 1984). This issue merits further detailed enquiry, to establish whether distribution of incremental incomes from all types of off-farm activities are more equitable in the case of all regions.

It is by no means clear, however, that promoting off-farm employment would be beneficial to women. Although studies have revealed that women in the hills at present contribute more than half of the total household income (particularly in cottage industry and food processing), development programmes have tended to ignore this and emphasize the role of men (Acharya and Bennett 1981; Joshi 1985). Further arguments in favour of off-farm employment emerge from some of the broader changes likely to be induced through its expansion. Through focus on poorer groups, off-farm employment generation loosens many of the land-related socio-institutional bonds that are *prima facie* exploitative. Increased employment opportunities in off-farm sectors will increase demand for foodgrain, probably the most effective stimulant to agricultural growth (Mellor 1975). Increase in demand for foodgrain will further stimulate farm demand for various off-farm activities, taking advantage of agglomeration economies, and providing a major spurt to the growth of urban centres. Rapid growth in off-farm activities, therefore, has enormous potential

for productive absorption of the labour force displaced by economic changes in the hills. This potential, however, will not materialise of its own accord; an effective set of policies and programmes must be designed and implemented.

### 2.3 Conventional Off Farm Activities

Broadly speaking, off-farm activities may be classified into two groups: the modern off-farm sector which is small and includes non-agricultural activities (mainly manufacturing and processing), that are fairly well integrated with the organised sector and conventional off-farm activities which are much greater and cover practically all off-land activities in rural hill areas. The latter are largely unregistered and usually operate on a seasonal or part-time basis by family members. The distribution of both types of off-farm employment activities varies considerably, both regionally and between urban and rural areas. In more accessible locations, and especially in towns, there is a growing trend of modern off-farm activities, as well as some modification in conventional ones. But in large parts of rural Nepal the bulk of activities remains conventional. The extent to which households allocate time for off-farm work has been found to be sensitive to numerous factors including wage rates, farm incomes, distance from home to alternative employment, and number of working adults in the family and their skill levels (Bhattarai 1984). In the hills there are strong ethnic associations with some of the conventional off-farm activities. Socio-cultural factors are also very important for example, various groups are excluded from certain types of work.

The range of economic activities in which rural households engage is shown in Table 2.5, which relates to Rasuwa and Nuwakot, two neighbouring districts between Kathmandu Valley and Tibet. It is clear that agriculture and livestock account for the greater part of annual income, with other economic activities (cottage industry, trade, portering, other wage labour) contributing less than 25 per cent on average. But this latter figure varies considerably with income level, being substantially greater for lower income groups. It is also noteworthy that income from livestock is the most variable; poor households earn almost nothing from this source, while it contributes one-third of the income for richer households. There is considerable variation in the

**TABLE 2.5 : AVERAGE ANNUAL INCOME BY SOURCE FOR DIFFERENT INCOME GROUPS IN TWO HILL DISTRICTS (PERCENT)**

	RASUWA			NUWAKOT		
	Low	Middle	High	Low	Middle	High
Agricultural	65.9	57.6	50.3	65.5	65.5	59.6
Livestock	5.9	8.9	33.8	1.0	13.0	34.0
Cottage Industry	0.9	0.4	3.4	0.2	0.3	0.1
Trade	2.7	0.4	3.7	2.6	0.0	0.9
Porterage	9.2	10.6	4.3	8.3	4.3	0.4
Other Wages	12.9	8.6	1.3	18.1	10.8	1.7
Other	2.6	3.2	3.2	4.6	5.0	3.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source : DRCG, 1982

composition of rural household income according to location, especially between the mountains, hills and Terai. This is well demonstrated by the figures in Tables 2.6 and 2.7. Table 2.6 shows a breakdown of eight study villages in aggregate, while the Table 2.7 indicates the situation in each village separately. In view of the problems of classification and measurement, direct comparisons between these data and those for Rasuwa and Nuwakot, for example, should be made with caution.

A few particular points of interest emerge. Farm production (including kitchen gardening) is most significant in the Terai (about 65 per cent), less so in the hills (45 to 50 percent) and least important in the mountains (39 per cent). Wage labour is of most importance in the hills (9 to 26 per cent) but displays considerable variation even here. Trading accounts for 23 per cent of household income in the mountains, but is of relatively little importance elsewhere (0 to 6 per cent).

#### Trading and Porterage

Trading as a source of off-farm income and employment has always been important both in urban and rural areas of Nepal. In the northern hills and mountains it is even more significant than agriculture, with salt and wool from the north being bartered for cereal grains from the south (Haimendorf 1975). The significance of this trade declined after the 1950 political changes in Tibet, but limited trade is still conducted. In the middle hills, the significance of trade is less. While in the urban areas trading is a full-time occupation of many households, in rural areas, these activities are limited mainly by the extent of surplus production and of rural purchasing power. Apart from providing income and employment to the traders themselves, trade is also an important source of off-farm work for porters, especially in those areas unconnected by roads. The significance of portering varies greatly according to location. Thus, in a Newar village in the Kathmandu Valley, and a Tharu Village in the Far Western Inner Terai, portering accounted for only 5 per cent of outside employment activities

**TABLE 2.6 : COMPOSITION OF OFF FARM INCOME IN EIGHT VILLAGES (PERCENTAGE)**

	A*	B*
Agriculture	59.4	62.9
Kitchen gardening	3.2	1.3
Animal husbandry	10.0	9.5
Hunting & gathering (incl. fuel)	5.9	6.0
Food processing	19.2	16.7
(liquor-making husking/drying roasting/grinding and others)		
Manufacturing	2.3	2.3
(textile rope/basketry and others)		
Total - Farm Income	100.0	100.0
Non-farm Income		
Trading & investment	8.5	6.2
Wages & salaries	14.3	13.5
Total	122.8	119.7

\*A: Household Income Study (279 sample households)

\*B: Time Allocation Study (192 sample households)

Source: Acharya and Bennett, 1982 Tables 2.8, 3.3

(measured in person-days). But in a Tamang village in the Central Middle Hills, the figure was 56 per cent (Acharya and Bennett 1981). This last village is on a major trade route between the Kathmandu Valley and Tibet.

Every ton of goods transported by porters provides portering employment for 25 working days. Despite the difficulties of portering, wages are attractive compared to other forms of rural work. Where roads are constructed, this source of income dries up and porters have to find alternative employment, or move to new areas. Roads, however, have other positive effects, one of which is growth in trade and retail outlets.

#### Cottage Industry

The decline of cottage industry in the hills has become an issue of increasing concern. It continues to be a major source of off-farm work for many rural households, with the bulk of the products consumed locally. Again, there is considerable variation according to location. Textiles, leather rope and basket work, are among the more important products. Although perhaps not a true cottage industry, liquor-making for sale, is of considerable importance in some places. In one mountain village, 12.5 per cent of household income comes from this source. And in another, in the Eastern Middle Hills, the contribution was 18.2 per cent (in this case the revenue arose almost entirely in a brief period in August/September, the occasion of a major festival). This is a good example of market seasonality of many such economic activities. The decline of cottage industry has been due to a number of factors, including availability of

cheaper and more durable manufactured substitutes, increasing difficulties in the availability of raw materials, particularly those from forests, changing tastes and preferences, and marketing problems. Rural areas close to urban centres have been able to overcome some market problems, but this is difficult to generalise. Traditional cottage industries that have effectively modernised in some areas are carpet making and distinctive types of cloth weaving (Shrestha 1985).

#### Wage-Labour

This ranges from landless peasants working for neighbouring farmers, to long-term migration. Table 2.8 shows the composition of total outside employment in eight sample villages (including portering and paid cottage industry work). Agricultural labour and service in the organised sector together account for nearly 60 per cent of the total. These figures, however, do not include migrant labour involving absences of more than six months. Out-migration (both seasonal and permanent) has become an important source of employment support for the hill economy and is being seen as an important indicator of the deteriorating agricultural economy of the hills. It is an extensive phenomenon, with complex dimensions (Sharma 1985; Joshi 1985; Kansakar 1982). The inhabitants of the northern mountains migrate seasonally for trading purposes and some have migrated for specialised work in mountaineering and trekking; others have been forced to move in search of any type of work. Some groups look specifically for military service while others move to urban areas, the Terai, and even to India for unskilled work. In some cases, only the males

**TABLE 2.7 : COMPOSITION OF HOUSEHOLD INCOME BY VILLAGE IN DIFFERENT ECOLOGICAL REGIONS (PERCENT)**

Location of Village	Farm Prod.	Kitc. Gnd.	Anim. Husb.	Hunt.& Gath.	Food Proc.	Manu- factur.	Trad.& Invst.	Wages
1.Kathmandu	48.7	3.1	10.4	7.0	8.5	1.9	4.0	16.3
2.Hills	44.1	1.4	12.7	3.1	7.8	2.0	2.6	26.3
3.Hills	44.9	1.3	11.6	58.9	8.2	1.2	1.5	22.4
4.Hills	48.3	1.4	7.9	8.21	2.5	3.1	6.3	12.3
5.Hills	44.3	3.7	6.6	5.0	28.8	1.7	0.9	9.0
6.Mountains	38.6	0.0	6.5	5.4	18.4	3.0	22.5	5.6
7.Terai	58.7	8.1	7.2	3.8	12.0	1.2	2.7	6.3
8.Terai	63.6	0.7	5.7	0.6	21.0	0.0	-	8.4

Source: Acharya and Bennett, 1989, Table 2.8

**TABLE 2.8 : PERCENTAGE OF TOTAL WORKDAYS**

Agricultural labour	34.1
Service - organised sector	24.5
Service - unorganised sector	6.5
Construction	8.9
Cottage Industry	8.1
Domestic	6.8
Portering	6.5
Other	3.3
TOTAL	100.0

Source : Acharya and Bennett, 1982, Table 2.12

move; in others, it is the entire family. All have provided valuable economic support to the hill economy. Over the years, some of the sectors absorbing migrants have remained static, while new opportunities have also arisen. Whether the latter have been able to absorb the increasing flow of rural migrants from the hills is not known, but the support provided by the remittances of migrants is becoming increasingly important for the hills. The hills have also been referred to as "money-order" economies, referring to the role of remittances.

#### Local Specialised Services

Many groups of people have been providing specialized non-agricultural services in rural areas of the hills based on the prevailing caste system and hereditary occupations. Some occupational mobility has occurred over the years, but many groups of people are still dependent upon conventional occupations. These include tailors, blacksmiths, potters, shoemakers, river ferry

operators, as well as a number of other distinct groups that do not fall within occupational caste groups, such as the Raute of Far Western Nepal. The demand for services and commodities produced by these groups has been declining all over the country. In many cases, better substitutes have become available. Traditionally, the asset holding positions of these occupational groups was limited and they were not paid a specific wage but were supported (in cash and kind) by the community. While the disruption effects are obviously not uniform, their extent is determined by asset holding positions and access to alternative employment opportunities. Some had the resources to move to other activities or to migrate, but a large number are left to struggle as agricultural labourers and porters (Seddon 1981).

#### 2.4 Manufacturing and Other Employment Generating Activities

Regular censuses of manufacturing establishments (MEs) have been undertaken in Nepal, which indicate that these establishments have grown at an annual rate of about 17 per cent, but from a very small base (TABLE 2.9). Employment has grown even faster; in 1965/66 average employment per ME was 11.5 and by 1981/82, this increased to 16.5.

Output and value added per person engaged also show some changes. Output/person engaged was about Rs. 36,907 in 1972/73 but increased only marginally to about Rs. 39,897 in 1981/82. The value added by this sector was about Rs. 6,549 per capita in 1972/73 but increased to about Rs 13,272 in 1981/82.

**TABLE 2.9 : CHARACTERISTICS OF MANUFACTURING ESTABLISHMENTS IN NEPAL**

	(RS. MILLION IN 1972/73 PRICES)				
	1965 /66	1972 /73	1976 /77	1981 /82	Percent Change per annum from 1972 to 1982
Number of Establishments (No.)	1257	2345.00	3528.00	4903.00	32.20
Persons Engaged (No.)	14397	47638.00	50120.00	81050.00	7.80
Wages & Salaries	-	69.00	94.40	144.50	22.60
Total Assets	-	257.40	677.70	711.80	19.60
Gross Output	-	1758.20	2800.20	3233.70	9.30
Gross Input	-	446.20	2421.80	2157.90	5.40
Value Added	-	312.00	378.40	1075.70	27.20

Table 2.10 compares the growth of MES in the hills and Terai. The increasing share of the hills is evident from the relatively higher rates of average annual change. The share of the hills in the national total has increased substantially according to most indicators, most notably the share in gross fixed capital which has registered an increase from 27 to 43 per cent. While these changes are important in the context of the hill economy, it is worthwhile noting the predominant importance of Kathmandu Valley, which in 1981/82, accounted for 20 per cent of the gross fixed assets, and 30 per cent of the output and value added.

ME distribution between towns and rural areas is also significant. The four main towns of the Terai and the Kathmandu Valley together show a major concentration of MES, accounting for 36 per cent of total MES, 54 per cent of employment and about 46 per cent of total output. The extent of concentration in Kathmandu vis- a-vis the hills is greater than the extent of concentration in the four major Terai towns vis-a-vis the Terai. This is evident from the fact that about 42 per cent of MES in the hills are in Kathmandu valley, while in the Terai only 32 per cent are located in these four towns.

#### Changes in Type of Manufacturing

Table 2.11 shows changes in MES by type and region. Some of the major points emerging from this Table are:

- Between 1971/72 and 1981/82, a number of new types of MES were set up both in the Terai and the hills, including fruit canning and bottling, knitting mills, and plastic and polythene products.

- The major significant difference in composition between the hills and the Terai is that the latter seems to be lacking in activities concerned with production of jewellery, curios, carpets and rugs: distinctly tourist- associated industries.
- A high proportion of MES in both the hills and Terai are still agriculture, forestry and livestock based. Even among the new establishments since 1972/73, 50 per cent are in this group.
- In the hills, 66 per cent of the increase in MES was in cereal grain processing and oil extracting.

While these changes in the types of MES undoubtedly suggest broad directions in ME growth patterns in Nepal, it is also important to relate this to changes in investment and employment. In 1981, manufacturing establishments employed less than 1 per cent of the rural labour force and about 4.3 per cent of the urban labour force: in aggregate terms, about 1 per cent of the total economically active population in the country. From Table 2.10 it is evident that while growth has been rapid, in absolute terms ME employment is still small.

The distribution of industry by size (measured in terms of numbers) is shown in Table 2.12 for the hills and the Terai. The Terai has a greater concentration of MES in the lowest and highest size ranges.

The distribution of employment by type of worker for 1981/82 is shown in Table 2.13. The percentage of unpaid family workers is less than 10 per cent for both regions. There are more female workers in MES in the hills (14.5 per cent) than in the Terai (10.4 per cent). The proportion of non-Nepali workers in the Terai is almost three times that of the hills (8 per cent in the hills, but about 24 per cent in the Terai).

In a recent study, the major problem identified for MES in the hills was shortage of raw materials, power, spare parts, and trained manpower. The situation in the Terai was similar, with lack of working capital as an additional constraint. It is interesting to note that lack of markets is not among the problems identified. This however does not imply that this factor may be ignored. The fact that both the Terai and the hills cite shortage of raw materials as the most serious problem is interesting,

**TABLE 2.10 : SHARE OF MANUFACTURING IN THE HILLS**

(Percent)

	Share of Hills in Total*	
	1972/73	1981/82
No. of Establishments	33	39
Persons Engaged	23	36
Gross Fixed Capital	27	43
Gross Output	23	31
Value Added	27	31

\*Hills includes mountains

Source : CBS, Census of Manufacturing 1972/73 and 1981/82

**TABLE 2.11 :CHANGES IN MANUFACTURING ESTABLISHMENTS BY TYPE AND REGION (NUMBERS)**

Types of Industries	Hill & Mountains		Terai	
	1972/73	1981/82	1972/73	1981/82
1. Oil & Grain milling	497	1135	1363	2397
2. Fruit Canning & Bottling	-	5	-	5
3. Other Food, Drink & Tobacco	21	59	28	81
4. Yarn & Textiles	30	120	2	25
5. Knitting Mills	-	22	-	8
6. Carpets & Rugs	11	67	-	-
7. Leather & Footwear	3	3	2	11
8. Wooden Furniture	54	167	21	62
9. Paper	-	-	13	-3
10. Other Consumers Goods*	38	50	21	40
11. Saw Mills & Jute Processing	-	8	28	63
12. Construction Materials	30	100	99	171
13. Plastic, Polythene, Rubber Products	-	12	-	12
14. Printing	53	68	27	57
15. Repair Works and Iron Products	16	49	7	37
16. Animal Feed	-	12	-	3
17. Not specified	-	19	16	16
<b>TOTAL</b>	<b>753</b>	<b>1909</b>	<b>1614</b>	<b>2991</b>

\*Metal furniture, soap, matches, caps, metal vessels, jewellery, curios, drugs & medicines

Source: CBS, Census of Manufacturing Establishments, 1972/73 and 1981

given that over 50 per cent of the MEs are in the agriculture, forestry and livestock sectors. This might indicate increasing supply constraints in these sectors, and more specifically, continuing poor performance of the foodgrain, forest and livestock sectors. Little mention is made of lack of foreign working capital which indicates limited constraints in terms of imported inputs at present.

Recently the performance of mainly export-oriented small-scale industries has improved. Shrestha argues that performance has been encouraging in terms of employment, loan recovery, capacity utilisation and export earnings (Shrestha 1985). Support for some of these activities has come in the form of special banking projects that minimise the collateral required where economic viability and technical feasibility are assured.

While focus should clearly be on promoting more viable export-oriented small-scale industries to generate off-farm employment, some problems are worth noting. Focus on export makes it important to emphasize problems of transport and to ensure that these products have access to reasonably assured markets. The success of carpet and garment manufacturing cannot be duplicated throughout the country, and other exportable

products must be identified. The vulnerability of export to exchange rate fluctuations is well known.

#### Construction

Infrastructural and development activities and construction work associated with building roads, power supply projects, bridges, irrigation, schools, hospitals, and drinking water projects are clearly a major form of off-farm employment activity in Nepal. They continue to take up the major share of planned development funds in

**TABLE 2.12 : DISTRIBUTION OF INDUSTRIES BY NUMBER OF EMPLOYEES (1981)**

No. of Employees	Hills	Terai	Nepal
Below 10	1426	2506	3932
10 - 99	421	400	821
100 - 999	83	60	143
1000 and above	-	7	7
<b>TOTAL</b>	<b>1930</b>	<b>2973</b>	<b>4903</b>

Source : CBS, Census of Manufacturing Establishments, 1981

**TABLE 2.13 : DISTRIBUTION OF EMPLOYMENT BY TYPE OF WORKER 1981 (PERCENT)**

	Hills & Mountains	Terai
Paid Employee Nepali :		
male	68.0	59.0
female	11.6	7.8
Non - Nepali :		
male	6.8	23.5
female	1.1	2.4
Unpaid Family Worker		
male	9.9	7.2
female	2.0	0.2
<b>TOTAL:</b>	<b>100.0</b>	<b>100.0</b>

Source : CBS, Census of Manufacturing Establishments, 1981

Nepal, and after agriculture, represent the most important source of wage employment for rural and urban populations. In urban areas, house construction is particularly important. Construction plays a major role in both the public and private sectors and represents an increasing source of employment for those pushed out of agriculture. The direct and indirect linkages of this activity with agriculture, manufacturing, and transport are very important. Unfortunately, little is known about this sector.

Some studies have examined aspects of public works activity and analysed factors that influence the type and volume of employment generated. Pradhan has examined payments to different groups resulting from these infrastructure projects and the nature of distribution of project benefits, particularly employment, in project areas (Pradhan 1985). Pradhan has shown that a 215 km road project can generate over 1 million working days. Road, forestry, and irrigation sectors with their construction activities generated over 200,000 man years during the first four years of the Sixth Plan.

#### Tourism

Tourism has been seen as one of Nepal's most promising industries, and the one least handicapped by a limited domestic market. It is one of those rare cases where obstacles (rugged terrain) can be converted into potential assets (tourism earnings). The option of using tourism as a generator of employment, however, is not

open to all regions. Experience indicates that the Kathmandu Valley and a limited number of other areas (including Khumbu, Pokhara, Jomsom, Chitwan) stand to gain the most from this sector, particularly the Valley, which controls the entire industry. Eighty seven per cent of tourists arrive directly in Kathmandu and most of their stay and expenditure are concentrated in the Valley.

Between 1962 and 1981, the number of tourists visiting Nepal increased 26 times, from 6179 to 161,669. Average per capita tourist expenditure also increased substantially from Rs.126 in 1962/63 to Rs. 5657 in 1981. The average duration of stay has increased from less than three days in the sixties to more than ten in 1982 (Burger 1978; DRCG 1981).

The contribution of this sector to the development of the Valley and Nepal has become increasingly important. In 1981/82, tourism contributed about 22 per cent of the total foreign exchange earnings in Nepal. It has given major impetus to the growth of the hotel industry, both in the Valley and outside. The number of hotel beds increased from 280 in 1986 to over 3000 in 1981, giving rise to significant excess capacity in an industry which is marked by strong seasonal fluctuations. The overall occupancy rate stood at a low level of only 36 per cent for Kathmandu in 1981. The bulk of investments of the Nepal Industrial Development Corporation have gone into the hotel sector.

Studies of tourist expenditure have shown that 50 per cent is spent on food and lodging, while handicrafts and curios receive about 24 per cent, internal travel 20 per cent, recreation and others five per cent. An important question is how much of tourism earnings are actually retained in Nepal? A World Bank study has estimated a figure of 60 per cent of gross earnings (World Bank 1983). Research has revealed that while the impact of tourist expenditure on income and imports is strong, it is lower on employment, although the effect varies considerably according to the type of tourist (DRCG 1981).

At present, this dynamic sector faces two major problems: decreasing growth in tourism in recent years and high import content of tourism-supporting expenditure. Government red tape has been compounded by the lethargy of the private sector in facing these problems, and with the growth in alternative sites lik

Lhasa and Bhutan, Nepal will have to more actively sustain the growth of tourism.

Total benefits from tourism are difficult to quantify. It has stimulated the growth of infrastructure like roads, airport and communication facilities and has generated substantial private sector investment in different services catering to tourism.

#### Government and Other Services

Other sectors which have shown fairly rapid growth in some parts of the country are government and semi-government sectors, transport, trade, and other services. With inclusion of all project-related construction employment the expansion in government activities has made this one of the largest employers after agriculture. The problem is that this expansion has been limited to major urban centres. Expansion in the services and trade sector is evident from the increase in the number of schools and hospitals and emergence of new markets and small towns. Many local markets have mushroomed over the years along new road networks as well as in urban centres. For the bulk of the rural population, however, absorption into these sectors is limited.

#### 2.5 Equity and Other Aspects

As noted earlier, in relation to the Rasuwa/Nuwakot study, off-farm employment activities disproportionately engage a large per cent of lower income workers. There is, therefore, a case for arguing that the benefits of off-farm employment generation will come especially to the poor, so that in equity terms, the effect should be progressive. However, the issue is not quite as simple. For example, the category of wage labour includes landless peasants working on other peoples' farms. And some

cottage industry activities are so unrewarding in terms of revenue per day worked, that one would not wish to encourage them. The equity implications of off-farm employment generation, therefore, require more detailed analysis, but the prospects would appear to be favourable.

In this context, the figures in Table 2.14 are revealing. Although the contribution of household production is fairly invariant with income (80 to 85 per cent), the composition of the balance varies substantially. As one might expect, high-income groups derive more than half of the balance (11.7 per cent) from trading and investment, while for low income groups wage labour accounts for almost all. As for extra-household employment, the pattern also varies with income level (Table 2.14). The top economic stratum derive their income largely (48 per cent) from employment in the organised service sector. The bottom stratum rely mainly on agricultural labour (58 per cent).

#### The Role of Women

As Table 2.15 shows, women in rural areas currently contribute more than half of total farm income, with a substantial proportion of income from trading and wage-labour. On the basis of days worked in employment outside the farm, their contribution averages about 25 per cent for the eight villages, but the type of activity varies considerably. Agricultural labour is generally a major activity, but portering, cottage industry, and domestic service are also important.

A major condition of the study from which these figures are taken (Acharya and Bennett 1981) is that development programmes are currently targeted almost exclusively towards men, resulting both in waste of productive potential and a tendency to lower the status of

**TABLE 2.14 : COMPOSITION OF HOUSEHOLD INCOME BY ECONOMIC STRATA**

Economic Strata	Household Products	Trading & Inventory.	Wage/Salary	Total (%)	Av. HH Income (Rs)
Top	79.7	11.7	8.6	100.0	16,871
Middle	84.8	2.4	12.8	100.0	9,757
Bottom	80.6	1.6	17.8	100.0	5,129

Source : Acharya and Bennett, 1982, Table 2.7

1



(Courtesy : Kk. Panday)

1. Weaving as off farm work for women

Cheap imports and unattractive returns are likely to discourage weaving in the future.

2. Women carrying firewood for sales

Sales in nearby urban areas provide a source of cash income for the household.

2



(Courtesy : Kk. Panday)

**TABLE 2.15 : MALE/FEMALE CONTRIBUTIONS TOWARDS HOUSEHOLD INCOME**

(Percent)

	Female	Male
Agriculture	48.1	51.9
Kitchen gardening	77.5	22.5
Animal husbandry	58.0	22.0
Hunting & gathering (incl. fuel)	47.3	52.7
Food processing	11.3	88.7
Manufacturing	44.1	55.9
Sub-total: farm income	42.2	57.8
Investment		
income and trading	60.3	39.7
Wages and salaries	79.5	20.5
<b>TOTAL</b>	<b>47.5</b>	<b>52.5</b>

Source : Acharya and Bennett, 1981, Table 3.3

women. These findings should be taken into consideration in planning off-farm employment generation strategies, so that women are neither excluded from such activities nor confined to specific types of activity defined by imposed gender roles, often inconsistent with traditional practice (Joshi 1985).

#### Location Aspects

In locational terms, two main distinctions are significant. One is between rural and urban areas, where to a large extent, the conventional/modern categories correspond to the rural/urban distinction. Thus, most of the conventional non-farm activities, even including much of the migrant labour, are to be found in rural areas, while most of the modern manufacturing employment described above is located in urban areas. (The exceptions are mainly those most closely related to agriculture, such as oil and rice milling.) For certain purposes, it may be more helpful to use the rural/urban classification in place of conventional/modern. A second distinction, already discussed, is the regional distinction-- mountains, hills, Terai which relates not only to land use and seasonality, but also to socio-cultural variation. Even within these broad regions, however, there are notable variations. Based upon a study of Nuwakot District, (see Chapter 5) the conclusion is that current spatial development forces are likely to concentrate the location of off-farm activities along accessible river valley belts and lowlands.

Given overall development trends, there appears to be some truth in the above findings. As pointed out earlier, in the hills there is a strong element of "lowland determinism" in the concentrations of development forces, which is recognised by the people and the market. Efforts to counter this at present may lead to uneconomic use of scarce resources.

Some of the Indian hill town provide exceptions to this picture, for these are very specialised service towns catering to a distinct clientele. In the future, with increasing economic growth, it may be feasible to develop such towns. But as Manandhar (1985) points out, many of the hill towns in Nepal which initially started as centres for off-farm activities and services, have progressively become more agricultural. Functional differentiation between rural areas and towns has gradually reduced over time and the towns have been unable to provide the impetus for rural change. It is important to find out what factors can revive the off-farm roles of urban areas in the hills.

#### 2.6 Policy Considerations

Many policies and programmes have had both direct and indirect implications for the growth as well as and slow demise of off-farm activities in the hills. Policies implemented with certain objectives in mind have, over time, often given rise to unanticipated and negative effects. Some of these could easily have been foreseen, like the displacement of porters by the construction of roads. Others were not adequately recognised, such as the effects of forest control on firewood sales, charcoal production, ginger drying, and Nepali paper making.

It would be interesting to identify all the various policies and programmes of recent years which have affected, to varying degrees, the extent and nature of off-farm employment. In the following pages some selected points are made regarding investment and pricing policies, agriculture and industry, and finally, integrated rural development projects.

Clearly, increasing levels of investment are critical for maintaining steady expansion in the development of off-farm opportunities. In Nepal, investments proposed by the Seventh Plan amount to no more than Rs. 2000 per capita over a five-year period. Investments in Integrated

Rural Development Projects, which might be seen as the major channel for pumping resources into rural areas, have over the past decade amounted to no more than US \$ 23 per capita. In order to promote off-farm activities which generally have higher capital-labour ratios than farm sectors, levels of investment will have to rise substantially. For purposes of comparison it may be noted that in the Small Farmer Development Project, the average per capita loan has been about Rs. 1500, while in the Cottage and Small Industries Project it has been about Rs. 12,000 per person employed. It should, however, be noted that there are questions about the absorptive capacity of the hills, although this issue appears to be more a lack of managerial skills than of suitable investment opportunities.

This in turn may help to explain the relatively disappointing returns from investments carried out so far. Across the board, projects are not being completed on time, costs are increasing rapidly, and actual benefits have been small compared to expected ones (NPC 1985; Pradhan 1985).

Exercises relating to the choice of area, sector, and location of investment have been poor. Sectoral investment policies have been primarily determined by the number of carry-over projects and possibilities of foreign aid (Banskota 1983). Little systematic evaluation of investment and returns has been carried out. Ad hoc shifts in focus are not uncommon. The trade-offs resulting from investment allocation between high-potential and low-potential areas have not been systematically evaluated. Often, after the completion of one set of projects, little supporting investment has been made.

The implications of these prevailing conditions for improving the overall planning capability for hill area development are substantial. Recent efforts to implement a more decentralised system of planning are important, but it is clear that the translation of the decentralisation system from a political programme to one that is capable of enhancing overall planning and decision-making capability is still a long way off.

A second critical area of policy for off-farm employment generation is the complex issue of pricing and taxation. Government influences the incentive structure for different activities and sectors through

alterations in prices. Wage rates, foreign exchange, interest rates, taxes, and subsidies all influence the relative rates of return from different activities. Often the use of these instruments is based on objectives which may not always be supportive of off-farm employment. In Nepal a liberal import policy has been pursued, both with the purpose of raising revenue and to earn Indian rupees, but the effects of liberal imports might adversely affect indigenous manufacturing units, as they are unable to compete with imports. A case-by-case study is required because the performance of some of the protected industries has been consistently disappointing. At the same time, the use of pricing mechanisms and other policies to promote manufactured exports, particularly carpets, handicrafts and textiles has been encouraging. There is no doubt that pricing policy deserves more attention, in order to identify specific pricing policy measures to promote off-farm activities.

Choices in terms of development strategies have undergone changes over time. In so far as agriculture is concerned, during the fifties and sixties, the major thrust was to expand cultivation in the sparsely settled areas of the Terai, and a limited effort was made at land reform. More recently, however, the main focus has been on the propagation of improved agricultural technology, both in the hills and the Terai. The overall performance, has not been encouraging. While some expansion in agricultural employment has undoubtedly occurred because of expansion in cultivated area, productivity increases and related employment benefits have been limited to pockets like the Kathmandu Valley.

Although it is generally believed that the cultivated area has expanded considerably in the southern Terai plains and to some extent in the hills, by bringing marginal lands under cultivation, the yield of all major cereals has either remained stagnant or declined (ADB 1982). Rainfall variation continues to play a critical role since irrigation development has been slow with only 10 per cent of cultivated land having a reasonable guarantee of water. Soil fertility has been declining on account of poor replenishment of nutrients and fertiliser consumption is low; indeed, fertilisers are largely unavailable in many inaccessible parts of the hills and mountains. As far as agricultural credit is concerned, it is still heavily biased towards the larger land-holding groups. According to the Agricultural Credit Survey,

marginal farmers held 8 per cent of the land and had access to 2.78 per cent of the credit, while large farmers held 42 per cent of the land and had access to 74 per cent of the agricultural credit (NRB 1980).

The manufacturing sector has been relatively insignificant in the Nepalese economy, and almost negligible in the rural areas. In 1981/82, the entire employment generated by the manufacturing sector was 81,000 of which 54 per cent was located in the five major towns (Banskota 1986).

Programmes for the development of cottage industry have been launched in a number of areas. Although these projects were started with the objective of supplementing the agricultural incomes of the poorer groups, they have lacked a target group focus and provided assistance indiscriminately. A number of evaluation studies have revealed that programmes have been ineffective with respect to both employment and income generation.

Some projects have provided training to people without the necessary working capital support, so that the trainees have been left unemployed. In many cases trainees have been selected from least needy households, or good training has not been adequately followed up. Markets have not been clearly identified or developed (DRCG 1982). While this is the general picture of cottage industry development projects in rural areas, there are exceptions in the case of a few projects like the Cottage and Small Scale Industry (CSI) Project. The coverage of CSI is to be expanded during the Seventh Plan period and it would be worth monitoring this vastly greater scale of operation to see whether the effectiveness claimed by it as a pilot project can be replicated. Infrastructure development activities like roads, electricity, bridges, irrigation, and drinking water projects have continued to take the lion's share of planned development funds in Nepal. They are clearly the second most important employment generation activity in Nepal after agriculture, and represent the most important source of wage employment for the rural population. Nevertheless, there is very little information on direct and indirect employment effects of infrastructure development. Some studies have raised doubts as to the overall employment effects even of infrastructure projects.

Money-flows alone cannot tell the whole story about distribution of benefits, but can highlight project characteristics regarding employment and income benefits. One study examining the case of construction workers in Western Nepal points out, "in summary, the overall situation (for the workers) is one of bare subsistence wages for long hours of work brought about through a combination of agencies, contractors, merchants and landowners, enforced by the state apparatus" (Seddon 1979, p. 138).

Lest one gets the impression that development of infrastructure has not contributed to employment generation at all, it must be pointed out that employment in two road construction projects alone generated about 62,00 man days/km of road (Pradhan:1986). During the period of the Sixth Plan, over 1500 km of road network was added which, on the basis of these figures, would imply employment of 50-100,000 persons per year. Similarly, employment has been generated in the fields of power supply, irrigation, and afforestation. Despite these large inputs, it is worth noting that these investments still make a relatively small contribution in relation to the overall problem of unemployment, and underemployment. Nor are these projects maximising their employment potential influenced as they are by other factors relating to choice of technology and materials, contractual systems and organisation of work.

Since the Fifth Plan, Integrated Rural Development Projects (IRDPS) have become a major vehicle for undertaking multisectoral development projects in the rural areas of Nepal. At present, eight IRDPS are in operation covering 23 districts of Nepal and about 3.5 million people. Total funds expended over the period 1976 to 1985 have exceeded US\$ 83 million. Although in aggregate this appears to be a large amount, the per capita expenditure was about US \$ 23.0 during the 1976-1985 period. These multisectoral programmes have covered a wide ranging set of activities. A recent study points out that the performance of the IRDPS has been less than satisfactory. All the evaluation reports suggest persisting problems of implementation and coordination (Pradhan 1985).

All rural development programmes pledge increasing gainful employment in rural areas through a variety of programmes expected to contribute to

employment generation both directly and indirectly. Direct employment generation is attempted through different infrastructure-related construction activities, through increased gainful self-employment in private sector activities, and through labour demands for implementing rural development programmes. Indirect employment increases are envisaged through increased agricultural and other outputs.

A study of the Rasuwa-Nuwakot Rural Development Project estimates that total employment generated by the project was 18,510 worker months, of which only 14 per cent was paid, the rest was voluntary labour (DRCG 1981). Data on employment generation from other projects does not exist. There are, however, some indications that the situation is unsatisfactory. Infrastructure projects have tended to be capital-intensive, and there has been increasing concern over the huge influx of Indian construction labour. Delays in project completion have tended to enhance capital intensity and have also adversely affected indirect employment benefits expected from the resulting output.

## 2.7 Prospects for Off-farm Employment Generation

In most developing countries, the process of economic growth is accompanied by and is indeed, primarily attributable to, a shift from low-productivity activity (notably agriculture) to high-productivity activity (notably industry), along with increases in productivity in both sectors. In Nepal, the process of industrialisation is at an early stage. The potential for industrial development is very limited, especially in the hills and mountains. There is scope for increased productivity in the agricultural sector, in terms of both labour and land, but there is little scope for increasing the area cultivated. Thus, prospects for productively employing the rapidly increasing population in their traditional agricultural activities is not encouraging. Simply stated, this is the stark background against which the importance of generating off-farm employment emerges so clearly. This is further reinforced by severe environmental problems faced by the hills and mountains, and any effective action to develop the economy is hampered by difficulties of access to these areas.

It is evident that the problems of economic development in the hills and mountains of Nepal are in

many ways different from those of most developing countries (although commonalities are shared by the mountain areas of the other countries of the Hindu Kush-Himalaya). Limited potential for industrial development, at least in the medium term, is a major constraint. Opportunities, therefore, must be sought elsewhere: In trading, for example, many groups in the mountains have adapted, with considerable enterprise to the changing opportunities open to them; in tourism where the export sector (unlike primary products) has a rapidly growing world demand and where Nepal's challenging physical environment can be turned to advantage. Other sectors include construction, agro-processing and handicrafts. In conclusion, it may be helpful to give a brief summary of the main emerging points.

### Who Benefits ?

There is evidence that the landless and those in the lower economic strata derive a higher proportion of their income from off-farm activities. There is thus a *prima facie* reason to believe that the generation of off-farm employment will be beneficial in terms of its impact on the poor. This may not inevitably be the case, however, and policies should be designed to ensure that this aim is achieved. Similarly, programmes should avoid the current practice of focussing primarily on men, not least because the evidence from rural Nepal shows that women currently contribute more than half of total household income.

### The Complexity of the Off-Farm Category

Being a residual category, off-farm employment includes a very wide range of different activities. These fit uncomfortably into modern classifications of economic activity. But in addition, the quantitative measures of these activities mark a number of different and important variations, for example:

- **by season** : the extent and nature of different types of off-farm employment vary considerably with the season
- **by zone** : there is considerable variation between the mountains and the hills
- **by area** : within a zone, there are variation



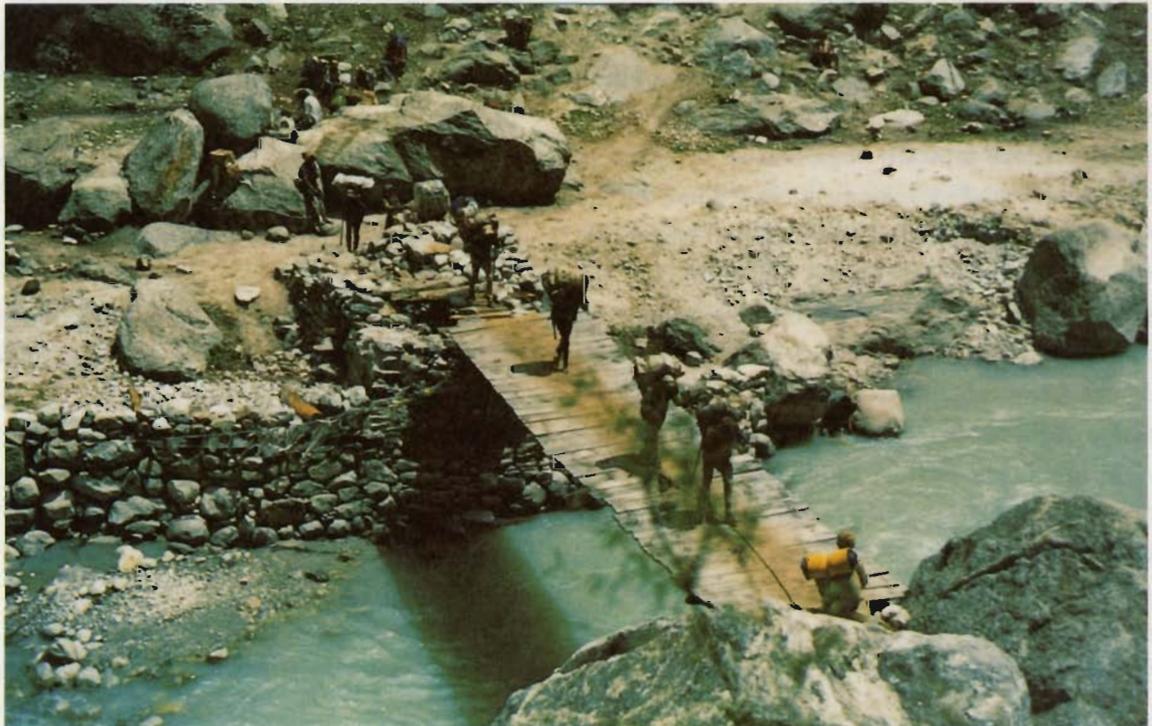
(Courtesy : Tej Pratap)

3. Use of pack animals in higher altitudes.

Animals such as yaks and mules have facilitated the transportation of bulk goods in higher altitudes and provide an important source of cash income for their owners.

4. Portering

Throughout the middle hills of Nepal, this is an important off farm activity for poor hill farmers.



(Courtesy : Veit Burger)

according to other locational factors, e.g. lowland vs. upland, distance from road, distance from major town

- **by economic stratum** : variations occurs significantly between high, middle, and low income groups
- **by social group** : in some instances, specific social groups are traditionally linked to specific activities.

No aggregate data can fully capture the diversity and complexity of off-farm employment in Nepal, and any policies designed must take full account of this situation.

#### Significance In Terms Of Money and Time

Even now off-farm employment is a major source of income for rural households in Nepal. Although agriculture is undoubtedly the primary source of income for the vast majority, the contribution of agriculture to rural household income is generally only about 50 per cent. If measured in terms of time inputs, off-farm employment is generally found to be even more significant. This raises the question of the productivity of off-farm activities.

#### Is Off-Farm Employment Productive ?

The shifts from subsistence to marketed output, from agriculture to industry, and from self-employment to wage labour, are typically regarded as evidence of economic growth and development. But some of the current off-farm activities in the hills of Nepal are properly characterised as distress employment. The returns to effort of producing rope or string for example may be extremely low. Some such activities are inevitably of low productivity, and products face severe competition from modern substitutes available in the towns. It is important, in framing off-farm employment, policy to distinguish activities which are potentially productive from those which are not.

#### Urban Development and Off-Farm Activities

Urban areas in the hills are few and far apart. In spite of their limited number, they are beginning to play an increasing role in the development of many productive off-farm activities such as agro-processing, manufacturing, trade and services. With increasing urban development in the hills, market centres, small towns, and cities will become increasingly important in the future for off-farm activities. Appropriate policies are required for better economic integration between rural and urban areas in these hills. There are important questions of improved access, rural-urban investment complementarity, and general upgrading of the quality of rural labour force and rural resource management in order to respond to urban development opportunities. Similarly there is a need for appropriate policies to induce selective urban development in order to generate agglomeration economies and derive maximum benefits from relatively costly infrastructure investment. This will further require some planning of population distribution between rural and urban areas for the future. An increasing and diversified urban demand will play a major role in diversifying hill agricultural production. This market-oriented multiple cropping system promises to be the major generator of non-farm activities for the hills. The transition is not likely to be easy under the prevailing conditions where basic infrastructure is lacking. Careful work on investments, extension, processing and marketing of specific cash crops and other activities will provide valuable guidelines for developing comprehensive policies to promote rural-urban linkages and the development of non-farm activities in the hills.

The next Chapters will examine in greater deal the problems and constraints in hill agriculture and the potentials for its development. Because of strong off-farm linkages of a dynamic agriculture, it seems obvious that the major impetus for rapid growth in employment and income opportunities must originate from agricultural development itself.

## Chapter 3 . Challenges of Subsistence Hill Agriculture

### 3.1 Transition of Hill Agriculture

The middle hills of Nepal, and indeed many other parts of these mountains, have passed through different stages of interaction between population, agriculture, and the environment. These stages or periods, despite many complex locational variations, reflect the typical evolution of an agricultural economy. In the early stages of quasi-subsistence conditions, population densities were relatively low in relation to available agricultural land. Agricultural practices were extensive, with widespread shifting cultivation across marginal lands where irrigation development was difficult. Labour utilization rates were low and technology was more or less static. Demand for non-agricultural goods was limited to some basic items and much of it was home-produced. Urban centres were few and far apart, performing largely non-economic surplus extracting functions. Incentive to trade was low because of low agricultural productivity and also because of the relatively limited availability of non-agricultural goods, except perhaps in parts that were unable to grow their own food and had to trade with other regions. Pressure on the environment no doubt existed, but was not very rampant.

This happy state of low-productivity, near-equilibrium conditions did not last for very long. Many quasi-subsistence pocket economies quickly deteriorated. In many cases terracing, development of irrigation, integrating livestock into the farming systems, and even switching over to crops from the New World, such as maize and potatoes, provided important relief for varying periods. Outmigration also provided a temporary safety valve. But it has been only a matter of time before an increasingly large number of pocket economies in the hills have become locked into a Malthusian trap.

Large parts of these hill economies have become virtually stagnant with extensive environmental damage. Incomes have been driven towards basic subsistence, with farm outputs insufficient to even support the family's food needs [Seddon 1987]. Given rapid increases in farm

labour, labour input in the production process has reached a state of low productivity, where many activities are clearly distress engagements.

Technological change from within the system, as a response to growing population pressure, cannot be totally ruled out as farmers continuously make different adjustments. But these changes do not result in any substantial improvement. A few irrigation ditches or improved land management practices, clearly very desirable and important from many aspects, are, however, unlikely to increase production. The most profitable opportunities for productivity increase from within the system are thus severely limited. The closed nature of the system, for all its efficiency in the use of available resources, has also been its greatest setback due to accelerated population growth on account of factors beyond the control of the local hill environment.

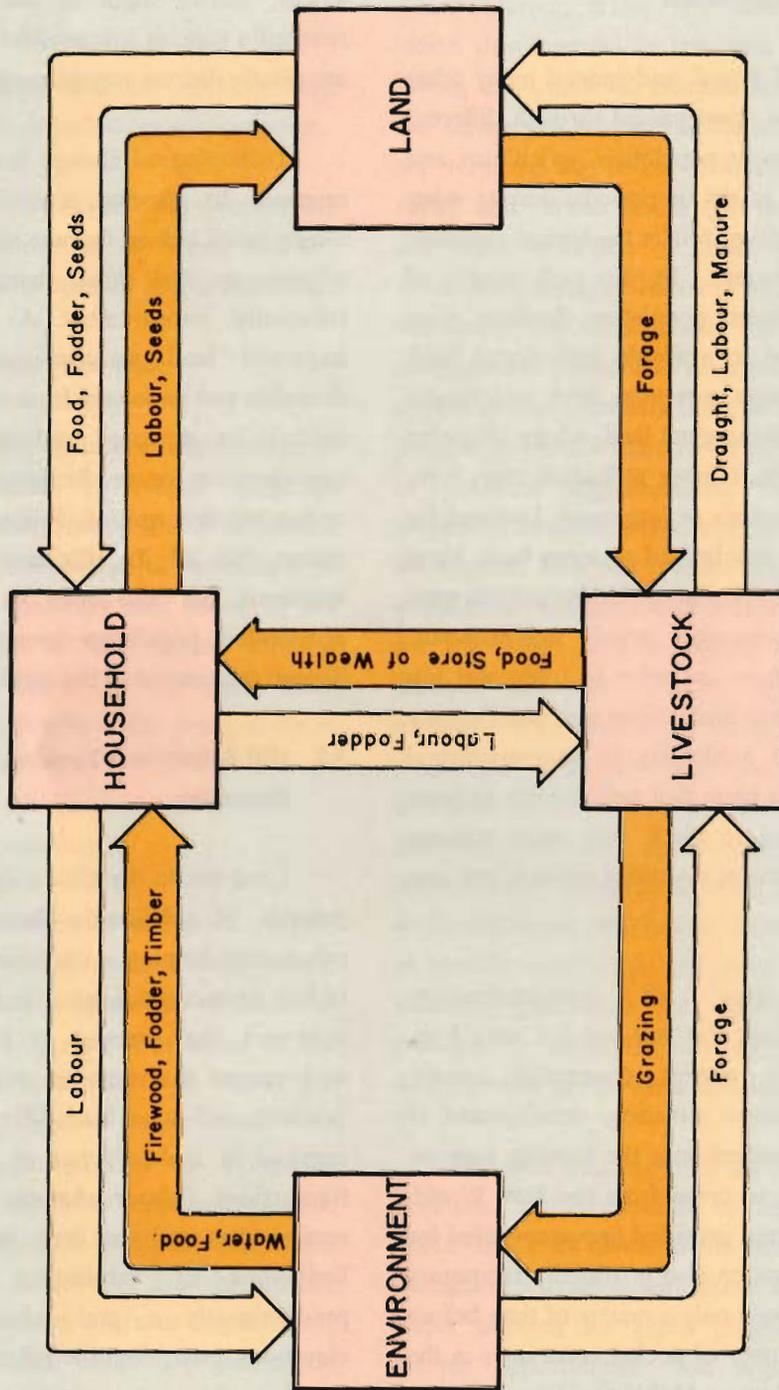
### 3.2 Hill Subsistence Farming and Land-Based Resources

Land use in the hills is determined primarily by the practice of subsistence farming. The basic unit of subsistence farming is the individual farm, which consists of four main components : the farm household, the land it cultivates, the livestock it holds, and the accessible environment that includes non-privately owned forests, pastures, and other lands [Fig 3.1]. Households are also engaged in limited types of inter-household economic transactions (labour sharing, taking loans, sharing of equipments, etc.) that help in overcoming some of the limitations of subsistence production. There is predominantly a grain-subsistence mentality at all elevations, even when the relative and absolute advantage of other non-grain crops may be greater. This is partly because farmers are leary of engaging in extensive sharing of productive resources necessary to avoid prohibitive risks in the early stages of specialization [Calkins 1976].

Over time, internal pressures on the land resources of farms and on the accessible environment have grown,

# INTERACTIONS OF THE SIMPLIFIED SUBSISTENCE FARMING SYSTEMS

Figure 3.1



Source: HMG/SATA Tinou Watershed Management Plan, Kathmandu, 1980, P. 51

with rapid increases in human and livestock population, consequent difficulties associated with traditional fertility management, decreasing fodder and energy supply, and problems of water management [LRMP 1986]. This is probably not an unfamiliar story of agricultural transformation experienced by other areas as well. However, in the case of the hills, several factors have severely limited the inflow of external inputs that could have arrested the productivity decline of hill land resources, made available substitute products for relieving pressures on land, and provided alternative employment and income-generating opportunities. Great difficulties in transport and communication have isolated the hills and mountain areas for centuries from the rest of the world, significantly limiting the inflow of external inputs. Outmigration of hill households has been insufficient to reduce the internal pressures on the fragile land resources of the hills.

#### Farmer Strategies for Land Resource Management

Farmer strategies for land resource management can be seen from two levels : the farm level, and the community level. The farmer focusses on the management of private lands, while the latter is concerned with the management of non-private land resources. Obviously, the two types of management are highly interactive, with changes in one directly influencing the other.

In so far as farm level resource management systems are concerned, the important question here is how hill farmers have managed land resources and adjusted to changing resource conditions. Building of terraces is one of the most important soil conservation activities that has been going on for centuries, which could have subsequently followed the slash-and-burn phase of hill agriculture, which is still prevalent in some parts of the hills [LRMP 1986 : 4]. There are different types of terraces depending on soil, slope, and climatic conditions. Recently some sources have indicated that cultivated area has not expanded in the hills, but cropping intensity has increased. Forty per cent of the total land area in Nepal is suitable for terraces, but only 15 per cent is being used and many stable terraces are being abandoned in favour of more intensive cultivation [LRMP 1986 : 2-4]. In other areas, farmer responses to increasing shortages and difficulties of fodder and fuel have been to plant more fodder trees and grasses on private fields, stall feeding of animals, sharing of livestock rearing and products, reduction in the number of livestock, use of agricultural residues for burning, and, wherever available, use of chemical fertilizers. All of these adaptive strategies [Table 3.1] indicate increased labour demand for subsistence activities and could mean less labour being available for environmental conservation activities. Some types of conservation activities conflict with the peak agricultural season, while others conflict with off-farm work and seasonal migration. The changing nature of farm labour allocation and the factors underlying them should be evaluated more carefully.

**TABLE 3.1: ADAPTIVE STRATEGIES AND LAND-RESOURCES MANAGEMENT OF THE HILL FARMER**

STRATEGIES	POTENTIALS FOR EXTENSION
1. Intensive Farming <ul style="list-style-type: none"> <li>- increases in cropping intensity</li> <li>- maintaining terraces</li> <li>- abandoning old terraces</li> <li>- use of HYV technology</li> </ul>	Altitude, technology, fertility constraints in more intensive subsistence farming, need to evaluate other land-use options Use of HYV technology limited by environmental conditions and farm-level resource constraints
2. Increase in tree Crops <ul style="list-style-type: none"> <li>- expansion of horticulture</li> <li>- fodder trees</li> <li>- agro-forestry</li> </ul>	Non-availability of land, knowledge, technical know-how, marketing problems, and inaccessibility
3. Stall-feeding of livestock <ul style="list-style-type: none"> <li>- take better care of the few good ones</li> </ul>	Preference for buffaloes, high costs, burden upon women, risks associated with improved breeds, difficult to get rid of cattle (religion), free grazing still very prevalent, effective where double cropping is practised.
4. Change in firewood consumption and use <ul style="list-style-type: none"> <li>- decrease in consumption</li> <li>- use of improved stoves</li> <li>- use of crop residues</li> <li>- some changes in cooking habits</li> </ul>	Limited supply of substitute/lack of improved technology; cost of other substitutes
5. Migration	Increasingly more difficult to find land

It is difficult to believe that some form of community-level management particularly concerning forest resources, has not existed across the hills. Based upon various discoveries that researchers have made, these management systems have focussed mainly on exploitation and distribution of existing forest resources, and to some extent, on pastures in the Higher Himalayas. The strength of local institutions, as a basis for local resource management and conservation, have depended on one or more factors, such as equality of access to resources, homogeneity of groups, leadership, and the severity of forest depletion, [Molnar 1981; Seddon 1987]. Another category of forests managed by the community are *Guthi* forests (grants to institutions) and temple forests, which are dedicated to local divinities. More recently there has been increasing amount of attention given to development of community forestry, with the hope of encouraging participatory management to develop new forests and protect existing ones [Campbell et al. 1988].

Both these management systems, including various changes discussed, have been relatively unsuccessful in closing the increasing gap in demand and supply of available land resources. While many of these systems worked relatively effectively under low population density conditions, they are encountering major difficulties in high density situations. As government policies clearly have a strong influence on how resources, both private and non-private, are used and managed, it is useful to briefly review the nature of government policies.

#### Impact of Land and Forest Policies

Land and forest policies of the government in agricultural economies, like those of the hills and mountain areas of Nepal, have had far-reaching effects. Even today over 80 per cent of the labour force is engaged in agriculture-forestry-livestock activities and if any group of policies directly affect the rural population, they are undoubtedly land and forest policies. A review of these policies prior to 1950 and their general emphasis indicates a very long history of government policies that assumed forest resources to be inexhaustible and consequently encouraged deforestation and expansion of cultivation. This is evident from policies that encouraged land grants in lieu of payment, land grants for other obligations to the state, tax incentives to clear new land,

large charcoal levies to villages/groups that had access to forests resources and, systematic alienation of tribal lands. There were no legal provisions for environmental protection or land-use management. After 1950 one notices the introduction of some new policies such as the land reform, changes in land tax and implementation of various forest acts to protect forests.

In 1957 private forests were nationalized, and expropriated without compensation. This was followed by other changes in forest policies regarding forest offenses and penalties (1962), the establishment of National Parks and Wildlife in 1973 and the introduction of Panchayat Forests in 1975. The Soil and Water Conservation Act was passed in 1982. Apart from these legislative measures, there were also changes in forest agencies. The Ministry of Forests was changed to the Ministry of Forests and Soil Conservation, forest offices changed from Division to District level which meant greater manpower and resources for supervision and control. Forestry programmes apart from focus on afforestation, also introduced other programmes such as soil erosion control, promoting improved stoves, fodder programmes, and watershed management.

A review of land and forest policies that have been implemented in the hills and mountain areas clearly indicates that in both cases sustainable management of available land resources has not been the objective of government policy, except very recently. Land and forest policies have been used for a long time in the past simply for generating more revenue for the government, bestowing favours, and extending political support for the regime [Regmi 1976 : 129].

In the past land taxation across the hills was the main source of revenue for rulers in the hills. Consequently there is a very long history of land taxation based more on what could be squeezed from the cultivator than on the productivity or land yield. Although various systems of grading agricultural land has been practiced in the hills for a long time, these systems have always been guided by, and arbitrarily adjusted for fiscal considerations [Regmi 1976 : 131]. Development of proper land use management practices in the hills has not been a focus of land use policy until very recently and, even at the present moment, it is not being enforced effectively.

Policies regarding distribution and ownership of land also do not reveal any trace of governmental concern for improving land management in the hills. Good agricultural land has remained very inequitably distributed. The majority of the hill population have had to eke out a living from steep and marginal hill lands. Inheritance laws did not control excessive subdivision and fragmentation of landholdings, which were already relatively small. For a long time, the government carried out very systematic alienation of tribal lands through grants, taxation, and usufructury land mortgaging [Zeverring 1979 : 102-107]. Another very harmful development, from the point of view of land management, has been the separation of the cultivator from the land owner. Following the 1950 political changes, land reform measures to improve various aspects of land management have been implemented, but these have not gone far enough in changing adverse effects of a long tradition of environmentally unsound land policies. Changes with respect to forestry policy also clearly indicate the lack of concern about proper forest and land-use management. Prior to 1950, management plans for forestry were considered unnecessary since forests were seen as abundant resources. Since 1952 policies have moved from a stage of total control over forests by the government, to partial relaxation of controls including implementation of various programmes to reduce deforestation. There are still no policies directed toward management of livestock and livestock grazing, which many see as a growing menace to limited grazing and forest lands in the hills [Pereira 1986].

### 3.3 Constraints in Hill Agriculture and Economy

Dispite a very long history of unfavourable land-use policies, hill farmers have developed many different types of innovative strategies. And yet overall scenario for hill agriculture appears very bleak indeed, given the overall trends in almost all key resources [Seddon 1987 : 275- 284; HMG/SATA 1980 : 59-61] Some of these trends may be summarized as follows:

#### (i) Cultivated Land

- declining fertility, loss of land, increasing soil erosion and partial desertification, major problems of fertility and water management

#### (ii) Pastures

- largescale overgrazing and degradation of pastures, landslides, livestock management focussing more on numbers rather than on quality

#### (iii) Forest

- reduced forest area, decreasing forest crown cover, continuing encroachment, overgrazing, loss of species, limited government control on wood harvested, very poor afforestation

#### (iv) Water

- Increasing shortages, flash floods

#### (v) Households

- larger households, more dependents, labour scarcity, increasing burden on women, higher proportion of children in the labour force, reduced cultivated area per capita, increasing landlessness, frequent and permanent food deficits, scarcity of firewood, indebtedness, outmigration

- focus on short-term needs that further aggravate medium and longterm problems

- little incentive to cooperate, and breakdown in conventional institutional mechanisms.

#### (vi) Economy

- rising prices for food, energy and other inputs, political pressures for greater subsidy on inputs, decline in non-agricultural activities due to further concentration on food production, investments for meeting short-term needs at the cost of long term sustainable development, difficulty in mobilizing domestic resources, increased dependence on external inputs

#### (vii) Environment

- increase in soil erosion, increasing dangers of destruction to roads, bridges, terraces, hydel plants, greater incidence of floods, changes in micro climate, negative downstream effects

Some of these constraints will be examined more carefully below.

#### a. Agricultural Land Resources

Land is unequivocally the most important asset of hill farmers. Its distribution and ownership patterns, therefore, reveal to a large extent the levels of incomes, consumption, and employment in an agrarian economy.

The average size of holdings in the hills has been reported to be about half a hectare. It has also been estimated that about 10 per cent of hill households are landless. Furthermore, the nature of land distribution in the hills seems to have been less unequal than that in the Terai. Another interesting point in the case of the hills is that the percentage of owner-farmers is greater than in the plains. So much for the general picture. As we examine this issue more closely, drawing evidence from area-specific reports and studies, we find that there are far more disadvantages with regard to land and agriculture in the hills than in the plains.

- i) Although the average size of holdings is 0.59 ha, this is misleading. A majority have even less, with a frighteningly large share of extremely small holdings. In Rasuwa-Nuwakot, one study reports that 52 per cent of the holdings were less than 0.3 hectares [Birgegard 1978].
- ii) In view of the extremely heterogeneous nature of the hill environment, productivity differences of the hill lands vary widely with averages likely to give a very misleading picture of the actual economic position of the hill farmer. Generally, one finds productivity of cereal grains declining drastically as one moves to higher altitudes and also northwards. Hill farmers have evolved various crop combinations to offset some of these locational disadvantages, but major difficulties are being encountered in maintaining productivity levels [Schroeder 1985 : pp 31-34]. There have also been changes in crops and farming practices and most of these measures have resulted in greater use of labour but have failed to increase productivity of either land or labour.
- iii) Agricultural densities are much greater in the hills than in the plains. This places a relatively greater

burden on hill lands than in the plains, forcing hill farmers to use marginal and fragile areas far more intensively than would have been necessary under less dense population levels. But their most serious consequence has been on the environment.

- iv) Hill farmers in every major agroecozone have depended very heavily in the past, on the use of public land resources for supporting their agricultural needs [HMG/SATA 1980]. This in fact, gave them access to greater amount of land resources than was owned by them, and we are only now learning of the intricate arrangements that had been evolved to regulate use of public pastures and forests. More recently, resources available through public lands have not only depleted drastically, but open-access is also being severely curtailed by the government or by the communities themselves. This has effectively served to reduce the amount of land available to the hill farmer. We know little about how these losses or reduced access to public land resources have affected different hill farmer groups in various hill ecozones.
- v) Another constraint for smallholder subsistence production in the hills has been problems associated with the diffusion of improved technology. Much of the improved agricultural technology has been seen as land augmenting. Because of large-scale variations in climate, soil, and other environmental conditions, application of land-augmenting technological possibilities has been more limited in the hills, than in the plains. Thus while smallholders in the plains have been able to offset land size constraints, to some extent, through adoption of HYV technology, many of the hill farmers have not had this opportunity.

#### b. Problems of Access

Questions of improved access appear in every context of hill development. It has been argued that without improving access, which reduce the cost of moving goods and services, potential for hill development will always remain limited. Reliable and cheap transport is such a critical precondition that many development activities are simply not feasible in its absence. Thus in spite of huge investment and maintenance costs,

transport development in the hills continues to acquire high priority in Nepal's development plans.

More recently, a number of important questions are being raised about the economic justification of transport development in the hills. In different parts of the hills, roads have been in existence for over two decades but there are no signs that improvement of transport has succeeded in transforming the rural hill economy [Blaikie et al. 1976]. Questions have been raised regarding the justification of huge investments for transport development in the hills. It has been felt that investment in other areas, such as agricultural research, development of irrigation, and improvement of natural resources, would have yielded better results. Furthermore, transport development has greatly increased the demand for imports which has further aggravated pressures on foreign exchange.

This is so because transport development has increased the level of trade mainly through imports [New Era 1987]. In many cases, transport development has suddenly displaced many labour-intensive, non-agricultural products through imported substitutes. The impact of roads on the natural environment has also been quite adverse. In view of these factors, including negligible improvements in productivity, justification for further development of road transport in the hills is becoming extremely difficult.

In the context of hill agricultural development, improvement in access can be evaluated in the context of the following issues:

- 1) Diffusion of improved agricultural technology which would help to boost production for domestic demand as well as exports and
- 2) Development of marketing so that the output can reach appropriate markets.

Improving access and diffusion of improved technology are related to some extent, although relationships vary according to the input contents. For instance, development of small scale irrigation, use of improved seeds and adoption of better farm management practices are all relatively neutral, with respect to improved accessibility. If these are beneficial and

available to the farmers, they are likely to be practiced both near the road and far away from the road. The chemical fertilizer story is, however, quite different. Some have reported that fertilizer usage decreases markedly after one day's walking distance from the road [Blaikie 1976]. The situation with respect to fertilizer use in the hills has been summed up by one author as follows:

"Because they (hill farmers) are low on the fertilizer-response curve, hill farmers get a higher crop production response per unit of fertilizer than Terai or Kathmandu farmers, but their yields are lowest because they use such little fertilizer. As their experience with fertilizer increases, hill farmer's demand will increase. The consumption of chemical fertilizer (in nutrients) in hills has increased more than six-fold from 1380 tonnes in 1975/76 to 8280 tonnes in 1984/85. Average per-hectare use is however the lowest (10.3 tonnes/ha) compared to Kathmandu (111.9 tonnes/ha) and Terai (18.9 tonnes/ha)." [Wallace 1986].

Transport costs and related bottlenecks have been seen by many as the major constraint in increased fertilizer use in the hills. Government is already providing a major transport subsidy for fertilizers and many critics maintain that the present fertilizer policy must be revised to reflect its true costs in different regions [Wallace 1986]. An argument in favour of cheaper fertilizer for the hills (either through improved access or subsidy or both) is the growing food deficit in the hills. It is maintained that it is cheaper to transport fertilizer than food into the hills. This argument, however, is based on a number of assumptions that are questionable. First it assumes that hills should continue to produce their own food. The fact that present-day hill farming is dominated by cereal grains with a strong subsistence focus does not necessarily mean that this is the best course for the hills in the long run. Economic activities in various regions should be evaluated on the basis of their comparative advantage, subject of course to the existing constraints. With the development of trading possibilities following specialization transport development is also likely to become economically viable.

Finally, we come to the point that links marketing development with improved access. Improved access only facilitates trade and marketing development, it is not the source of these developments. It is, therefore quite clear

that lack of improved access cannot be seen as the prime factor in the stagnation of hill agriculture. While it might have slowed down the pace of agricultural development (through increased costs of mobility), there are clearly other factors playing a far more critical role. So long as costly transport development is used primarily to support subsistence agriculture, it will continue to raise major questions about its economic viability. Improving access must be strongly linked with major improvements in the entire hill farming systems.

Without sustaining efforts along these lines, costly infrastructure development, not only in transport, but also in energy and other basic services, will be grossly underutilized, increasing the costs for such services and further limiting their demand.

### c. Fertility Constraints

Traditional hill agriculture has depended entirely on locally available nutrients for maintaining soil fertility. Although chemical fertilizers are becoming important in areas with improved access, for most of the hills, use of chemical fertilizer is still very limited. Utilizing of all available organic waste and minimizing soil erosion has been the major process through which fertility has been replenished in hill farms [LRMP 1986:31]. The plant nutrient recycling systems, prevalent in the hills, has a number of important components and, of these, three can be singled out: (a) livestock (b) forest biomass, and (c) farm labour. All three are closely interrelated. Reduction in forests has directly affected the supply of leaf litter and fodder, which has further influenced the supply of livestock manure. Similarly, availability of farm labour is also very important as the making of compost and organic manure, including tending of livestock, are very labour-intensive operations. Hill farming is beginning to face major fertility transfer constraints, as the hill farmers put a higher premium on land devoted to food production rather than forests and pastures. With these changes in land use, land and labour constraints are affecting traditional fertility maintenance systems in the hills.

Land constraints figure in two major ways. First, the need to maintain a forest to supply fodder and leaf litter is causing major difficulties. It has been estimated by some researchers that at least 3 ha of forest lands are

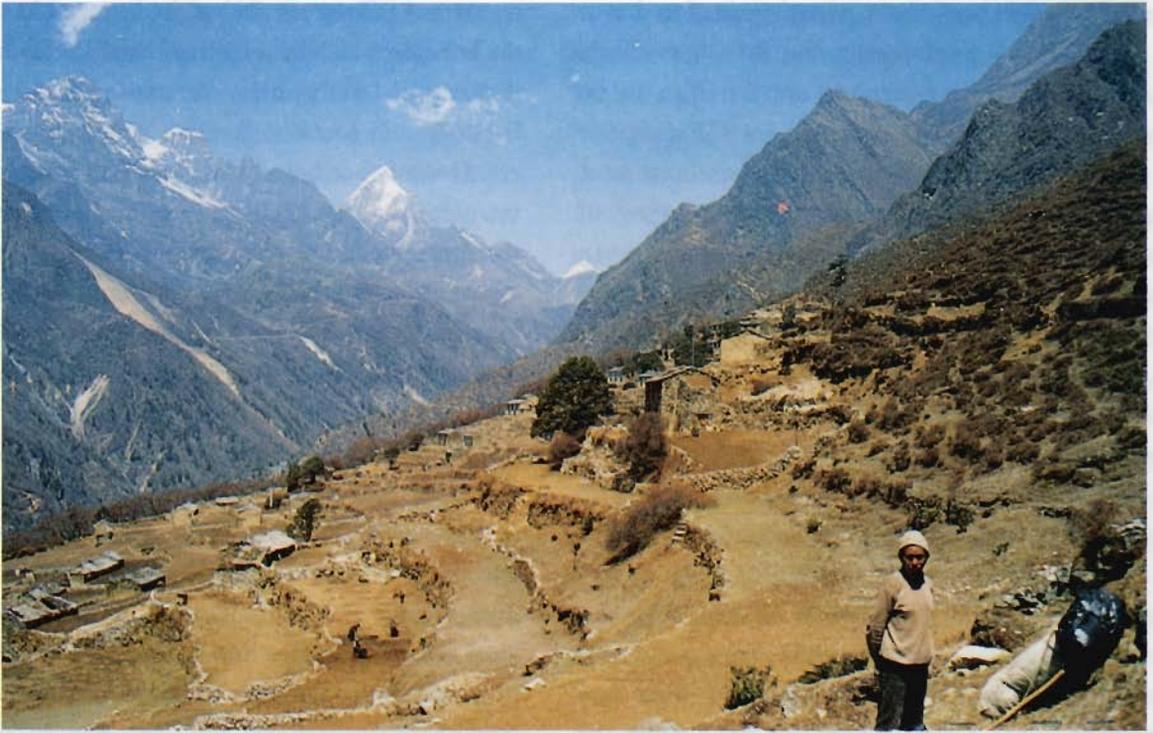
needed to maintain each unit of adult livestock. Otherwise, deterioration in livestock products, including manure, increases markedly [Wyatt Smith 1982]. Similarly, other researchers have suggested that as much as 50 tonnes/ha of leaf litter is necessary to maintain current fertility levels. Even under proper management, this translates to more than a couple of hectares of forest land [Blaikie 1976]. Obviously, more careful research is needed to establish the relationship between productivity changes, forests and pasture lands. But the conclusion is quite clear. In a situation where average holdings are less than half a hectare, and where forests and pasture lands are rapidly declining, land constraints for supporting traditional methods of fertility transfers will soon become very severe. With additional pressures on forests from firewood and timber demand, the problem becomes even more critical.

The next issue is the labour supply constraint. Available evidence indicates that farmers are already making various adjustments to labour supply constraints. For instance, it has been reported in one case that chemical fertilizers are generally introduced into larger land holding. Use of compost peaks at 0.51-10 hectares, suggesting that the increase in area does not make it economical for the farm household to allocate labour for compost preparation where chemical fertilizer is available. Thus increasing cultivated area under relatively constant labour supply tends to decrease the use of compost. Most larger farms in Nepal have to use hired labour. Limitations in the use of compost are created not only by the unavailability of forest biomass but also by farm labour supply [Applegate and Gilmour 1987]. As forests recede further and further from farm households, the labour supply constraints, in terms of time allocations for compost making, affect even smaller farms.

### d. Irrigation Development

Further development of irrigation in the hills does not hold much potential. Most easily developed surface water has already been tapped for irrigation. There are many farmer-managed irrigation systems in the hills that are functioning well. There may be some room through better management, for greater harvesting of irrigation water, but the possibilities of easily developed irrigation projects have more or less been exhausted [LRMP 1986].

5



(Courtesy : Veit Burger)

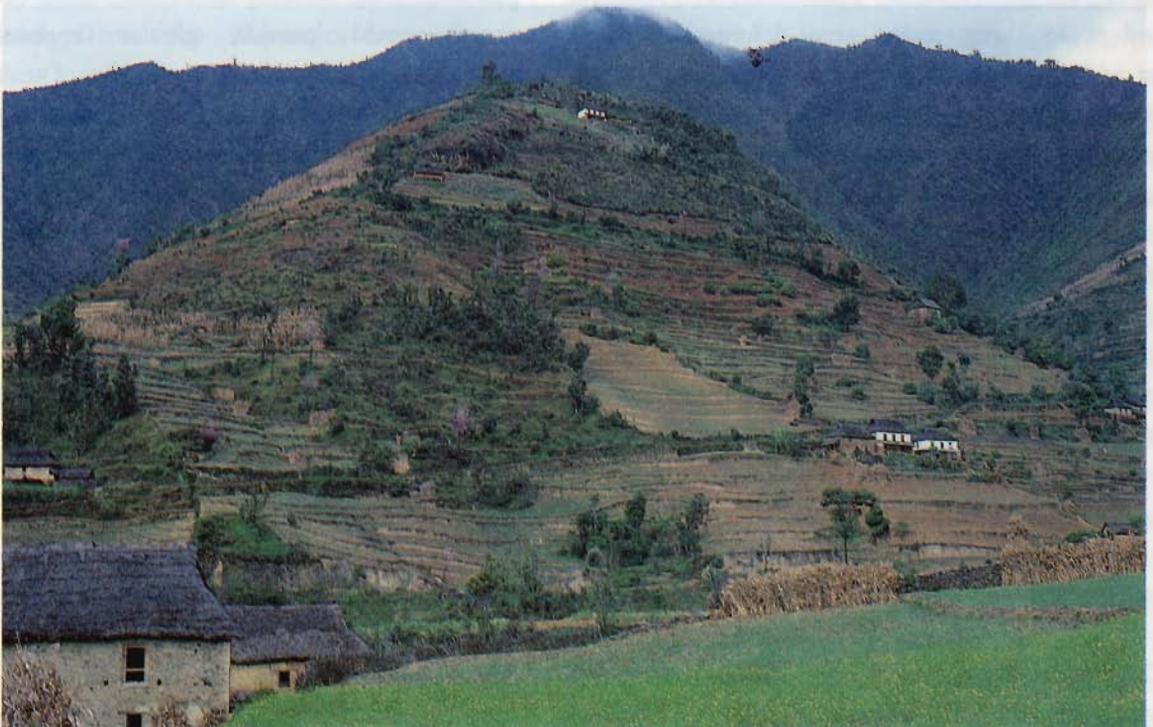
5. Cultivation on Marginal Lands.

Agriculture in marginal lands is becoming increasingly unsustainable both economically and environmentally.

6. Land scape of Subsistence Farming in The Middle Hills of Nepal

The hill farmer is a very good manager of environmental resources but he is unable to cope with the increasing pressures of population.

6



(Courtesy : Kk. Panday)

River tar (flat land above rivers) irrigation has a major potential for development, but is a very costly proposition. Upland river terraces are too high to be serviced by major rivers with perennial flows. Experience with a number of Tar irrigation projects has been most discouraging, particularly from the point of view of economic viability. If large canal construction has been used to divert streams to develop irrigation in some areas, the lift irrigation system has been used in a number of others. Both these alternatives which have involved such massive costs provide good examples of how not to develop hill irrigation. At the same time, a number of other smaller tar irrigation systems, developed with greater people's participation in some parts of central Nepal, have been reported to be functioning very efficiently [MOA 1984]. While there are potentials for small-scale irrigation development in currently unirrigated areas, experience suggests that these are unlikely to be either cheap or relatively easy, under the present farming context. With changes to more high-value crops, greater investment in irrigation development may become economically feasible.

#### e. Environmentally Unstable Conditions

Environmental concern for the hills has increased to such an extent, that one finds it being raised in almost all writings on hill development. Environmental problems are evident in three major areas-deforestation, soil erosion, and problems of water management. All these three problems are very strongly related with changes in hill agriculture. Deforestation has been related to the growing food, fodder, and firewood needs of hill households [Bajracharya 1983; Yadav 1984]. While a large part of soil erosion across these hills is attributable to natural causes, the role of anthropogenic factors is also believed to be increasing. Cultivation of marginal lands, deforestation, abandonment of old terraces, livestock management systems, and other cultivation practices have also contributed to increasing soil erosion from the hills. Loss of forests and vegetation cover has increased run off, reduced soil moisture and increased problems of water management.

These concerns have resulted in a number of important changes with respect to hill development programmes. There is increasing appreciation of the linkages between hill agriculture and local environmental

resources. Efforts are being made to understand better the linkages maintained by traditional hill farming systems in terms of farming and forestry, farming and livestock, livestock and forestry, forestry and water management, etc. One of the central questions being asked is how to increase the productivity of local resources in an environmentally sustainable manner. Similarly, some concern is also being given to farm-level engineering aspects, to better understand the role of such factors as terracing and soil erosion, terracing and productivity, etc.

Concern with environmental issues has increased the appreciation of local or indigenous resource management systems, and efforts are being made to understand and encourage some of these traditional resource management systems [Mahat et al 1984]. As available local natural resources have a strong relationship with the prevailing hill agriculture, these inquiries can have important implications for the management of hill agriculture. It may be noted that in the context of management of natural resources, the focus of decision-making is the community, and not the individual farm unit. With the emergence of more insights into the breakdown of community decision-making systems, there is a strong likelihood that community decision-making will be revived and strengthened. The impact of this on hill agriculture, in terms of group activities and group planning of agricultural operations, could be substantial as it could provide greater opportunities for specialization, risk sharing, economies of scale in various agricultural operations, and development of agricultural processing and organized marketing in the rural hills. It would indeed be a logical step to extend community-based resource management systems to the organization of improved agricultural systems in the hills. What should be underscored is that concern for the environment should not in any way reduce the support for a stronger diffusion of improved agricultural systems.

#### 3.4 Prospects for Hill Agriculture

One of the most significant aspects of economic transition in the hills and mountains has been change in land use and its capacity to support economic production. Where cultivable land has been limited, communities have developed other economic activities, like trading in the northern mountain areas of Nepal. Even with disruptions in traditional transhumance practices and the

north-south border trade, following the political changes in Tibet after 1950, northern "adventurous traders" have shown great entrepreneurial capacity to adjust and improve their economic situation (Haimendorf 1975). The "cautious cultivators" of the middle hills, on the other hand, are continuing to fight a losing battle by clinging on to their small, fragmented, and unproductive parcels of land. The nature of change in land-use practices and mechanisms of control over land not only epitomise the process of economic deprivation in these hills but will also largely determine the economic future of the hill people. Numerous factors including low productivity, lack of product diversification, disparity in size of land holdings, share cropping systems, absentee ownership, and high rentals have hindered the process of transformation.

The overall landuse pattern as given in the Seventh Plan of Nepal (Table 3.2) has raised doubts about the validity of the earlier land-use figures, so it has become extremely difficult to provide a picture of land-use changes in the hills. It is commonly believed that forest areas have been severely depleted to provide more agricultural land both in the hills as well as in the plains (ADB 1982). Even assuming that agricultural land area has remained the same, which is clearly not true, changes in population during the past twenty years have doubled population densities on cultivated land. Given the disparities in regional endowments of agricultural land and changes in regional population, it can easily be surmised that agricultural densities in the hills and mountains have more than doubled during the past two to three decades.

Trends in production and productivity of land have been equally discouraging. According to the Asian Development Bank, yields of cereal grains have declined by 10.06 and 6.67 per cent respectively in the mountains and hills during the decade of 1971/72 and 1981/82 (ADB 1982 Appendix 1.3). The reasons for the decline include inadequate replenishment of soil nutrients, cultivation of marginal land, reduction in fallow periods, poor extension services and limited purchasing power because of low incomes and small size of holdings. The size of holdings for most people in the hills is too small to meet household food requirements for the whole year. The situation is critical in the hills where the land cultivated per worker is only one-third as much as in the plains. Average sizes of holdings in the hill and mountain areas generally indicate increasing difficulties in supporting food requirements of farm households.

In mountain areas, four per cent of the households are landless but about 60 per cent have holdings below half a hectare. In the middle hills, 2.17 per cent of the households are landless but about 50 per cent have average holdings below half a hectare (NPC 1983, p. 37). Various estimates have suggested that farms under 0.75 ha in the hills are unable to provide for an average family's food requirements (Zevvering 1974, p. 9). Even if there is increased use of labour with smaller-sized holdings, it is important to recognise that there exists a lower economic limit to the size of agricultural holdings and the hill areas seem to have either exceeded or are rapidly nearing this limit. With a rapidly increasing population, the size of holdings will decrease even further. Productive employment and income considerations under existing cropping systems therefore clearly suggest the need for larger holdings in order to be economically viable. Increasing the size of holdings in the hills is possible by either a major displacement of existing landholders or through extension of cultivated area. Both of these options do not appear realistic under present circumstances.

There are possibilities for a major restructuring of the Terai agricultural lands, but it is doubtful how much of this can be used to adjust for hill agricultural households. Landless farm households in the Terai already comprise more than 20 per cent, which is double the present national average. The other option of further extending cultivated area in the hills is likely to be environmentally catastrophic.

**TABLE 3.2: PATTERN OF LAND UTILISATION**

Land Types	Area (Km <sup>2</sup> )	Percentage
1. Agricultural land	26533	18.0
2. Forest	55334	37.6
3. Snow-Covered Areas	22463	15.3
4. Pastures	9785	13.4
5. Water	4000	2.7
6. Settlements and Roads	1033	0.7
7. Others	18033	12.3
Total	147181	100.0

Source : NPC (1985) Seventh Plan, p. 181

It may be relevant to briefly touch upon potentials for wage employment in agriculture in the hills. Available evidence indicates that this is a very small portion of total employment in hill agriculture. Hired labour accounts for only 14, and 20 per cent of the total labour used by farm households respectively for mountains and hills of Nepal (NPC 1983). As all the regions have some landless groups, and much of the hired labour occurs for very short peak periods, there does not exist much scope for any major expansion in agricultural wage employment under the prevailing cropping systems in the hills.

It is therefore fairly evident that far from creating any additional employment, rapid growth in labour force, and prevailing size of holdings will make it difficult to sustain even current levels of employment in the future under the prevailing conditions in hill agriculture.

In spite of this very distressing agricultural employment situation, the non-agricultural options appear to be even more limited. The previous Chapter reviewed the present conditions with regard to off farm employment. While there are many important potentials in this field, it should be underscored that it is very closely related with the development of agriculture. Yadav has argued that even under the most optimistic assumptions regarding expansion of non-farm employment, countries like Nepal will remain predominantly agricultural and rural into the twenty first century (Yadav 1986). From many alternative considerations a healthy agriculture appears to be major precondition in economies where agriculture already employs a large part of the population. The general experience regarding enhancements in agricultural productivity indicate that without substantial investment in irrigation, research and extension, improvement in accessibility to link with urban areas and marketing condition, a major breakthrough is quite unlikely. Hill agricultural investments on these infrastructures have not as yet reached the critical levels capable of generating sustained changes. The fragile and rugged environment of

the hills further complicate the nature and magnitude of these investment packages. However once the process starts, it can lead to significant developments in off-farm activities as well. There is no reason to believe that the "green revolution" cannot be brought about in many parts of the hills also, particularly in low land areas where irrigation can be developed. It is already happening in many small pockets of the hills. At the same time very little work has gone into the development of market oriented multiple cropping systems in which the hills have a distinct comparative advantage vis-a-vis the plain areas. The hills have distinct advantage for many agricultural products on account of their physical conditions and yet very little of this potential has been evaluated in terms of investments and their overall income and employment effects. In view of the growing poverty and pressures on natural resources arising out of conventional farming practices, it seems increasingly evident that hill agriculture must concentrate on those cropping systems where its comparative advantage is the greatest.

Many of the characteristics associated with hill agriculture (small holdings, intensive use of labour and land, etc.) can be utilized profitably if economically superior crop combinations and the necessary support services are made available to hill farmers. Conditions have reached a stage where hill farmers will accept changes that can be demonstrated to improve their economic conditions. There are many things that are lacking in hill agriculture, but this is true of all agriculture. If change is to come about, it cannot wait until all the conditions have been met. Many of these so-called preconditions reflect different stages of development itself. It is thus important to identify a number of effective entry-points, and to concentrate initial efforts on developing these. Later on, other problems can be dealt with at appropriate stages. The next Chapter will elaborate upon some of these issues regarding market oriented development of hill agriculture.

## Chapter 4 . Market Integration of Hill Agriculture

### 4.1 Introduction

In order to use scarce land resources more efficiently so as to provide gainful employment and increased incomes to the labour force in the hills, development of market-oriented multiple cropping systems present a major potential. As argued in Chapter three, potentials for improvement in productivity of traditional subsistence hill agriculture are becoming increasingly difficult. Without access to economically superior cropping systems, using improved technology and high pay-off inputs, subsistence farming in the hills will generate even greater problems of poverty and environmental pressures in future. A poor hill farmer is less capable of properly managing the hill environment.

Development of a market-oriented multiple cropping system has played a major role in transforming small-holder family- based agriculture in many countries in South-east Asia. And more recently this has been evidenced in hill areas such as Himachal Pradesh in India. Disadvantages of extremely small land holdings, comparable to those of the hills of Nepal, have been offset by the development of very high cropping intensity which has successfully absorbed the rural labour force. Increased flow into the market of many non-cereal agricultural products has sustained the development of a diverse range of agro-processing industries, and has made it economically viable to expand services and physical infrastructure deep into the rural areas. The major precondition has been the existence of a technically sound research and extension system that is able and willing to work closely with the farmers to help them increase their productivity. The fact that large groups of small farmers were able to organize themselves and work together was closely related to the existence of a fairly equitable landholding distribution. Unlike in many countries where the agriculture sector has either lagged behind the industrial sector or where only large- holder agriculture has expanded, transformation of small-holder agriculture has also provided a very sound basis for sustained all-round development [Oshima 1983].

Multiple cropping systems that are well suited to conditions with high labour-land ratios, as in the middle hills, cannot develop without the availability of improved crop varieties and related cultural practices. Farmers will not give up their subsistence crops completely. Under special conditions of the monsoon climate, many areas in the hills will have no alternative to rice and maize cultivation in the summer. In many cases, hill farmers may also take a second crop of cereals. However, there are periods when land is fallow, or when land is being used for non-high-value crops. In some cases, it may even be possible to convince hill farmers that a high-value crop would perform better than the crops currently being raised by the farmer, even under conditions of existing resource endowments. Alternatively, it may also be feasible to profitably exploit tree crops with other seasonal crops as is being increasingly practiced in many hill areas of China and India.

Another important aspect of multiple cropping is the assumption that there is a demand for higher-value crops raised by the farmer. It assumes the existence of a market. As additional varieties of crops and increasing quantities of products are added to the supply, the market becomes the most powerful factor for inducing changes in the farming system.

Similarly, multiple cropping development cannot succeed without strong agricultural institutions to ensure: (a) guarantee of fair returns from the efforts and risks undertaken by the farmer; (b) responsiveness through appropriate research and educational institutions by developing new products, technology, and productivity; and (c) encouragement of strong local farmer organizations that increasingly undertake the responsibility for management of inputs and primary marketing activities [Huang 1975:64-76]. The last point is particularly important as agricultural development programmes cannot be designed on the needs of the individual farmer. Development of specialized crop production or more appropriately, specialized systems of multiple cropping, based upon demand, local factor

endowments, available technology, etc., requires that we seek to develop these potentials in larger areas. The individual farmer still operates as the owner and manager of his farm, but does so under a planned system, with institutions and organizations to assist him in his production, input supply, marketing, and other activities. Thus, while individual family farms are still the basic operating units, they are organized to change or engage in various planned farming activities on a group basis over a larger area.

#### **4.2 Multiple Cropping and Market Orientation in the Hills**

Having made out a case for market-oriented multiple cropping systems, it is useful to examine this issue more carefully in the current context of hill agriculture. It becomes immediately apparent that there is already a very high degree of multiple cropping in the hills, and that some marketing of agricultural products also already exists [Calkins 1976; Jones and Innes 1981].

Insofar as multiple cropping in the hills is concerned, it is generally much higher in upland fields than in the lowlands where the soil moisture and other conditions seem to be more favourable [Calkins 1976]. Over time, with the increases in population pressure, the cropping intensity of hill agriculture has increased [Schroder 1985]. These increase in cropping intensity is accompanied by decreasing labour productivity, which contribute less to both subsistence needs and net incomes. It has been argued that, in many cases, reducing the number of crops with focus on only some that have good yield and marketing potentials would increase farmer incomes quite substantially [Calkins 1976]. These changes towards greater specialization on selected crops could be undertaken without affecting the cultivation of major cereal grains in appropriate seasons.

Regarding market orientation of hill agriculture, some sale of agricultural products is necessary as it is one source of cash income for the hill farmer. Obviously, sale of agricultural products alone is insufficient to meet all the cash needs of the household and needs to be supplemented with off-farm work [Banskota 1986]. The balance between subsistence and sale of crops is, therefore, a very critical decision for the hill farmer as it affects the choices of crops and use of his limited

resources. At present, market sales are mainly from surplus of larger farms located in lowlands, using high-yielding seeds and irrigation. Sale of livestock products has declined, as a higher priority has been given to subsistence crops due to increasing population pressure. There has also been a marked decline in the sale of forest products following extensive deforestation across the hills.

Multiple cropping is sequential cropping of various crops, both planted and harvested in a 12-month period, on the same piece of land [Lee 1975;200-215]. It includes relay planting but excludes intercropping. Multiple cropping systems could be monoculture, duoculture, or polyculture. Monoculture is the sequence of the same crop. Duoculture is the sequence of the same type of crop, such as grain after grain or vegetable after vegetable. Polyculture is the combination of different types of crops, such as grains and pulses or grains and vegetables or fruits and vegetables, etc. In deciding about multiple cropping systems under conditions of limited farm resources, it is important to ascertain whether the crops have a competitive, supplementary, or complementary relationship. A competitive relationship, would mean increase in output of one crop to decrease the output of another crop. If supplementary conditions prevail, then increase in output of one would not change the output of the other. While in the last case, increasing output of one also results in output increase for the other, given various conditions. Obviously the search should be for complementary multiple cropping systems as far as practicable [Lee 1975].

#### **4.3 Hill Ecozone Specialization**

One alternative to predominantly subsistence farming in the hills is part or full specialization of agricultural production. As opposed to the current "inward looking" strategy of the hill farmer, ecozone specialization calls for some degree of "outward orientation". Underlying such a strategy are a number of important assumptions. First, there are potentials for meaningful specialization in hill farming activities. If there were none, the current pattern of resource allocation by hill farmers would clearly be the most optimal. Second there are economic advantages to specialization through economically superior systems in the use of scarce resources in the hills. Third, specialization automatically

assumes trading and marketing beyond those already being undertaken by hill farmers. In other words it also assumes both potential local and non-local demand for specialized agricultural products produced by hill farmers.

At the regional level (in terms of the plains and hills) the idea of specialization in agriculture has been well known for a long time. It started in Nepal's Fourth Plan, when the concept of regional development based on a regional focus on specific types of agricultural activities was expounded. It was argued that the plains should focus on cereal crops, while the hills should develop livestock and horticultural activities. [Gurung 1973:1-17]. Efforts to implement this strategy however did not go very far, as it failed to develop both the understanding, as well as practical plans and activities that were necessary for providing integrated development thrusts. It remained a good idea lacking in adequate research support and careful planning necessary for affective implementation. Such an approach was not easy, but was bound to face complex problems as it meant many changes for hill farmers and related development institutions. For the hill farmers, it meant a switch from subsistence to greater dependence on trade and the outside environment. It also meant development of more effective farmer cooperation to implement carefully designed production plans for which the hill farmers neither had resources, relevant knowledge or strong institutional support. For development institutions, it meant facing upto many obstacles, inherent in such shifts in policies and programmes. For national planning, it meant a greater degree of close-to-ground bare-foot thinking necessary for translating a good idea into meaningful practice, which was a far-cry from the harmless exercises of manipulating capital output ratios. Such radical changes in development planning are seldom self generating or self inspired. They often require careful national direction and extensive resources. This is where Nepal's regional development strategy floundered.

Futhermore, this approach also overlooked a number of critical stages in regional development. First, it did not start from the farm and work its way upward, integrating homogeneous units by cropping zones, resources, settlement clusters, market accessibility, similar investment packages and support services required. Second in a predominantly subsistence economy, trade

and marketing developments in the initial stages are better stimulated in smaller spatial units than in the larger regional context. Farmers are more comfortable trading with people they know and in markets more familiar to them. Later on as development expands to higher levels and more experience is gained in market oriented production, regional trade becomes more feasible. Another important constraint with the development of inter-regional trade has been the costs of transportation associated with such long distance trade.

If it is somewhat premature to expect promotion of inter-regional trade within the current levels of development in the hills, how should specialization in hill agriculture proceed? Our attention naturally turns to the environmental diversity of the hills and the extent to which this could be a basis for agricultural specialization. To some extent this is already evident in hill farming. Crops raised in lowland valley areas (Khet) differ from upland fields (Bari). Similarly as one moves northwards, crops also change to some extent. Focus on specialization in the hills should have three major thrusts. First, is to increase productivity of existing crops that are best suited to the local environment, as for example paddy in lowlands where irrigation is feasible. In view of the monsoon conditions, very few crops perform as well as paddy in lowlying fields. Second, there is substantial scope for off-season production. Third, high value tree crop specialization potentials are greater in the hills and this is likely to be highly desirable from environmental considerations.

In the past in Nepal, ecozone specialization has meant simply identifying horticulture and livestock in the hills and cereal grains in the plains. This approach has not worked because of the lack of carefully designed plans for specific agroclimatic zones starting with what the hill farmer is already doing, and focusing on providing high pay-off inputs and services to the most beneficial combinations of crops, within the existing cropping system. At present for example, one finds little qualitative difference in the agricultural development plans for the various hill districts and sub regions even for an area like the Bagmati Zone where there are better institutions. Some crops out yield others over a wide range of soil, micro climate and factor combinations. Identification of these crops, including demonstration of their benefits, is the surest way to convince hill farmers of progressive specialization in hill agriculture.

7



(Courtesy : Tej Pratap)

7. Cash Crops in higher altitudes.

Cabbages grown in an apple orchard at Marpha Agricultural Farm demonstrates ways to enhance farmer income levels at higher altitudes.

8. Raddish marketing by roadside.

The entire family is busy cleaning and stacking raddish for transportation to Kathmandu market.

8



(Courtesy : Tej Pratap)

The extent of current research work on the economic and environmental aspects of ecozones is very limited. Based upon changes observed in different parts of the hills further agronomic, economic and environmental analysis is required for specific directions that ecozone specialization in the hills may follow.

#### Products Most Appropriate to Different Altitudinal Belts

It is by now well established that crop performance varies with different altitudinal belts. Hill farmers themselves have evolved a wide choice of crops through experience over the years. There is need for research, in terms of which of these is likely to have greatest comparative advantage in local conditions and after the development of market potentials. Some examples from Nuwakot will help to clarify the argument. [Calkins 1976]. For the tropical zone farm located at 2500 ft. or less, net income through specialization increased in each cropping season. In lowland fields during winter, farmers raised as many as four crops. But it was found to be more advantageous to concentrate on only potato. Similarly in upland fields during the winter, it was found more profitable to increase area under ginger cultivation from the 2 percent allocated by the farmer, to almost 85 percent of the area. Similar examples can be identified for farms in different altitudes. There are also some crops that out yield others over a wide range of soil, micro climate and factor ratios, such as potato and rape seed. This type of identification requires very careful analysis. Unless this type of research to identify and analyse these influencing factors is undertaken, it will be difficult to recommend improvements to systems being used by the farmer.

#### Focus on Seed Production

Many types of seeds produced in higher elevations perform relatively better in lowland conditions. In some areas, farmers have already started seed production of potatoes, and other vegetables. The scope for expanding seed production is very large indeed. If proper quality control can be maintained, market potentials are very large.

#### Off Season Products

The harvest periods of similar agricultural products vary under different altitudinal conditions. For instance if

vegetables like cauliflower, chilli and sweet pepper are harvested during January and February in the Terai, they can be harvested in the hills from November onwards, while in still higher altitudes they can be harvested from July onwards. Proper planning of crops in different altitudes in the hills can ensure a steady flow of products to the urban and Terai markets especially when there is no production in the Terai. This aspect of agricultural production in the hills holds a major potential for development. The only major precondition is proper transport and handling of these products as they need to be transported over longer distances in order to exploit off season advantages.

#### Development of Livestock Products

Despite many potentials, current livestock conditions in the hills is shocking. As one of the most seriously mismanaged sectors of the agricultural system, it is characterized by shortages of feed, heavy parasitic infestation in a generally very inferior breed, and low livestock productivity. [LRMP 1986:5-6]. Furthermore, its effect upon the environment is a very serious issue. "While ruminants are a key link in the vital chain connecting cultivation of crops and forestry, they are also the weakest links. Virtually all of the environmental degradation so common is directly attributable to the management of the livestock sector".[LRMP 1986:14]

The potential for livestock development lies in improving the productivity of livestock. Demand for livestock products is very strong even in the hills. Fresh milk is always in short supply though there are well known techniques for processing milk into ghee and cheese. For hill farmers with little land, productive livestock can be a major source of income. If managed properly it can even exceed contributions from the land. It is a sector of immense potential that has been grossly neglected so far.

#### 4.4 Trade and Marketing Development

There are a number of possibilities for developments in trade and marketing in the hills. With specialization, intra- hill trade is likely to develop a strong interdependence between different ecozones in the hills. Following specialization based on comparative advantages, each farmer group is likely to be better off

through trading as compared to prevailing subsistence production. Rural demand structure for agricultural products are also not uniform in the hills. They vary by income groups as much as in other areas. The demand structure between upper and lower income groups also vary. This difference in demand structure has been identified as a possible source of promoting rural growth linkages for other areas and there are no reasons to believe that this would not be applicable to the hills. [Mellor 1983].

The second and more exciting possibilities lie in the development of rural-urban trade and marketing linkages. With increasing pace of urbanization across the hills, urban centres represent an important potential for increased momentum of hill development. The traditional isolation of rural hill areas is rapidly breaking down with the development of infrastructure, urbanization and other socio-economic changes. Rural areas are quickly being swept into the vortex of urban influence. If this is not properly managed and directed, the hill economy will not be in a position to take advantage of the opportunities afforded by urban development in the hills.

Experience with mountain area development generally suggests that the potential contribution of urban areas has not been fully exploited. Rural urban developmental linkages in the hills have been relatively weak. If these rural hinterlands could be made more responsive to the opportunities created by a growing and diversified urban demand structure for agricultural products, the impact upon rural income and employment would be quite substantial.

The comparative advantage of rural hill areas in horticulture, livestock and vegetable products clearly suggests major possibilities for gains from specialization and exchange to rural hill households. An agrarian economy, isolated from trade, is inhibited by the lack of market opportunities to diversify production and expand income and employment opportunities. Once trading opportunities are developed, and rural areas begin responding favourably to urban demand, there are other important production and consumption linkages that will emerge in the urban economy as well. The process of agrarian specialization, based upon strong urban linkages is likely to lead to improved productivity of hill agriculture, through adoption of improved technology,

and increased rural consumption of intermediate raw materials and capital goods, supplied by urban areas. Thus the reduction of market barriers and expansion of trading opportunities between rural and urban areas provides a major opportunity for transformation of the hill economy. An appropriate investments package should be designed to help rural hill economies respond to these increased opportunities for trade and exchange. Incentives and support systems are necessary to encourage rural hill households to reallocate their resources to meet growing and diversified urban demand for various agricultural products. In the past a good deal of emphasis has been laid on increasing rural food production per se, without any attention to urban demand structure, marketing and enhancement of trading opportunities. Without major improvements in these areas, emphasis on food supply alone is unlikely to generate sustained improvements in rural incomes, as the comparative advantage of many hill areas might lie in the production of non grain crops.

Market areas in the hills are limited in number, far apart, poorly organized and relatively undeveloped in scope and type of marketing functions. In many instances, inaccessibility has limited the development of markets, but in many other cases improved access has not resulted in any significant improvement. Markets, on account of transport improvements, have undoubtedly grown, but have not really developed. Transport is just one among a whole host of factors that have hindered the development of these markets. Other factors include lack of marketing knowledge, weak research and extension institutions, and total absence of promotional activities.

This issue of marketing development is emerging as a very significant factor in the transformation of rural hill economies. Rural development activities that have carefully developed and organized a marketing approach as a critical component, have made some very significant economic impact upon rural households. In others, where marketing has not been given due attention, even innovative farmers have been unable to dispose of their produce or receive "fair" prices for a variety of reasons to do with pre and post harvest operations.

The lack of a market-oriented approach in the hills has clearly demonstrated the persistence of many anomalies such as:

- hill demand for many commodities is being met through imports when they could very well be supplied from the hills
- many hill products fetch significantly low prices due to their inability to compete with similar products entering the market from the plains
- because of the lack of regular markets and reliable marketing, hill farmers find it too risky to switch to more lucrative high value crops, and continue with subsistence farming
- in many hill markets producers try to maintain direct contact with the consumers, increasing the cost of marketing. This is prevalent even in areas with good access due to lack of market intermediaries.

On the other hand, the potentials of marketing in hill development can be seen in terms of:

- stimulating market oriented higher value cash crop production;
- generating higher levels of cash incomes for hill farmers
- generating more off farm employment in post harvest and marketing activities
- more effective use of costly transport and energy infrastructure in the hills in areas where these are available, and
- in the long run the development of more environmentally and economically sound land use practices.

#### 4.5 Organization and Management Aspects

The task of organizing thousands of small hill farmers to participate in the development of specialized production system, is not easy task by any account. Many good programmes and policies have been wrecked because of inadequate attention paid to organization and management. After all these years of poor plans and programmes, it is now necessary to examine the appropriateness of the existing organizational and

management set up. With strong institutions, even weak programmes are likely to become stronger, though the same does not hold true in the reverse situation. The experience of countries like Nepal is increasingly beginning to suggest that the biggest weakness in development has been the lack of organizations and institutions capable of bringing desired changes on a sustained basis. [Cernea 1987] Complex developmental programmes are casually dumped upon organizations that expand programmes and area coverage without efforts to consolidate existing activities. Many organizations have become so susceptible to outside pressures and influence that there is constant "fine -tuning" of programmes. No good is ever likely to come out of such organizations. Development is to a large extent the process of creating opportunities for the emergence of more productive forces. As we learn more about the process of development, readiness to organize necessary changes, particularly through sustained improvements in organization and management, become a critical precondition for the success of development programmes. Thus one important aspect of development is a process of creative destruction of institutional arrangements, organizational structures and management systems. The extent to which subsistence hill farming can make a reasonable transition towards greater market integration depends on the effectiveness of organization and management and the demands made are neither simple nor limited.

#### Establishment of Specialized Production Ecozones (ESPE)

Establishment of specialized production ecozones in different altitudinal belts is the first major task. The objective behind ESPE is to enlarge the scale of farm operation of specialized agricultural production activities so that management can be organized on an area-basis. It is far too complex to deal with diverse activities of the individual farmers. As a matter of fact the continuation of a diversified pattern of family subsistence farming in the hills, is a response to the lack of effective organizations for integrating and managing hill farming on a larger area basis. Operation on a larger area basis provides many advantages. It is easier to improve basic production facilities, provide commercial scale handling and marketing, and cost of services to the farmers can be substantially lowered. While individual family farms are still retained as the basic units they now operate on a

planned basis under different systems of price guarantee, supply of improved packages, contract growing and marketing etc. The most appropriate mix of incentives and support services will vary from area to area and crop to crop. Some advantages of group activities have already been well established - under the SFDP in Nepal - particularly risk sharing, access to credit, and linkages with outside organizations. All of these advantages need to be fully exploited under the ESPE. The big question is who will manage these ESPE's? Will they vary by crops and by area?

Decisions on what should be produced will require a careful evaluation of alternative land uses in the hills. Specialization cannot ignore the limitation of environmental sustainability. Areas of comparative advantage have to be meticulously identified. A beginning towards ESPE is already evident in Nepal through identification of special crop areas for tea, cardamom, apples, etc. In areas where such potentials have been identified, they need to be developed intensively, while for other areas, such opportunities for specialization have to be carefully identified.

#### Development of Infrastructure

Physical infrastructure like roads, electrical supply, provision of water etc. are very limited in the hills and are in rudimentary stages of development. Slow development of infrastructure has, in part, been due to high costs of providing and maintaining these facilities. Assumptions underlying these high cost investments, that they would quickly transform the areas brought under infrastructural development have not been validated. Consequently there have recently been strong economic reservations expressed about further high cost infrastructural investments in the hills, while large parts are still lacking in any type of modern infrastructure.

One of the basic premises regarding infrastructures like road and power supply is that they only become economic when they are used for productive purposes. Under major constraints such as subsistence agriculture, it is difficult to use infrastructure productively. High costs are not the only implications but also the lack of profitable alternatives. It is therefore very important that use of infrastructure be carefully planned and integrated with other productive activities. Infrastructure

investments alone are insufficient to generate their productive use. While they offer many opportunities, their development requires additional investments, appropriate technology, availability of support services and marketing outlets.

The development of specialized production zones cannot take place without basic infrastructure. Movements of goods and services, both in and out of these zones, requires reliable and relatively cheap transport services. Availability of power will help reduce the burden of human drudgery and enhance labour productivity. It is clearly inappropriate to attempt development of specialized production areas without the basic infrastructure. There are many important choices of technology and phasing possibilities that need to be examined within the specific possibilities of each specialized production zones.

#### Research, Education and Extension

Research and educational institutions have played a major role in agricultural development when ever they have been properly organized and managed. The successful propagation of high yielding seeds in paddy, wheat and maize has been possible mainly because of effective research and education programmes. However much of this development has occurred outside national systems in places such as IRRI and CIMMYT. In spite of the high pay off from such research and education programmes, countries like Nepal have failed to develop a strong domestic research capability. [Yadav 1987]. This sharply contrasts with agricultural developments in countries like Japan, Taiwan and South Korea, where, because of the strong support provided for agricultural research in a wide variety of fields, agricultural development has been largely internally induced and has provided valuable surplus resources for development of non-agriculture in the initial stages of development. Agricultural research institutions in these countries have enjoyed strong support from the government for a considerably long time. [Oshima 1983] These organizations cover many activities from research and experimentation to establishment of research centres, experimental stations, improvement stations, multiplication centres, breeding stations and very specialized farms. Many improved varieties and new agriculture production techniques have been developed

by these institutions. Closely related to these organizations, are many vocational schools in almost every major district or county. These schools have played a very important role in training large numbers of agricultural workers and technicians and have become an effective mechanism for agricultural development because of the quality of research work and linkages. The conditions in countries like Nepal are quite the reverse, with undue concentration of resources, technicians and organization only at the top. Basic facilities for research work are lacking in most field stations. As a bureaucratic system, resources are often used for purposes other than activities benefitting the farmer. The entire agricultural development system needs to be re-organized to respond more effectively to the needs of the farmer.

The development of sustainable hill agriculture that balances economic and environmental factors will not progress without strong research institutions capable of dealing with specific problems - as for instance, developing seed varieties that are not damaged by hails. Various methods need to be designed to deal with these specific ground level problems.

It will be almost impossible to improve the hill agriculture productivity without the support of strong research institutions. This means major investments in manpower to provide adequate research facilities and reasonable motivation for individuals to undertake research activities in hill agriculture. Extension services are equally critical as vital links between the hill farmer and researcher. While various alternative models exist for organizing hill agricultural research and extension based on the concept of specialized production ecozones, the fact that prevailing systems have not been effective underscores the need for a thorough evaluation of the prevailing research and extension system in the hills.

### Market Functions and Pricing

Development of marketing is particularly critical as specialization progresses. In many cases weak marketing activities have resulted in very serious consequences to farmers. Marketing must include identification of suitable products and pass on this information to research and extension. Alternatively, it must also identify suitable markets for different products. It should support the development of processing, storage, transport, packaging,

provide farmers with some reasonable estimates of prices, and advise the concerned agencies on appropriate pricing policies.

Given the fact that there is increasing competition in agricultural products that are generally perishable, the role of marketing activities cannot be underestimated. Many products will lose their off season advantages if they fail to reach the market on time. The problem of finding ready markets cannot be left to the hill farmer. Strong institutional support is required for marketing development if hill agriculture is to be more productive.

### Organizing the Farmers

Without effective local change agents to implement programmes, new technology or development programmes are unlikely to have far reaching impact. Experience all over the world has clearly shown that strong grass root organizations are vital for the sustainability of development programmes. Financially induced changes invariably wither away, unless supported and managed by strong grass root institutions. Thus in the specific domain of agricultural programmes, deliberate promotion of a strong local organizational base is as important as financial resources and improved technology. Unfortunately this has been overlooked for a long-time at great cost to otherwise good agricultural development programmes.

An example of effective management at the grassroot level is the Farmer's Association in Taiwan that has had a very good track record. [Huang 1975]. It has existed in almost every community, providing various kinds of services needed by farmers-such as credit, marketing and extension services. Credit has been the "heart" of the association as it mobilizes both deposits and disburses credit. It therefore must compete with local banks for deposit mobilization. That farmers are members of the Association has been very important too. This alone would have been insufficient if it had not at the same time provided good returns on the farmer's deposits. Capital needed by the farmers has come mainly from this source. To support its banking functions, the Association has organized effective extension systems so that farmers can take advantage of the latest technology. It has encouraged joint cultivation system in order to take advantage of economies of scale in mechanized farm

operation, bulk marketing, and setting up of agro processing units. It has been argued that the success of this organization lies mainly in its organization structure and particularly its links with farmers. Bulk of the management staff come from the farmers themselves. The government has also tried to help the Association with necessary organizational, technical and even financial assistance. A well organized and responsive agriculture research system providing improved technology and farming practices was also very essential for the Farmer's Association to succeed in developing effective support services and organizing the farmers.

Many other examples can be cited where the

formation of effective local organization with strong support from the government has provided opportunities for unprecedented changes in rural areas. There are successful cases of dairy development, afforestation programmes, cash crop development and even agro-processing, organized on a group basis by farmers. Working together in groups has been a major factor in overcoming many constraints related to capital shortages, marketing, quality of extension work, etc. The critical element in development of specialized production ecozones in the hills is the extent to which hill farmers can be organized and mobilized to work jointly in improved production systems and management of limited hill resources.

9



(Courtesy : Tej Pratap)

9. A Familiar Courtyard of a Mountain Household.

A common scene of subsistence mountain households with livestock, piles of firewood, stacks of hay and small terraces in the front. (Photo from Himachal Pradesh.)

## Chapter 5 . Agricultural Development and Marketing Linkages in the Bagmati Zone

### 5.1 Introduction to the Bagmati Zone

Chapter four provided a general discussion of one approach to the development of a predominantly subsistence-oriented hill agriculture. It focussed on the discussion of a number of key components of such an approach. It argued the need for crop specialization by ecozones, and emphasized the notion of inter-ecozone hill trade and rural-to-urban marketing linkages. Although hill agriculture already shows a high degree of multiple cropping, it is primarily subsistence oriented. The discussions in Chapter three clearly illustrated the economic and environmental difficulties inherent in such a system, especially under conditions of constant pressure of rapidly increasing population. Hill agriculture must not only be environmentally sustainable, it must also be productive. Recent changes clearly suggest that subsistence orientation, as in the past, is unlikely to fulfill both these conditions.

In this Chapter, an effort is made to review changes in the Bagmati Zone of Nepal which represents one of the better developed hill areas in the middle hills of Nepal. Changes here will indicate the practical problems and potentials associated with a strategy focussing on specialization and commercialization of hill agriculture. Although information associated with various types of changes are quite sketchy, there is enough to illustrate the nature of some of these major changes.

The Bagmati Zone lies in the Central Development Region of Nepal (see Map 5.1). It is one of the three zones in the country that does not contain any part of the Terai plains. Its importance, however, lies in the fact that it contains the Greater Kathmandu Valley region (GKV) with the capital city of Kathmandu and the two larger urban centres of Lalitpur and Bhaktapur.

This zone has 6.40 per cent of the total land area and in 1981, contained 12 per cent of the population or about 1.8 million people. Interestingly enough, its share in

total population declined slightly from 1971 when it accounted for 13 per cent. The population density per arable land (km<sup>2</sup>) in the zone increased from 690 in 1971 to 822 in 1981, while the national average for 1981 was 657 [CBS 1987]. The agricultural density of this zone is, however, close to the average hill density.

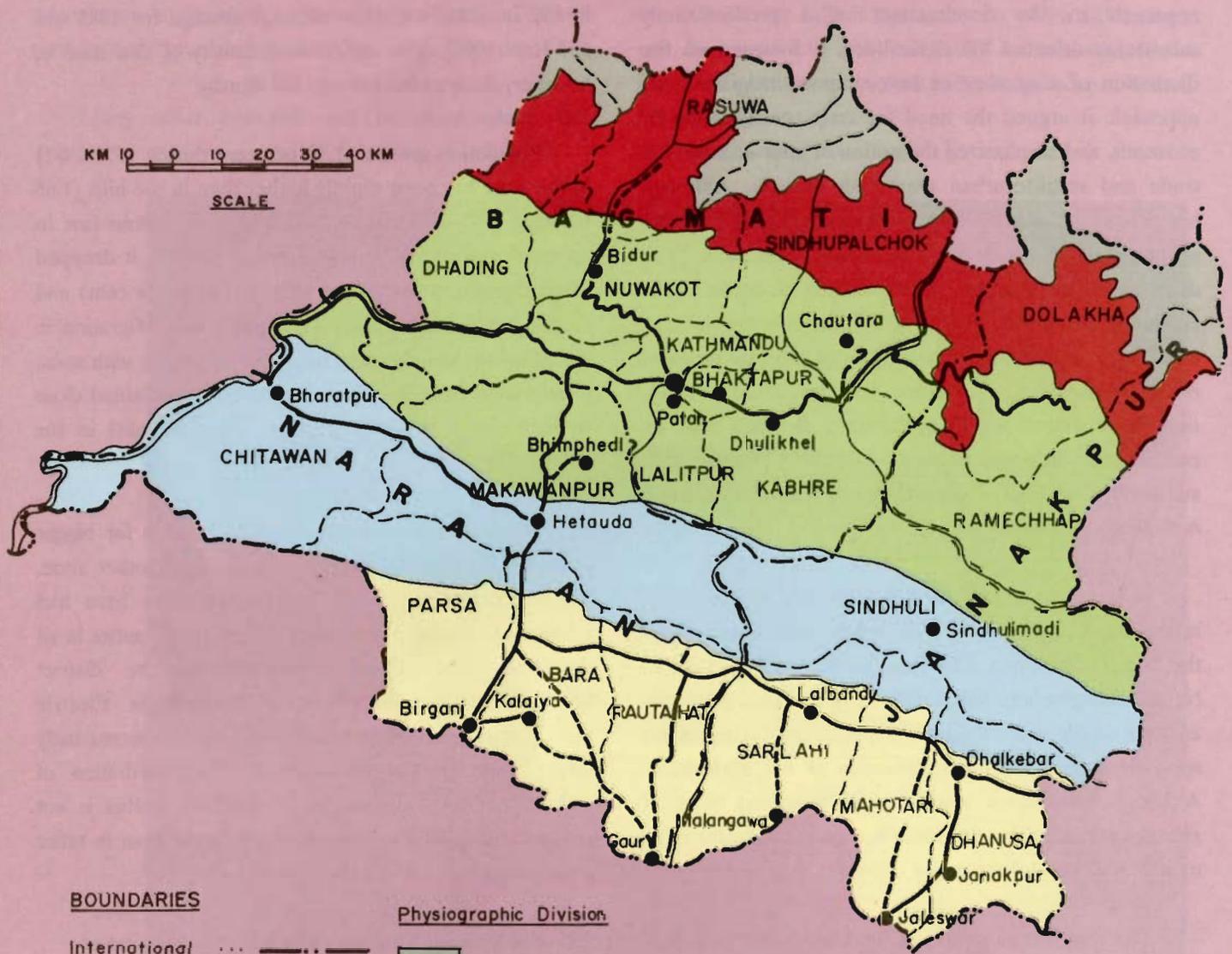
Population growth (1.75 per cent during 1971-1981) in the zone has been slightly higher than in the hills (1.65 between 1971-1981). If in 1971 this zone ranked first in terms of overall and female literacy, in 1981, it dropped to third position for overall literacy (29.10 per cent) and second for female literacy (17.9 per cent). Migration in the zone was mainly intra-zonal (49 per cent) with some in-migration from neighbouring zones. It contained close to half of the urban population (46 per cent) in the country [CBS 1987].

Development wise, this zone has had a far bigger share of the national investments than any other zone. The eight districts that comprise this zone have had relatively better access to development programmes in all the Five Year Plans. Practically all the district headquarters have been connected by roads. Electric power supply is being made available to increasingly larger parts of the rural areas. The distribution of institutional support services in different sectors is not only extensive, but also qualitatively better than in other parts of the hills.

### 5.2 Subregional Specialization and Development of Marketing

The construction of an extensive network of roads in this zone has led to the emergence of a number of subregions that are showing signs of agricultural specialization and market integration (see Map 5.2). Not only are various parts of the hinterland responding favourably, the GKV region is also indicating some positive changes in response to the development activities in the hinterland. There are signs of increasing economic

## NUWAKOT DISTRICT & BAGMATI ZONE IN THE CENTRAL DEVELOPMENT REGION



**BOUNDARIES**

- International ... ————
  - Zonal ... - - - - -
  - District ... - - - - -
- ROADS**
- Metalled ... ————
  - Un metalled ... - - - - -
- Urban Centre ... ●

**Physiographic Division**

- High Himalaya
- High Mountain
- Middle Mountain
- Siwalik
- Tarai

**MAP INDEX**



integration although very little of this has been deliberately planned or for that matter, even been recognized as a major regional force. Many programmes are still haphazardly scattered across different districts. Different agencies are engaged in a wide range of district level programmes that neither support the forces of market integration, and specialization nor exploit economies of scale.

The first subregion is the GKV area itself where major changes can be seen in agricultural activities. Farmers in the valley are realizing lucrative returns from vegetable production. Wherever irrigation is available, more land is being brought under vegetable cultivation. One survey showed that in some settlement areas vegetable cultivation covered as much as 65 per cent of the area in Kathmandu while in Lalitpur and Bhaktapur it was slightly lower [DFAMS 1984].

To the east of GKV region lies the Kathmandu-Dhulikhel subregion extending to Chautara, Jiri, Dolakha and Southern Kavre. Major exports to GKV region are paddy, potatoes, livestock and some horticultural products. More recently, opportunities for agricultural trade with Lhasa in the north have expanded considerably in Panchkhal Valley and a number of other areas are also beginning to export agricultural products. Developments in specialization and trade, are however not to the extent that would be possible on the basis existing factor endowments and environmental conditions. The case of potatoes illustrates difficulties associated with changes. Potatoes, which have higher per hectare net income, higher return to labour and higher return to capital cost are found to be an extremely attractive crop, but only a small per cent of the potential area has been allocated to potatoes. Potato is a market crop rather than a subsistence crop in this area. It has not been an important part of the staple diet of the population. It must be sent to Kathmandu as it is difficult to store and cannot all be consumed locally. If marketed immediately, it fetches good off season prices. The greater the delay, the lower the price, as supplies from other areas start arriving. Farmers complain of major transport, storage and price problems. Although there are no local marketing organizations, some efforts are being made to form farmer groups for marketing [Pachico:1980].

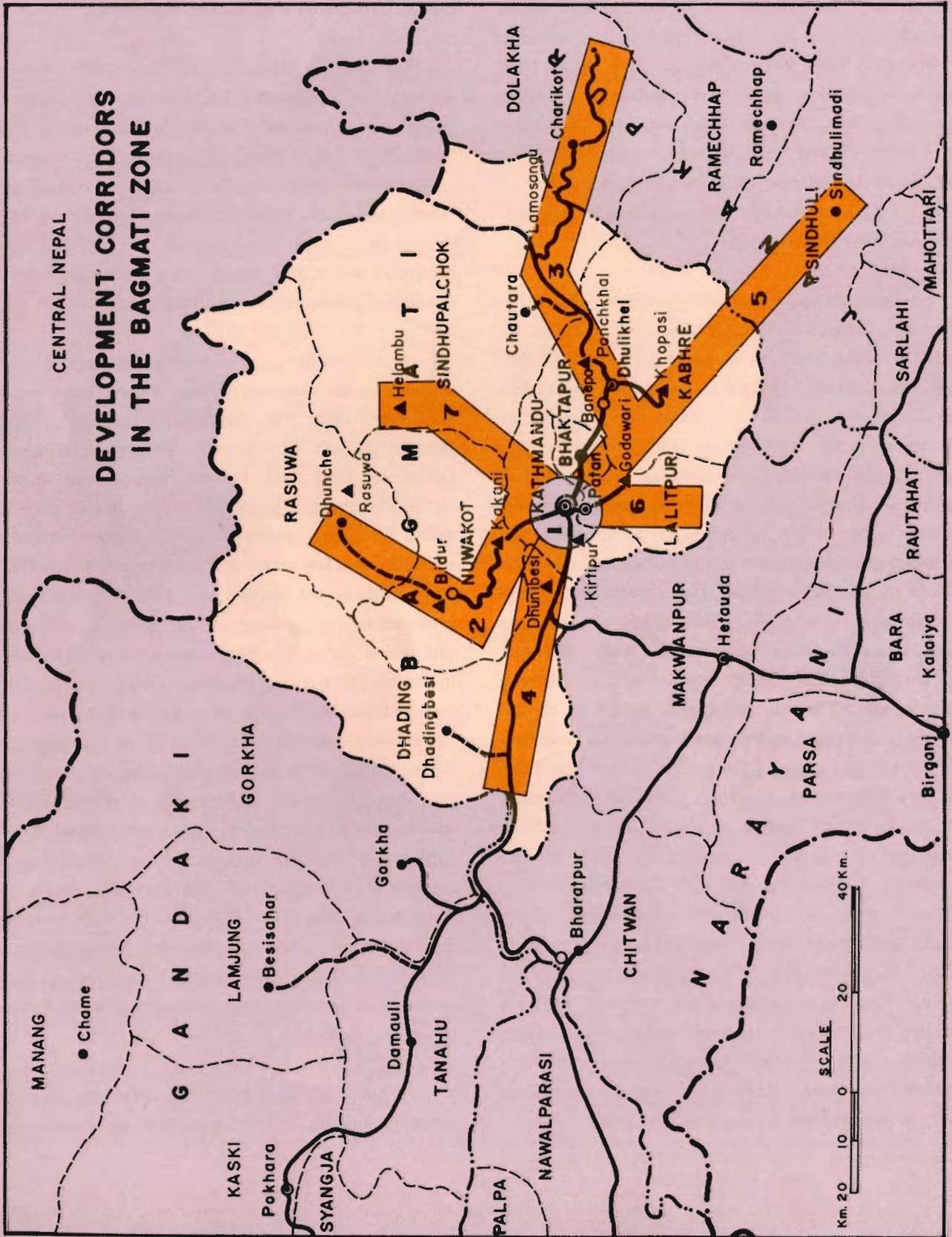
To the South-West lies the Kathmandu-Mugling corridor with large parts of Dhading district serving as the hinterland of GKV. Recently some major changes have been seen in agricultural specialization with focus on vegetable crops in selected areas. Commercialization of agriculture decreases markedly as one moves further away from the GKV region. Farmer awareness of improved agricultural practices has increased considerably, but agricultural production for the market has been restricted amongst larger farmers.

To the North-west of the GKV lies the Kathmandu-Trishuli corridor, with the two districts of Nuwakot and Rasuwa. This region also exports paddy, horticultural and livestock products to Kathmandu Valley. Some efforts have been made to promote apple farming in Rasuwa District, though progress has not been encouraging. Lack of transport has been a major complaint so far, but this situation is changing with the opening of the new road link to the north.

A study undertaken in Nuwakot during the middle seventies made some interesting observation which are valid even today. The study found very high cropping intensity already in existence, but its contribution to household food and income needs were minimal. Significant changes in farmer income levels were seen where cropping patterns were slightly altered to specialize in a few crops. For the temperate zone (higher altitude) farm net income increased four fold through increases in crop acreage for vegetables. In the case of subtropical zone, incomes more than doubled by increasing the share of leguminous crops and vegetables and reducing the share of grains and livestock. The exercise was conducted for other altitude zones and, in all cases, specialization in environmentally favourable crops was seen to result in substantially higher income, even under existing technology and cultivation practices [Calkins 1976]. The important point underlying this exercise is that households that specialize should trade for potentials offered in trading could benefit households in all ecozones.. While these research findings are over a decade old, they clearly illustrate the type of analysis necessary to determine improved agricultural activities in the hills.

Although changes are being seen here and there, major regions of the GKV hinterland are largely similar

MAP 5.2



with a predominantly subsistence focus. Though changes are discernible in some areas in response to specific opportunities, these changes are at most sporadic, and location specific. Furthermore, they do not form part of a larger organized strategy for regional agricultural development.

### 5.3 Demand for Agricultural Products

Demand conditions exercise a significant influence upon specialization and trade in agriculture. Obviously, supply conditions are also important, but without favourable demand, farmers are not easily motivated to produce for the market. In the context of the GKV region, demand for specialized agricultural products comes from a number of sources. First is the urban household sector. With increases in incomes, households with higher incomes consume greater amounts of products such as milk, meat and eggs, vegetables and fruits. The Nepal Rastra Bank Household Survey indicates that consumption of these products has more than doubled over the past ten years. Changes in income levels also show significant differences in expenditure for these products, with the upper income groups spending thrice as much as the lower income groups [NRB 1987].

Another important element of demand for various types of agricultural products has come from tourist demand. With rapid growth in tourism, expenditures in agricultural products are likely to grow quite rapidly. There has been a growing import substitution in these products, but supply is still very erratic, product choices are limited and quality control is lacking. Figure 5.1 shows the extensive import and export linkages of the Greater Kathmandu Valley Region.

Demand is also likely to come from other sources if careful off-season supply planning is organized. Many areas in the southern Nepal and in India are important markets for off-season products. However, off-season supply planning is a very delicate operation and if the time advantages cannot be fully captured, farmers may have to face price collapses and other marketing problems. Another important reason for focussing on specialized agricultural products is price change. Prices for vegetable and fruits, have been rising very rapidly in recent times. This is a good indicator that price conditions are very favourable for inducing positive

supply responses. While data is sketchy, the indication is clearly towards very favourable demand conditions for specialized agricultural products, particularly vegetables, meat and fruits.

### 5.4 Changes in Fruit and Vegetable Marketing in Urban Kathmandu

During the past ten years, there have been major changes in the organization of fruit and vegetable marketing in urban Kathmandu. The most notable change has been the emergence of Kalimati as the major wholesale fruit and vegetable centre in the valley, superseding other traditional centres of Asson, Ranamukteshwar and Indrachowk.

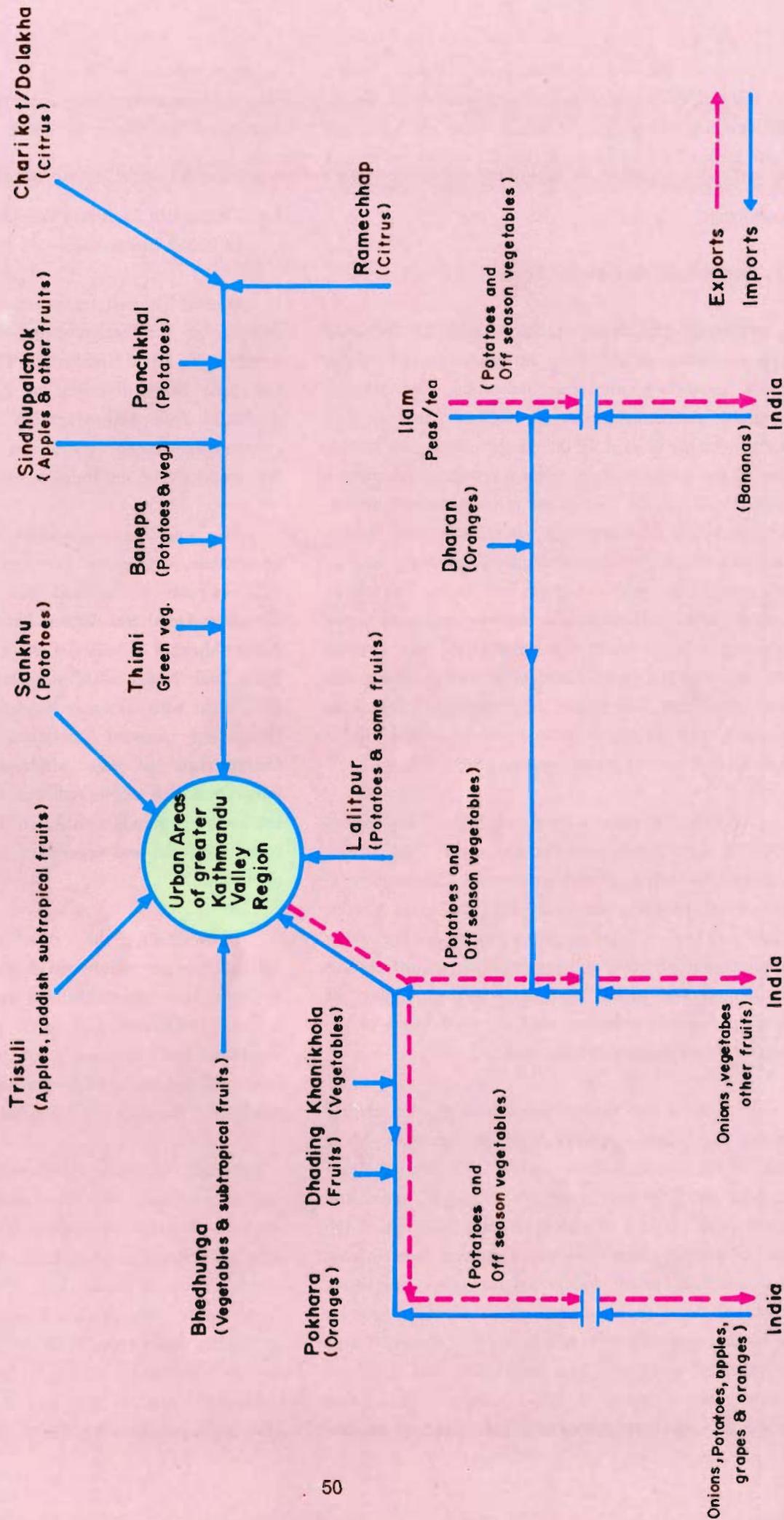
The Kalimati wholesale market has 40-50 wholesalers, with agents operating on commission basis in different parts of Nepal and India. Connections extend as far out as Delhi and Assam. These wholesalers organize direct shipment of seasonal fruits from different parts of India and Nepal with minimum transshipment costs. Discussion with different wholesalers revealed a fairly competitive market situation. Another important characteristic of this wholesale market has been integration with mobile retailers. Every morning, one can see hordes of retailers either on their bicycles or on foot, collecting fruits and vegetables for retail distribution in the valley.

Interestingly, the development of organized marketing began mainly with fruits and is still dominated by fruits. However, it has also attracted other groups to organize wholesale and retail purchase and sale of vegetables like tomatoes, potatoes, cabbages and a few others. There are groups dealing with vegetables from Bhaktapur, Dhading and a number of other areas.

In spite of these developments, there are many serious problems with the ad-hoc manner in which marketing has developed. First, farmers outside the valley face major transport problems. The limited number of vehicles cause a heavy rush. In Dhading, for example farmers have complained of having to load their products by three in the morning so as to reach the market on time in the morning. Another problem related with transportation is the difficulty of access into the valley after six in the morning. There are some restrictions on

# EXPORTS AND IMPORTS OF HORTICULTURAL PRODUCTS FROM THE GREATER KATHMANDU VALLEY REGION

Figure 5.1



the entry of heavy vehicles in the morning. There are also problems of unloading because of the lack of suitable places. Lack of proper marketing sheds, absence of control over weights and measures, very poor sorting and grading of produce, lack of skilled labour to handle loading and unloading of delicate fruits and vegetables, are all major problems in the organization and development of fruit and vegetable marketing. It is also important to point out that farmer's preferences in the choice of convenient market points vary largely. For instance, farmers from Nuwakot and Panchkhal find it very inconvenient to have to go to Kalimati or other such locations that require moving through the city with their produce. It is, therefore, important that separate marketing outlets be located to suit the conveniences of farmers from different areas.

Without stronger marketing organizations, the development of the present marketing system will not operate to the advantage of the farmer. So long as farmers are compelled to sell to urban wholesalers, they will always be price-takers and not price-setters. At present, large numbers of farmers still deal with the market on an individual basis which is unlikely to improve their bargaining capacity. Also, it severely limits the level of investments that have to be made for reducing distress sales of farm produce.

Thus while important developments are underway, there is still a long way to go. Many improvements in marketing are critical for major thrusts in agricultural specialization and trading in the Bagmati zone. To date, public investments in marketing development in the GKV region has been minimal and the bulk of investments have come from the private sector. In the future, it is important for the public sector to make marketing investments and carefully coordinate these with specific area-wise plans for agriculture development.

Both from the point of view of the farmers and marketing development, a number of general conclusions can be made.

#### (a) Demand Conditions

In general, demand conditions are likely to become more favourable for high value agricultural products like fruits, vegetables and livestock

products. Apart from possibilities for import substitution, there is also some scope for export promotion to the Lhasa market, off-season markets in the Terai towns and neighbouring parts of India and, in terms of high quality seed production, even exports to more distant markets.

Capturing these markets will not be an easy job especially on account of high competition and costs. Careful planning and effective organizational support are necessary for integration of different operations from producing to marketing of various crops.

#### (b) Production Conditions

From the farmer's side, a number of problems are evident. First, knowledge of markets for various products, their prices and necessary marketing arrangements are lacking. Second, farmers face problems of sales and reasonable prices in cases where they are already producing for a market. There is a strong reluctance to commit land to these crops as there are no long term guarantees of purchases. Third, post harvest losses are very high. Farmer level processing to preserve product quality is virtually non-existent. Some simple processing steps could enhance product quality and shelf life of products.

#### (c) Marketing Organization and Support Services

This is clearly the weakest link and the most difficult constraint in the process of agricultural specialization in the Bagmati Zone. At present, quality control and central marketing facilities are very poor. There is a complete lack of specialized Marketing Boards or Commodity Trading Houses or even effective marketing cooperatives. Among line agencies, there is lack of clarity as to who should be doing what. It is fairly clear from the experience of many countries that without demonstration of effective institutional coordination and support, farmers will be reluctant to change. This critical issue of organizational support in the context of agricultural development in the Bagmati Zone is discussed below.

### 5.5 Organization and Implementation of Agricultural Development Programmes

During the past three decades, important changes

have been noticed in the agricultural sector of the Bagmati Zone. The use of HYV seeds in cereal grains, increase in double cropping, and stronger movement towards greater market orientation of farmers are some of the more significant developments. To some extent, these are the impact of programmes started by various public sector agencies. Much of it, however has been the result of innovative hill farmers who are constantly struggling to overcome the constraints of relatively small land holdings. Programmes to develop irrigation, horticulture, livestock improvement and to some extent, marketing support, have been in operation for some time. And yet, the potentials are far greater than the actual progress made because of lopsided priorities, unsustainable efforts and unresponsive institutions. The experience of Nuwakot district under the World Bank-funded Rural Development Programme is particularly instructive as it illustrates the prevailing conditions in other districts of the Bagmati zone [DRCG 1982]. The agricultural sector occupied a major role in the project and a large number of activities were initiated under the agricultural development programme which included:

- (i) Propagation of improved seed and fertilizer technology for cereal grains, root crops, fruits and vegetables through seed distribution, fertilizer, credit supply and extension programmes
- (ii) Training of extension personnel and farmers
- (iii) Development of markets and
- (iv) Improved irrigation

The combined effect of all these measures was to increase the output of edible crops (primarily paddy, maize and wheat) and vegetables by about 17,500 tons by the seventh year of the project (1982/83). More significantly, it was anticipated that participating households would be able to meet fully their annual food requirements in contrast to a pre-project assessment of only a six-month food supply.

If we review the programmes, a number of points emerge. First, accessible areas have been better served than inaccessible areas and here accessibility refers to roads. Second, lowlands, or those areas under paddy and wheat cultivation have benefited more than areas raising

other crops. In Nuwakot, there is a fair abundance of lowlying *tar* areas along the Trisuli, Tadi, and Likhu river valleys. While the project identified all the 29,000 households as target population, the availability of improved seed-fertilizer technology for only a few crops has effectively reduced the participating households under the agricultural development programme. Some effort have been made to supply improved maize and potato seeds, but these have not been encouraging. With regard to institutional involvement it was found that all the major agricultural development institutions received substantial project funds, making possible some extension work at the sub-district level. The institutions involved included those engaged in extension, e.g. Agricultural Inputs Supply (AIS), Agricultural Development Bank of Nepal (ADB/N), and Agricultural Marketing (AM). Projects supported the establishment of subcentres of the District Agricultural Office (DAO). It provided funds for the credit programme of ADB, (up to 63 per cent of the total investments) and supported godown construction for AIC. It provided complete support for the establishment of the agricultural marketing office and the Regional Training Centre. It is therefore, apparent that at the district and sub-district level there was a major boost by the project, for strengthening institutions involved in agricultural activities. The support for physical facilities like offices, buildings for staff quarters, godowns and salaries of personnel has enhanced the quantity of both physical infrastructure and technical manpower in the districts.

In so far as agricultural development programmes and projects are concerned, a District Agricultural Development Plan was prepared by the Department at the centre, based on earlier recommendations of the Trisuli Watershed Project. The District Agricultural Development Plan was, however, only an indicative plan. It contained none of the details required for an operational plan beyond identification of crops raised by farmers and some rough estimates of yields. Crop relations, combinations, input usage by crops and credit requirements, availability of water, etc., which were all important inputs for an operational programme were lacking. Even locational aspects of the programme did not find any review, except for the names of panchayats. The plan primarily served to establish the agricultural organization in the districts. The bulk of the actual

programmes have been developed on an annual ad hoc basis - more often to satisfy the Planning Commission and the Department, than for the requirement of farmers.

The implementation of agricultural development programmes has not been uniform over the years. A distinction may be drawn here between activities relating to the establishment of the institution and those concerned with provision of services to the farmers. Construction of subcentres, regional training centres, godowns and office buildings have made a major claim of project funds and time.

The first year of the project primarily focussed on office establishment and on getting ahead with construction work. Midway during the project the referendum and the national election took place. These were political events that, undoubtedly had some impact upon the implementation of programmes. In effect, the service delivery component of the project had an effective operation period of only about two years in a five-year programme.

Major Sectoral activities of the project are described below:

#### (a) Institutions and Services

Extension, inputs and credit have been the major thrust of the project for agricultural changes in the project area. While these components, along with marketing and support for irrigation development, are critical factors for the development of agriculture, it is immediately apparent that it is the farmer who must make efforts to take advantage of these institutions. Questions regarding farmers organizations have not even been raised at anytime during the past five years.

Below the district level, most agencies have evolved some form of lower unit to support their delivery system as a necessity for working in the hills, and emphasizes the need for careful spatial planning. These sub-units are not located in the same area and no mechanism exists at present to integrate them spatially.

Thus while there are many institutions to cater to the needs of the farmer, this is easier said than done [Fig 5.2]. In most instances, it is the farmer who has to move from agency to agency and patiently wait for the

institution to attend to his needs.

#### (b) Extension

Extension work in the district has received substantial support from the project and major effort has been to propagate the use of improved seeds such as paddy, wheat, maize and potato including some vegetables and fruits. At present, this work which is mainly in the form of information transmission has little capacity to get existing problems solved. Work time regulations (10 am-5 pm), budgetary limitations, lack of training and equipment, etc., are some familiar reasons given for low capacity to solve problems. With increases in the use of improved seeds and fertilizers, problems of various kinds are bound to increase and there is every need to upgrade the level of services provided. Specifically, there has to be an enhancement in capacity of the extension system to solve the problems faced by farmers. Crop diseases in potato for example is not being adequately attended to. Research farms located in the project area are not of much help in the cereal extension programme of the project. Focusing on horticulture is effective if there is a concurrent programme to address problems of farmers. Farmers will not, at the moment, choose horticulture in preference for cereals and this is a priority that has not been reflected in the research system under the project. A weak research system unmistakably lowers the quality of both training and extension quite apparent in the project.

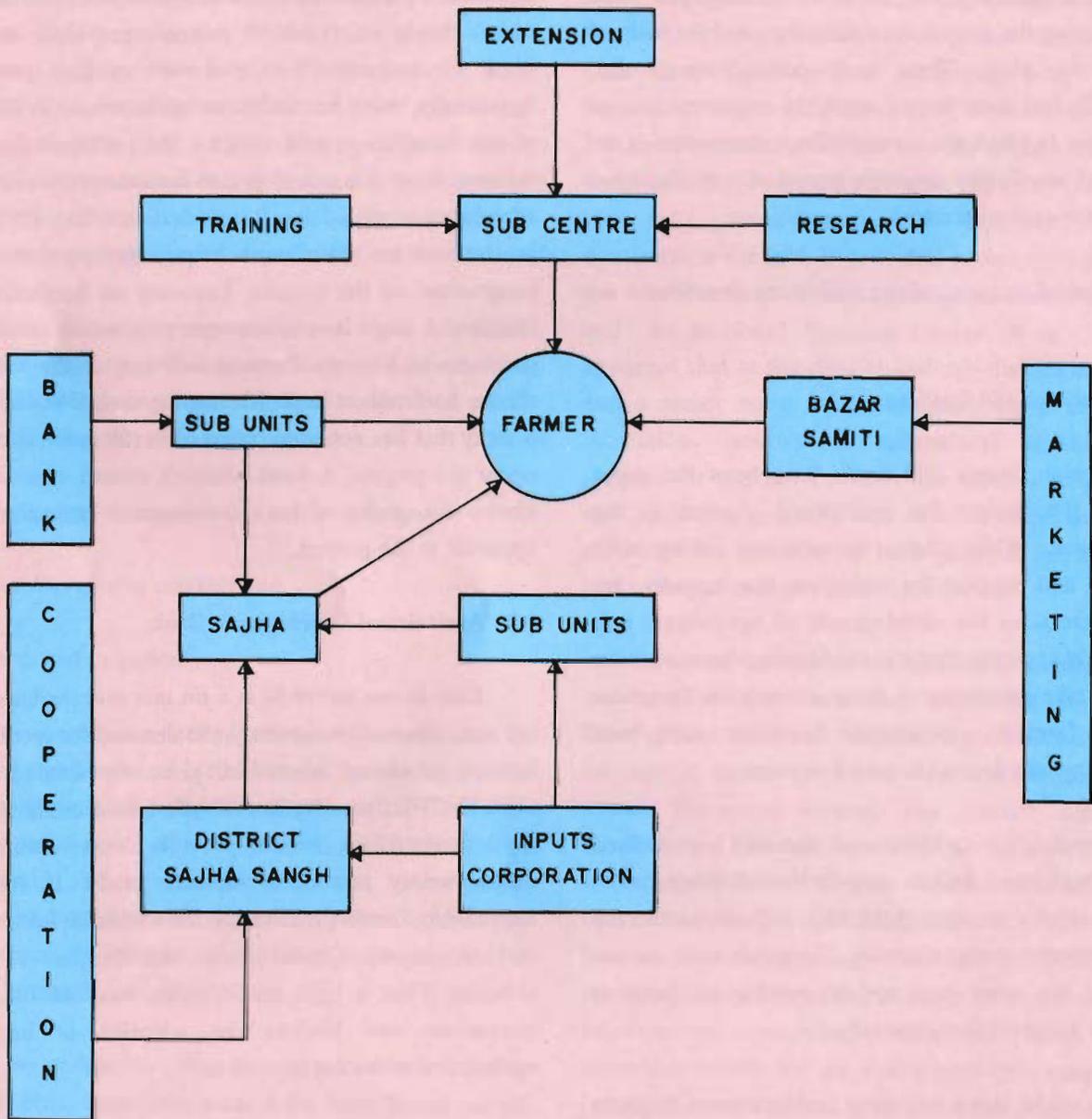
#### (c) Agricultural Development Bank

Easy access to credit is a *sin qua non* for improving hill agriculture. Consequently, the demand for credit from farmers is almost insatiable, given the limited funds available. The "poor" collateral offered for credit and the high demand for credit provides ADB/N with very discriminatory powers to allocate credit. If credit is unavailable, farmers cannot use the extension information and AIC inputs. Credit is also the life line of Sajha societies. Thus a tight credit policy weakens the other institutions and hinders the adoption of improved agricultural technology.

Over five years, ADB/N's credit policy has moved from expansion to contraction with a slight expansion in the fifth year. This is somewhat surprising as the

Figure 5.2

### DISTRICT LEVEL INSTITUTIONS AND SERVICES IN AGRICULTURE



repayment rates have been increasing. As a tight credit policy hurts the entire agricultural development process, efforts should focus on recovery rather than curtailing loan supply. Recovery is, undoubtedly, more difficult as it may require house to house visits. It is, therefore, in ADB/N's interest to strengthen the Sajhas or develop more effective farmer's organizations.

(d) Agricultural Inputs Corporation :

While farmers have traditional moneylenders as alternative sources for credit, there are no alternatives to AIC. It is a monopoly supplier, that discriminates with respect to quantity rather than prices. As there are major restrictions on supply and allocative flexibility is limited - the problem is accentuated by inaccessibility.

At present, supply is based solely on AIC's own estimates about expected demand (based on past sales). Sales have been increasing although not very evenly. AIC supplied about 300 tons more in the second year of the project and again another 300 tons more in 1979/80. There is limited flexibility to adjust to increasing requirements. AIC is not prepared to be left with huge fertilizer stocks and is therefore operating on the lower supply side.

(e) Agricultural Marketing

The Marketing Office is trying to help farmers, but it has not been very successful. Traditional channels seem to be more effective at the moment in so far as the farmers are concerned. Some efforts have been made to find markets for farm produce but this is clearly not feasible on a larger scale. Marketing cereals is well established but newer products like vegetables and horticultural products face many problems. Presently, the sources of agricultural products surplus for the market in Nuwakot are as follows:

(i) surplus from larger farms - mainly cereal crops with some lowland farms that grow some fruits

(ii) use of marginal land for cash crops or animal husbandry. Two examples are livestock raising in upper altitudes and use of millet for brewing and

(iii) sale of forest products - which are almost

non-existent although some sale of wild animals like wild boar in the Trishuli market does exist

Thus there is a limited amount of marketed products and much of it consists of cereals, livestock products and some vegetables. Marketing of cereals and livestock products have not created much problems because the volume is low. Under this condition, the local marketing office does not have a very useful role.

(f) Sajha Institutions

The closest form of farmer organizations are the Sajhas or cooperative societies. Sajhas are completely at the mercy of ADB/N and AIC and a few other corporations. The District Cooperative Office is of little help if ADB/N does not grant it credit. The major lesson from the successful Sajhas is one of motivated staff. Profits can be made in existing activities, but the people working in these institutions see no future, no security and no commensurate reward for working towards a successful Sajha. It has become a totally unproductive bureaucracy, extensively exploited by rich farmer-politicians of the district. In contrast, the Small Farmer Development Project Cooperatives function relatively more effectively, although they have been virtually spoon-fed by the ADB/N.

Thus there are many positive signs in Nuwakot district -- (at least in the accessible parts). Agricultural development is beginning to change, -- these changes are however severely constrained by weak supporting institutions and services that have failed to operate on the basis of comparative area advantages. Efforts to support the subsistence production activities of hill farmers in upper elevations have not met with much success. The focus has been on lowlying areas where farmers are already active and have access to resources. This story is not very different from other parts of the Bagmati Zone.

## 5.6 Market Centres and Spatial Linkages

Settlements inevitably undergo a process of change all the time in terms of population movement. People are constantly in search of newer opportunities and although not everyone wanting to move can, a surprising number do. These movements, long-term or short-term, seasonal or daily, reflect different types of relationships between

different settlement levels. Spatial linkages incorporate not just movement of people but also those of goods, and generally include demographic, economic, social and political linkages. The basic objective in looking at these aspects is to understand the nature of rural-urban links and examine their overall implications for organizing potential development areas and activities. Here a small case of Nuwakot district is discussed.

## Migration

To start with it might be useful to provide a brief background of migration patterns in Nepal. Nepal's migration process has been significantly influenced by the geography of the country with its three distinct geographical belts running east to west - the mountains, middle hills and the southern Terai. It is the hill and mountain regions that have been major exporters of population to the southern Terai plains and a number of other areas. If on the one hand, the Terai's increasing attractiveness for settlement exercised a powerful "pull" effect, the deteriorating hill economy and environment have increased "push" effects, resulting in population exodus from the hills. Over two decades of reckless deforestation and settlement promotion in the southern Terai has practically exhausted agricultural land for new settlement and the Terai no longer seems capable of productively absorbing any more of the hill population without substantial changes in technology and

agrarian systems. Developmental attention is being redirected to the hills through a series of rural development programmes in order to improve the incomes of hill people. Migration in Nepal, therefore, has been mainly rural to rural. Rural to urban movements are also increasing but have been limited because of the low levels of urbanization. Rural to urban migration is likely to increase substantially in the future as urbanization spreads more rapidly.

Nuwakot district (Map 5.3) has had a relatively better share of development projects which have generated a good deal of local employment, possibly reducing out migration to some extent. Two major projects - the Devighat Hydro Electric Scheme (which has been completed) and the Betrawati-Somdang Road (in Rasuwa district) generated as many as 15,000 jobs every day during 1981-83 period. An important integrated rural development programme has also been implemented in the area.

## Level and Duration of Migration

A special field survey indicated that 815 persons had migrated during the past year which represents about 5.22 percent of the surveyed population (Table 5.1). An earlier study pointed out that migration was 2.25 percent for the district as a whole. In so far as the number of migrants by short term (six months to one year) and long term (more than one year) movements are concerned, long term movements are almost double (68 per cent) those of short term movements (32 per cent).

## Income characteristics of Migrants

Migration characteristics by income groups show some interesting differences. Migration is lowest for middle income groups, followed by lower quarter and upper quarter (Table 5.2). In terms of the duration of stay measured in man months, it is lowest for the lower quarter and highest for the upper quarter.

## Destination of Migrants

It has been pointed out that migration in Nepal is mainly rural to rural. In other countries where

**TABLE 5.1 :DIFFERENT TYPES OF MIGRANTS IN NUWAKOT**

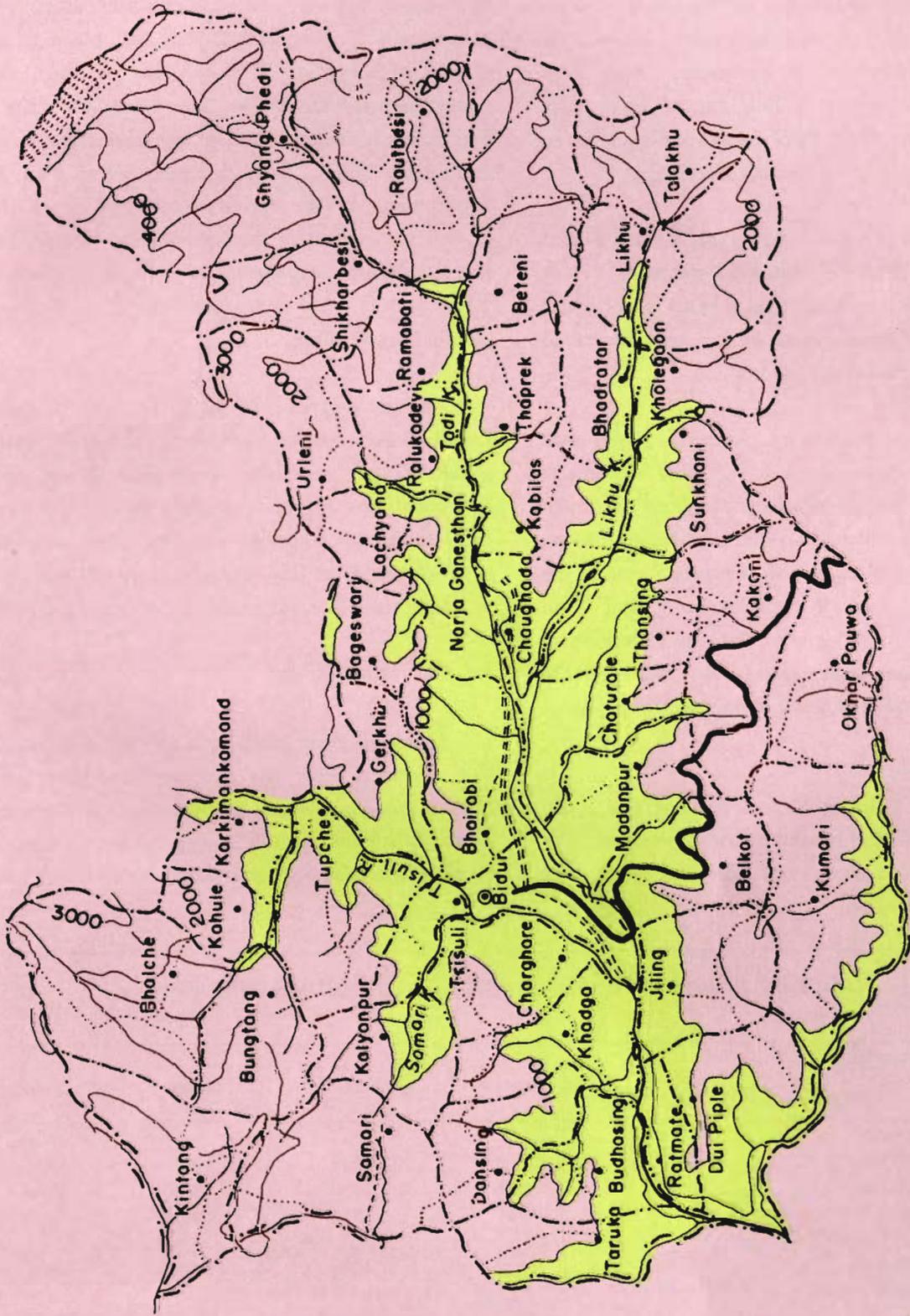
Surveyed Settlement Population - 15,616 : Household = 2,544

	Within District	Outside District	Foreign	Total
More than one year	59	360	133	552
Six months - One year	73	158	32	263

Source : Field Survey (by the author)

# NUWAKOT DISTRICT: PHYSICAL

Map 5.3



## LEGEND

- District Boundary ; Village Panchayat Boundary
- Metalled Road; Unmetalled Road; Trail; Footpath
- River
- Village Panchayat
- Contour Line; Steep Slope

urbanization has reached relatively higher levels, the movement may be more rural to urban. Table 5.3 shows the different migration flow characteristics by destinations and by duration for the surveyed settlements. The Table indicates that a large proportion of the migrants from Nuwakot make a rural to rural movement, followed by rural to urban and foreign movements (Map 5.4). Broadly, what this means is that out of every four migrants, two go to other rural areas, one goes to an urban area and another goes to India (foreign).

**Rural to Rural :** Out of 454 migrants making a rural to rural movement from the surveyed settlements, 67 per cent was long term (i.e. more than a year) and only 33 per cent was short term. About 84 per cent moved to destinations outside the district (Map 5.5).

**Rural to Urban :** There were 196 migrants who were reported to have made a rural to urban movement. Urban areas are those officially declared as town panchayats. As Nuwakot had no officially declared town, Trishuli Bidur was defined as the only urban area in the district. As in the case of rural to rural, long term migrants accounted for 59 percent. In terms of inside and outside district movements, the former was only 34 percent. Outside district movements exceed inside district movements.

**Inside District :** Out of the total 815 migrants, those moving inside the district made up only 16 per cent. The proportion between rural to rural and rural to urban is

interestingly enough roughly half and half. Although this figure is based only on a limited survey and needs to be verified by more comprehensive data, it is important to note point that fifty per cent of the movements within the district was towards the Trishuli-Bidur urban area. It underscores the importance that this place is already playing in terms of its dominance in trade, finance, marketing, administration and transport links. The implication for future development of this area is equally significant. Today, it is a small centre with limited employment in the tertiary sector. If Trisuli-Bidur's growth is to be kept manageable, the development of non-agricultural employment as well as development of other centres with some basic urban functions merits careful consideration.

**Outside District :** About 63 per cent of movement from Nuwakot was to destinations outside the district, of which 70 per cent was long term. Rural to rural movement was 75 per cent while only 25 per cent was rural to urban. Although rural to urban migrants are relatively small in this category, it is still double those making a rural to urban movement within the district.

#### Reasons for Migrating

Questions were asked as to why different households had migrated from the settlements. These represent reasons for migration as identified by non-migrant households. Consequently, it is necessary to keep this in mind while examining the various reasons cited.

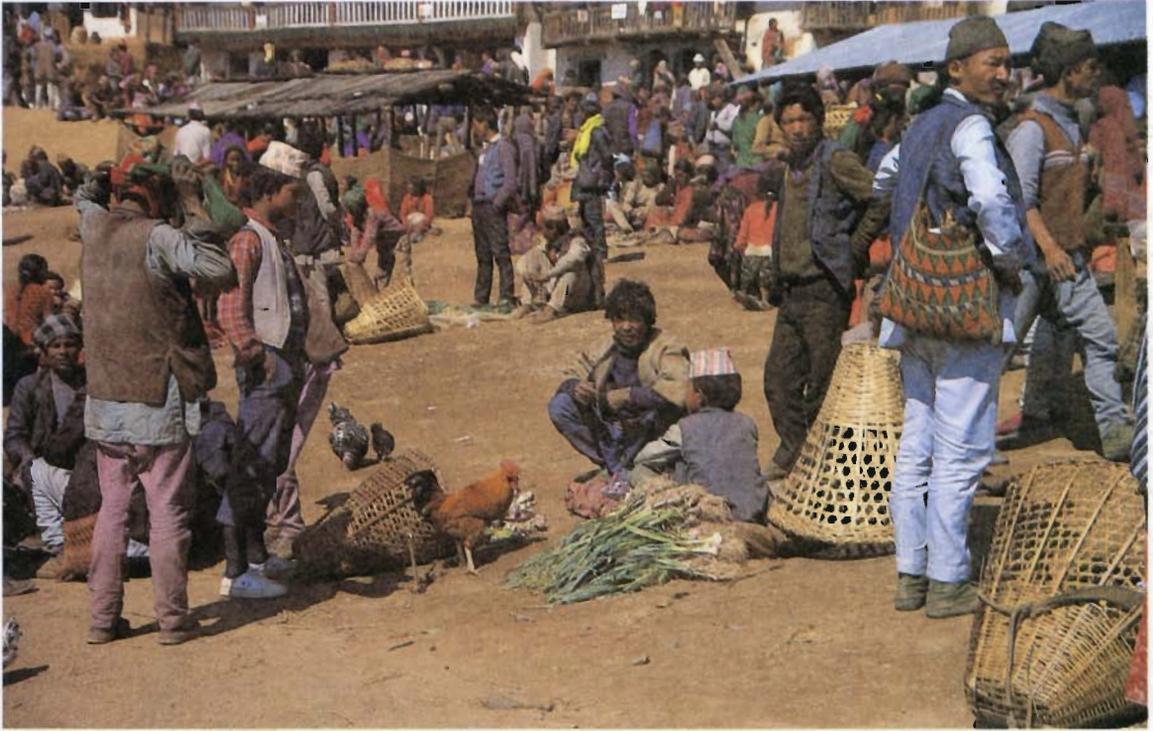
**TABLE 5.2 : MIGRANT CHARACTERISTICS BY INCOME GROUPS**

Household Types	Lower	Middle	Upper	All
<b>Number of Migrants</b>				
Short term	0	259	517	776
Long term	1161	1615	968	3744
Total	1161	1874	1485	4520
<b>Duration of Stay (outside) Man/Months</b>				
Short term	0	7500	2328	9826
Long term	6965	20284	46209	73458
Total	6965	27784	48537	83288
Average duration of stay/migrant man/months)	6.00	14.83	32.68	18.48
Average Remittance per migrant (Rs.)	210.11	682.19	1190.61	727.70

Source : DRCG, Op. cit., Table 4.4



10



(Courtesy : Tej Pratap)

10. Marketing by hill farmers in a hill Bazar.

Sometimes the farmer is lucky and gets good prices after a long day of waiting.  
Also note how little there is for sale.

11. Trail-side Marketing by Hill Farmers.

11



(Courtesy : Kk. Panday)

**TABLE 5.3 : NUMBER OF MIGRANTS BY DESTINATION AND DURATION**

	Rural to Rural			Rural to Urban			
	Inside District	Outside District	Total District	Inside District	Outside District	Total District	Foreign Place (not identifiable)
More than one year	49	254	303	10	106	116	133
Six months - one year	17	134	151	56	24	80	-
Total	66	388	454	66	130	196	-
Weekly	22	6	28	2	4	6	
Daily	4	45	49	4	12	16	
Total	26	51	77	6	16	22	-

Source : Field Survey

Six categories of reasons have been identified, and obviously there is some overlap. For instance, income and search of jobs are interrelated in the present context but need not always be so. Resettlement is also related to income and search for jobs but has been identified as a separate category simply because it was not a very common reason (Table 5.4).

More than one year : Under this category, "low income and lack of food" was identified as the most common (50 per cent) reason. This was followed by "search for jobs" which include government and military service. What is interesting is that foreign service (military service in India, mainly) was identified in almost twice as many cases as domestic service. Similarly, reasons such as "search for jobs", "going to India" were more common here than in other parts of Nepal. This reflects to some extent to the overall structure of the Nepalese economy, where secondary and tertiary employment is very limited. Another interesting category was "better facilities" and "own choices". What this indicates is that these groups of migrants were apparently well off even in their original places, and chose to move out for a different type of environment, due presumably to the urban "pull" effect.

One year to six months : There was some change in reasons for short term movements as compared to long term movement. "Low income" and "lack of food" dropped substantially to about 34 per cent while "searching for job" increased (36 per cent). "Business" was not mentioned before, but is identified in this category. The number of service holders in this category increased to twice as many as in the long term category and here services in Nepal rather than in India dominate.

### Commuters

Table 5.5 indicates the number of weekly and daily commuters to different areas. This could perhaps be due to field data counts of daily and weekly visits instead of monthly visits. However, daily commuters exceed the weekly ones. As expected, movements within districts are greater than outside because of difficult transport systems.

Referring back to Table 5.3, we find that outside district rural to rural movements are greater than inside district for weekly and daily commuters. This is explained by the presence of a major road construction project in Rasuwa district which attracts large numbers for work. Rural to urban movements reflect a similar case with more people commuting to Kathmandu for work almost on a daily basis, primarily from Panchayats and settlements that are close to Kathmandu. Among the reasons given for weekly and daily movements, "searching for jobs" and "service" (government) are the only two identified.

### Summary of the Migration Process

Migration in the study area has been primarily to other areas with potentials for agricultural activities (rural to rural) and to a limited extent, to higher order centres (rural to urban). Based upon a general reading of reasons given for migrating, "push" factors (low income, insufficient food, in search of jobs etc.) seem to be relatively more important at the present than "pull" factors. From this it would appear that the urban drift is not as pervasive from this area as one would have

**TABLE 5.4 :REASONS FOR MIGRATING**

	More than one year				one year-six months				Total	
	Domestic	Foreign	Total	Percent	Undomestic	Foreign	Total	Percent	Number	Percent
1. Not enough food/ low income	276	-	276	50.0	-	-	-	-	276	33
2. In search of job	39	72	111	20.0	153	26	179	68.0	290	35
3. Resettlement	10	-	10	181.0	-	-	-	-	10	1
4. Business	-	-	-	-	8	-	8	3.04	8	0
5. Services	35	61	96	17.39	53	6	59	22.43	155	19
6. Own choices/ better facilities	59	-	59	10.69	17	-	17	6.46	76	9
<b>Total</b>	<b>419</b>	<b>133</b>	<b>552</b>	<b>100</b>	<b>231</b>	<b>32</b>	<b>263</b>	<b>100</b>	<b>815</b>	<b>100</b>

Source : Field Survey

expected, based upon the experience of other countries. In other words, it may be argued that the migration process is still in an early stage, primarily rural to rural because of limited number of urban places, non-availability of resettlement opportunities, low levels of education and skill development, and a small manufacturing sector. As education and skill levels improve, secondary and tertiary sectors expand and create jobs, city lights will grow brighter and migration will increasingly take a rural to urban shift. Obviously, there is some overlap between the two stages as we have observed quite clearly from the discussion of migration patterns in the study area. With increasing linkages to the city (for education, health, inputs, and jobs) and decreasing opportunities for agricultural resettlement, this second stage of mainly rural to urban movement is likely enhance substantially in the future particularly in the case of the study area.

#### Marketing Linkages

Map 5.5 shows the various types of economic linkages within and outside the district for the surveyed settlements in Nuwakot district. In so far as marketing is concerned at least eight settlements identified local villages and this, is mainly due to inadequacy of products to take to the bigger markets. The pattern for purchases is almost identical as that for sales except for the fact that there are substantially fewer local purchases reported. The number of reported centres were eight as before but Tupche and Betrawati dropped out and Dhading (another district) and Ranipauwa are identified as local

market for of sales. Kathmandu, identified by fourteen settlements, interestingly enough appears to serve a larger number of settlements because of cost considerations and supply reliability.

Settlements located in the southern and eastern parts of the district are attracted to Kathmandu while those the north and west look towards Trishuli and Battar (in Bidur). Proximity to the market centre is clearly the determining factor between Kathmandu and Trishuli, although by virtue of Kathmandu being the capital and a much larger market centre, it holds other attractions as well.

#### Service Linkages

Five places identified as points for agricultural loans were Ranipauwa, Kathmandu, Tupche, Trishuli and Choughada. Except for Kathmandu and Trishuli, all others are service centres. About half the residents from surveyed settlements reported that they had no idea

**TABLE 5.5 :NUMBER OF WEEKLY AND DAILY COMMUTERS**

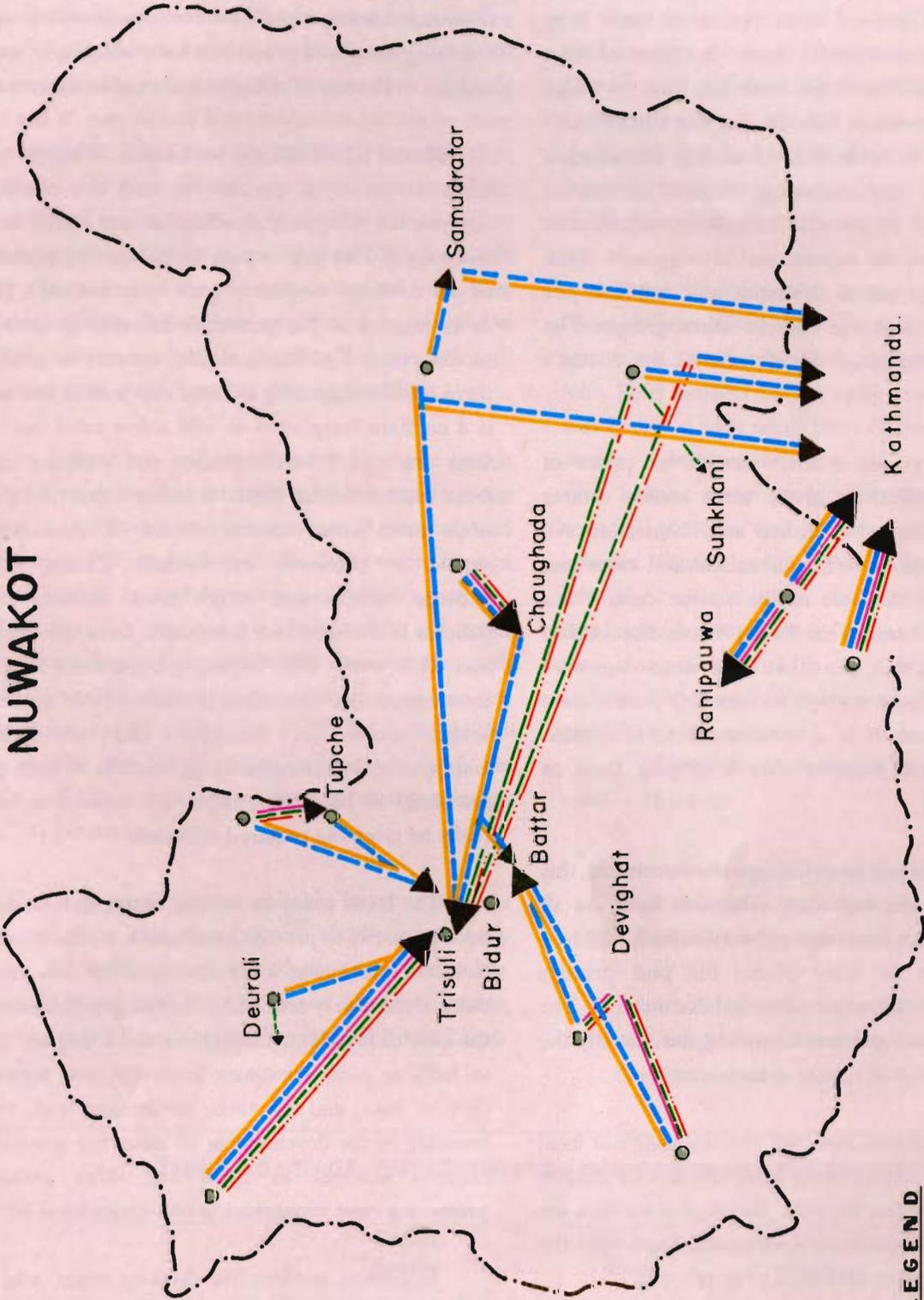
	Within District	Outside District	Total
Weekly	24	16	40
Daily	49	12	61
<b>Total</b>	<b>73</b>	<b>28</b>	<b>101</b>

Source : Field Survey

# PATTERN OF ECONOMIC LINKAGES

Map 5.5

## NUWAKOT



**LEGEND**

- Studied Village Panchayat
- Sales of Agr Produce
- Purchase of Agr. Produce & HH. Requirements
- Agr Loan Service
- Agr input Service
- Extension



where to go. It may be pointed out that all the service centres have to process loans through the district Headquarter Office of the Agricultural Development Bank. This does not imply that other areas in the district cannot receive any loans. Thirty-six panchayats were identified to have received some amount of loans from the Agricultural Development Bank. In terms of loan distribution for 1981/82, 50 per cent had gone to Bidur and Choughada panchayat with the rest was shared by 34 others, amounting to about Rs. 6.3 million. Distribution by groups was also very interesting. While 65 per cent of the loans went to cooperative institutions, others that received loans from the Agricultural Development Bank stood at 26.49 per cent to Brahmins and only 2.46 per cent to Tamangs and the rest to other groups. The Tamangs constituted about 50 per cent of the district's population.

Service centres are the key distribution points of agricultural inputs and six of the seven service centres were identified along with Trishuli and Kathmandu. All service centres have an office of agricultural extension, except Bhadratar. The role of the service centres has been important in terms of the three services discussed so far. This indicates that there has been some degree of strengthening of these service centres and people have started to use them. It is now necessary to take these centres to the next stage by also developing them as marketing centres.

In so far as educational linkages are concerned, this begins only from the secondary education level. As all Panchayats have at least one primary school, children need to be sent to other places for post primary schooling. Three settlements identified Kathmandu. The other places for post primary schooling were mostly the panchayats identified as service centres.

All the settlements reported the availability of local healers but not doctors. Once again the service centres were identified for health posts. As hospital services are available either in Trishuli or Kathmandu, these were the two locations that were identified by the people.

Service penetration into the rural areas is weak and variant by sectors. Education has made some progress through distribution of primary schools, but even here there is much to be desired as seen from the low levels of

literacy. Some progress is also evident in terms of drinking water availability. At the service centre level, health and agriculture related institutions have begun to function but are still fairly new. The overall picture that emerges is a low service and institutional base with disproportionately high levels of concentration in selected low lying areas and practically total absence of any such support in the upper altitudes and smaller settlements.

Future efforts should be towards bringing as many villages together as possible so that the existing void between the villages, Bidur-Trishuli and Kathmandu can be bridged. This gap cannot be bridged by planning for all the seven sub-centres to grow spontaneously. This will never happen as the potentials inherent in each of the service centre hinterlands are enormously variant. Today, there is little happening in these sub-centres and so there is a constant temptation to add a few more institutions. Only time can tell the blunders and wastages resulting from such decisions. What is being argued here is that while more urban centres should be developed, this should be cautiously approached. Closing this gap between villages and major urban centres requires policies that strengthen integrative focus between rural and urban areas. Such forces, in the context of Nuwakot for example, are those that promote newer markets, and better access to seasonal and non-agricultural employment. As investment implications of such policies are likely to be substantial, a few centres at best can really be given the required attention.

The focus today on service centre development has been primarily to provide government services, and not in terms of mobilizing local resources for investments in these areas. Every area has potential growth centres as in the case of Nuwakot, Choughada and Devighat. In order to mobilise local investment resources, it is necessary to turn to land, and for those controlling land, to begin investing in the development of industrial activities. This requires changes in fiscal and other policies for promoting rural investment in non-agricultural activities.

Regarding services like drinking water, schools and health posts, certain criteria should be worked out in terms of the served population and the desirable travel time to these services. Based upon these norms and expected population distribution, these facilities should be provided to the people as early as possible.

## Employment

Gainful employment is becoming a serious problem in the study area and in Nepal as a whole. The Rasuwa-Nuwakot Appraisal Report pointed out in 1975 that people had to migrate seasonally in search of jobs for about six months of the year. Agriculture is the major source of employment at the moment, using an average of 201 man days of family labour and 46 man days of hired labour per hectare for three main crops in the hills [Zevvering 1980]. It is therefore clear that labour utilization will vary not only in terms of the amount of land owned but also by types of crops raised. Very few farmers can take double crops, let alone triple crops. Hill people with lands must therefore obtain income from other economic activities besides self-employment in agriculture. For those without any land, the need to find alternatives to agricultural employment becomes even more pressing.

The share in total wage employment by income groups (Table 5.6) was found to be highest for the middle group (60 per cent) followed by lower quarter (26 per cent) and upper quarter (13 per cent). In terms of the number of wage employment days for each income group, an average of 18.1, 20 and 9 days was obtained for lower, middle and upper groups, respectively. If we relate the wage earnings with number of working days, average earning per working day for the three income groups are Rs. 13.2, 7.2 and 4.6 for upper, middle and lower groups, respectively. Both the lower and middle groups earn less than the average earnings of Rs. 7.43 per working day.

What is interesting is that while the lower quarter has 26 per cent of the man days, but only 18.36 percent of the earnings; the middle group with 60 per cent of man days has only 58.65 per cent of earnings and the upper income group has only 13 per cent of the man days but 22 per cent of the earnings.

The field survey indicated that the total number of job seekers was close to 25 per cent of the total population or roughly about half of the total labour force in the sample (Table 5.7). Amongst the job seekers, 58 per cent reported a six month food supply only. Of the total job seekers, only 46 per cent were successful in finding jobs which were predominantly porterage (93 per cent), followed by skilled jobs (5.57 per cent) and others. The share of male and female labour accounted for 79 per cent and 21 per cent respectively. Wage employment decreased with increasing income groups to 30 per cent in the case of lower quarter, 18 per cent in the case of the middle group and only 12 per cent for the upper quarter.

The need for greater remunerative employment is fairly obvious. With only 200 calendar days annually in agriculture, another hundred days are available for other jobs. Most farmers do not raise multiple crops and the majority hold only small plots of land, which means the average number of days of work on the farm goes down even further. Some groups like the Tamangs work in cottage industries and porterage to supplement their incomes. Others have to move around seasonally to find jobs. Even after a major rural development project, the employment picture has not improved. Had it not been for construction work in the Devighat Hydel Project and the Somdang-Betrawati road, the problems would have been more serious.

Employment thrusts in future need to be in a number of areas :

- intensification of agricultural operations using improved seeds and multiple cropping based on comparative advantages and eco-zone specialization
- infrastructure development, particularly roads and irrigation schemes to support agricultural development

**TABLE 5.6 : WAGE EMPLOYMENT BY PER CAPITA INCOME GROUP**

	Lower Quarter	Middle Group	Upper Quarter	All Groups
Person days of Male Labour	620,588	1,649,410	382,043	2,660,041
Person days of Female Labour	267,605	375,327	50,015	693,947
Total Person days of Labour	986,193	2,025,737	432,058	3,353,988
Total wage Earning	4,576,709	14,620,611	5,727,617	24,924,937

Source : DRCG, op. cit

- development of agricultural processing activities and
- support to light consumer goods industries, taking advantage of the increasing demand, both in the urban areas and agricultural households.

### Subsistence Labour

An understanding of the role of subsistence labour is particularly critical in the context of employment generation in the hills. The process of socio-economic transformation is invariably accompanied by the development of a more skilled and productive labour force. When members of the household are fully occupied in subsistence activities, there is little chance for skill and productivity improvements. Children are deprived of school because of household and farm activities. Women have very little time to learn various skills and educate themselves. The extent to which a nation's population is engaged in subsistence activities is a good indicator of the country's level of development. The argument is not to belittle the value and contribution of subsistence labour but to emphasize the fact that unless people can be freed from this traditional 'bondage', they will never be able to take advantage of the opportunities to improve their skills and productivity.

The implications of the extent of time involved by people in various subsistence activities provide a good basis for location of basic services like drinking water as well as other development activities.

Labour inputs for different household needs and activities are substantial (Table 5.8). Important activities

are firewood collection, fetching water, gathering fodder, grazing animals and transhuming.

Data reveals that women in all three income groups consistently spend more time than men in fetching water and gathering fodder. Firewood collection and animal grazing appear to be male activities with little inter-group differences.

The impact of increasing environmental deterioration (through loss of forests and drying of springs, etc.) has been to increase travel time for subsistence activities. From Table 5.8, it is evident that in terms of time spent, one adult is almost fully occupied in just subsistence activities. Provision of services such as drinking water will certainly help, but can adequate services be provided to this spatially scattered population without some better redistribution of settlements? This is a very important question.

### 5.7 Spatial Development Opportunities: Lessons From Nuwakot

What are the major characteristics of spatial development in the district and what are the implications for future development, particularly for income and employment generation? Based upon what has been described, certain spatial characteristics begin to emerge.

- The prime thrust of spatial development has been along the three river valleys of Trishuli, Likhu and Tadi. It is here that most of the markets and service centres are located. This is also relatively more prosperous and more accessible area in the district. Development programmes focussed on this area, leaving out other areas to the north-east, east, south and the north-west.
- Some new roads are being proposed for the district. One is to the south-east originating from Kathmandu into the district and moving down the Likhu river valley. The other as planned will pass through Devighat and extend south ward to join the Betrawati- Somdang Road. Given the present nature of spatial development, it is evident that both these roads will reinforce existing spatial development patterns and not really help in the development of

**TABLE 5.7 : JOB SEEKERS IN SURVEY  
SAMPLE AREAS**

	Number	
Job Seekers (with only six months food supply)	2,257	(57.56)
Others	1,664	(42.44)
Total	3,921	
successful in finding jobs-	1,812	
Skilled (%)	101	(5.57)
Porters (%)	1,686	(93)
Other (%)	25	(1.27)

Source : Field Survey

**TABLE 5.8 : SUBSISTENCE LABOUR USED (IN DAYS) FOR HOUSEHOLD ACTIVITIES IN NUWAKOT**

	Sex	Lower	Middle	Upper	All Groups
1. Firewood Collection	M	43	99	53	73
	F	47	50	40	41
2. Fetching Water	M	19	22	15	19
	F	62	65	82	68
3. Gathering Fodder	M	74	66	41	64
	F	100	156	196	152
4. Grazing Animals	M	95	65	62	73
	F	72	64	20	54
5. Transhuming		10	9	0	7
Total		122	196	508	557

Source : DRCG, op. cit., Table 3.8, p. 37.

economically backward areas or yet underdeveloped pockets in the district. It may provide certain employment benefits which is important, but is unlikely to boost economic activities in the areas lagging behind.

- (c) Service centres though small have been successful, in motivating people to use some of the services that have been established. Instead of going to Trishuli or Kathmandu, the people of Nuwakot have now some alternatives in terms of agricultural services that are closer to their homes and fields. There is a lot to be desired in terms of the quality of services, but this marks an important beginning for a system of decentralized services. In turn, this is often the beginning of a more balanced spatial development.
- (d) Because the current levels of investment and development programmes in the Tupche-Devighat-Choughada triangle are still fairly small, there is no question about redirecting development efforts from this triangle to other areas. As a matter of fact, the development pace of this triangle will determine the growth of the hinterland, rather than any indirect investments in the latter. This point must be underscored because distribution of limited investment resources will dilute the effectiveness of any programme. Attention should be to promote development of this triangle both agriculturally and industry-wise (see Map 5.6). This process will be greatly facilitated by developing Devighat and Choughada as other market centres in the district.

The proximity of Tupche to Trishuli does not justify its development as an independent marketing centre. Deurali is situated in the middle of a very poor region, and except for institutionalized services and to a lesser extent subsidized marketing of basic goods, its scope for growth is necessarily reliant on the potentials inherent in hinterlands. These potentials certainly do not lie in subsistence agriculture. Though livestock may offer equal potential, this is not visible from currently sponsored livestock programmes. Samundrar as a service centre could develop as a satellite marketing centre of Choughada. Ranipauwa is a small market and a service centre at present. Its current advantage lies in its location as an access point to the Likhu Valley areas. It is doubtful, however, if it will grow beyond its present size and functions. In so far as Bhadratar is concerned, it has better chances than Deurali for developing but at present it is not important.

- (e) The concept of service centres is indeed a useful one. It serves to improve access to certain types of services and also tends to provide some impetus for the growth of marketing functions. The latter, however depends upon the economic potential of the hinterland and this is limited. Some like Choughada and Devighat can grow very rapidly with the right type of stimulus, while others will show only limited change.
- (f) The Tupche-Devighat-Choughada triangle is likely to experience substantial immigration in the future.

This process which has already started, will facilitate growth of urban centres and urban functions. However, programmes to promote non-agricultural activities should begin in a major way to productively absorb people moving into this area.

- (g) The problems of outlying areas are more complex. One way of helping these areas is to develop the triangle and provide opportunities for more jobs. The other would be to find more high value crops that are environmentally sound. But fundamentally, the competition for limited resources between people and an unproductive reservoir of animals must be stopped. Otherwise, environmental deterioration resulting from efforts to eke out a living in these fragile ecosystem might lead to a major catastrophe in the future.

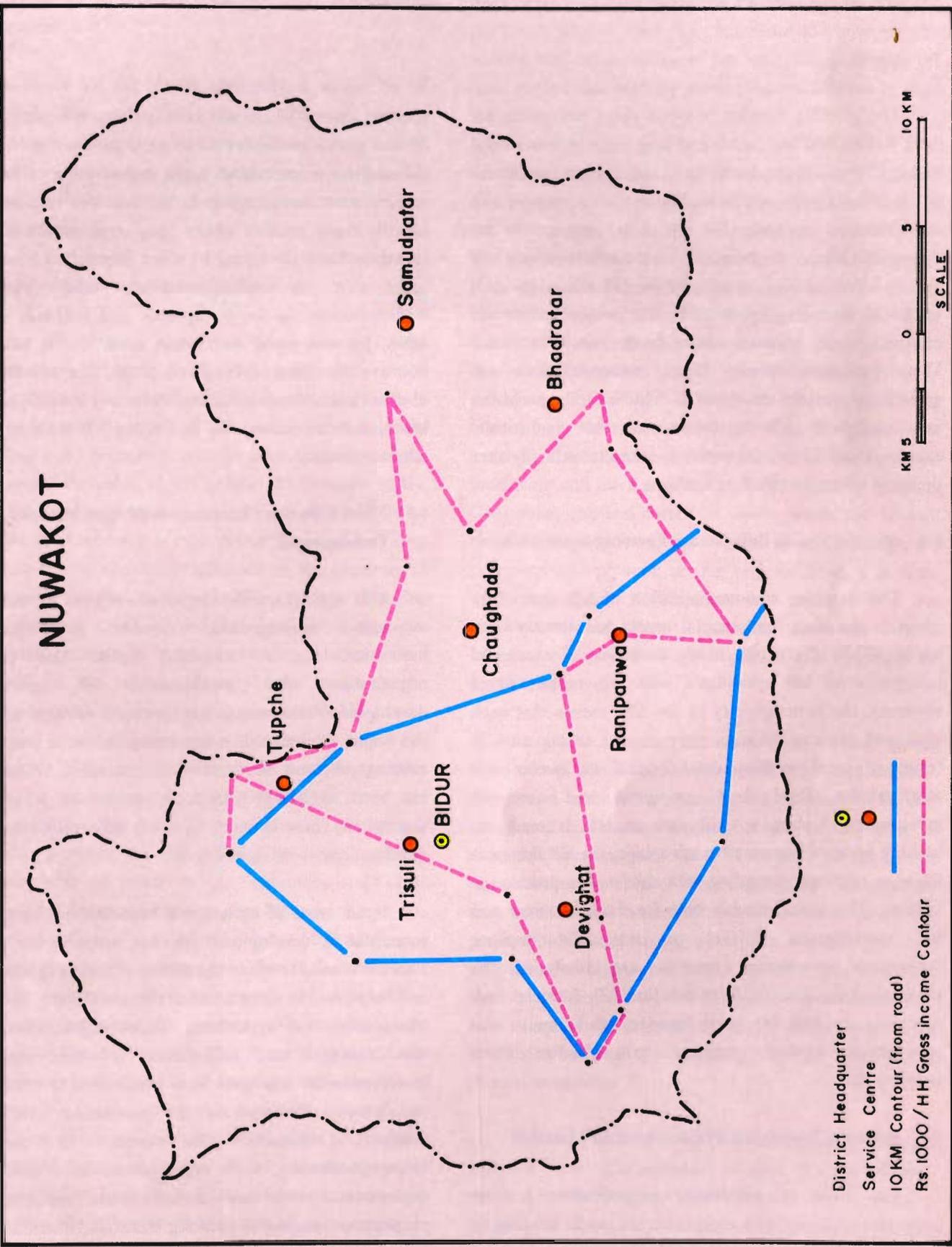
- (e) The overall implication for development is that current spatial development forces are likely to concentrate along the accessible river valley belts. As this is primarily an agricultural belt, the extent to which other off-farm activities can develop will be determined by the pace of sustained improvements in agricultural productivity. This means that off-farm activities will have to be generated in those areas supporting the development of market oriented agriculture. The spatial structure and endowments at present have reinforced this position. The alternatives, not all of which have been fully explored at present, are unlikely to counter the strong *low land determinism* and for a long time to come, poorer people in upper altitudes will have to come down or go to other prosperous areas for jobs so long as comparative advantage of uplands and low lands are not fully exploited.

TABLE 7.1 : JOB SECTORS

The table is intended to provide a general idea of the types of jobs available in the different sectors of the economy. It is not intended to provide a detailed analysis of the job market.

Sector	Job Sectors
Agriculture	1. Farming
	2. Fishing
Industry	1. Manufacturing
	2. Construction
Services	1. Retail
	2. Wholesale
Government	1. Public Administration
	2. Education
Health	1. Medical
	2. Nursing
Education	1. Teaching
	2. Research
Transport	1. Road
	2. Air
Communication	1. Postal
	2. Telephone
Energy	1. Electricity
	2. Gas
Water	1. Drinking
	2. Irrigation
Waste	1. Solid
	2. Liquid

Map 5.6 MARKET CENTRES AND ACCESSIBILITY AND INCOME ZONING



## Chapter 6 . Conclusions

The growing conflict between short run needs for food, fodder and fuel needs and long term environmental sustainability, under conditions of subsistence agriculture in the hills, is quite apparent. The overall economic and environmental scenario for the hills appears to be extremely bleak if demand conditions continue to overload the carrying capacity of the hill resources. And yet for all their fragility, the hills also possess substantial economic and environmental development potential. These potentials remain largely untapped and will continue to remain unexploited if the existing problems associated with hill agriculture are not realistically examined and some bold decisions taken to radically alter the basic structure of hill agriculture.

### 6.1 Alternatives to Subsistence Farming in the Hills

The case for commercialization of hill agriculture which is the most fundamental aspect has already been made. While there are many examples of successful integration of hill agriculture with the wider market economy, the heterogeneity of the hills means that each area and ecozone requires very careful examination in terms of local environmental conditions, access and marketability, local food conditions and necessary investments. Unless a deliberate search is made to identify areas of comparative advantage, the hill farmer is likely to continue struggling with subsistence production systems. This is undesirable both for the hill farmer and hill environment. Efforts to marginally improve subsistence production systems are likely to be unsustainable. This is because the hill farmers lack resources to pay for these services and inputs and government cannot continue to subsidize them indefinitely.

### 6.2 Relieving Population Pressures on Hill Lands

The issue of population redistribution is also important as it implies a comprehensive understanding of the dynamics between population and resources. In many areas, population pressure on limited resources has

reached a point where irreversible changes are beginning. At the same time where pressure is partially reduced or checked for a number of years, regeneration of biomass can be most encouraging. It is, therefore necessary to identify those pockets where long term sustainability is threatened and the extent to which population from such areas can be redistributed to other locations. Redistribution can be to uplands and lowlands in hill areas, between rural and urban areas in the hills and between the hills and the Terai plains. The effectiveness of various combinations of incentives and controls have to be carefully appraised for motivating hill households to relocate themselves.

### 6.3 More Effective Organization of Agricultural Development

Hill agriculture development requires flexible and responsive management, capable of organizing innovations on a sustained basis. The present organization and management of agricultural development however, is not oriented towards meeting this major challenge. It is extremely limited in scope and coverage in terms of research and extension. While there has been significant growth in number of agricultural institutions, these changes have not been effective in the development of hill agriculture.

Some types of agricultural organizations have been successful in development of cash crops in the Terai. There is a need to study the nature of these organizations and explore the possibilities for developing them in transforming hill agriculture. Those organizations that have managed and coordinated a whole range of functions under one roof from production to marketing, and have a factory-base for processing have been relatively successful. In order to maintain factory-production, such organizations have conducted experiments, trials and demonstration, multiplication, propagation, testing of planting materials, distribution of farm inputs and credit supply. They are also engaged in extension, transportation, storage and processing.

Experience with hill development activities in India also suggests that this has been a relatively successful model, particularly in Himachal Pradesh for horticulture development.

In order for the above approach or model to be successful, the need to have effective farmer organizations is also quite evident. Without strong farmer organizations, even the above model is unlikely to be effective. Both these aspects have to be seen as two sides of the same coin.

#### 6.4 Comprehensive Area-Based Planning

One of the most significant developments in the Bagmati zone has been the gradual integration of the entire zone as hinterland of the Greater Kathmandu valley region. Extension of the road network from Kathmandu has brought practically all the districts of the Zone under the orbit of the greater Kathmandu valley. While the road network to some of the districts is not as extensive as in others, it is evident that Kathmandu Valley will be exercising significant influence on the structure of development in the hinterland. The rapidly changing urban demand structure will be a major source for stimulating changes in rural production structure. The GKV will be the source of supply for many of the important inputs and services required by the hinterland. It will also be the major source of investment capital for the region. While these represent some of the positive aspects for increasing economic integration, there are also possibilities for dualistic development. This means the centre grows at the cost of the hinterland, depriving the hinterland of much of the resources and skills necessary for balanced regional development. There are already indications of a polarized process of development which will tend to get stronger over time if the hinterland fails to be more productive. Many parts of the hinterland are already beginning to indicate unfavourable trade balance with the GKV region. This is mainly because the GKV region is functioning as an entre-pot with hinterland imports being controlled by this region. A more closer examination of the economic structure of the GKV region shows that the economic power of this primate region, in large part, stems from its political role as the capital of the country. As the seat of the central government it, therefore claims a large share of tax revenues which pay for the high imports of the region. Traffic flow data reveal

that the ratio of incoming freight to outgoing freight for the GKV region is as high as 5.8, indicating that it imports more than it exports, which has the tendency to drain the periphery [Ender 1980]. The construction boom and the soaring real estate prices in the valley are siphoning off rural capital that is badly needed for investments in rural areas.

From the point of view of spatial and regional development, the emergence of potential hinterland for the GKV region is a major change in the hill economy. The implications of these changes for spatial and regional planning in Nepal are far reaching. It is no longer plausible to perceive rural development activities in isolation of the changes in the GKV region, without considering the potentials for specialization and trade in different parts of the hinterland. The physical and institutional infrastructure is already in place. The number of urban centres with different service bases are increasing and intra regional trade linkages are growing. Over time, regional forces of development will acquire their own momentum in the Bagmati Zone. If changes are perceived and planned at this regional level, it is more likely that spatial development will proceed in a less lopsided manner, than if planning continues without adequate recognition of the broader spatial opportunities for development.

Very few activities are economically viable at the district level where subsistence production predominates. Roads and other infrastructures will continue to be very costly and ineffective. This is because at this scale of economic production, there are just no profitable opportunities for higher consumption of infrastructure and services. In order to overcome these problems, production should be organized at a much larger scale with focus on bigger and better markets. This would not have been feasible without the basic infrastructure that now exists in the Bagmati Zone. A major opportunity now exists to push for a strong regional development process in motion.

In the past, the regional development concept lacked a meaningful economic content. A stage has been reached in the Bagmati Zone where it can be given a meaningful direction and the starting points are the development of agriculture through specialization and trade; through increasing rural-urban marketing linkages

and through greater inter regional exchange of products, based on comparative area advantages.

The need for far more careful regional planning exercises, to identify key areas of investments for balanced regional development of the Bagmati Zone is now very apparent. This means incorporation in the planning process of changes occurring at the Zonal level. Historical evidence regarding the forces of development does not support the transfer of capital, skills and innovations to weaker areas. There is an inevitable polarity in the spread of development forces which will further lead to inequitable development if interventions are not carefully designed. The process of market integration in the hills of the Bagmati Zone will expand even more rapidly in the future. But this will not help the poorer regions without organized efforts to integrate poorer areas in an economically desirable manner. Furthermore, there is also the growing problem of environmental stress that makes even greater demands on planning.

Regional development in the context of the hills is not an easy approach in an area marked by strong variation in resource endowments, access and development potential. The basis of regional development should be agricultural development based on ecozone specialization, with strong inter ecozone and rural-urban linkages. This is not a new idea but the time has come for organised implementation in the Bagmati Zone. Currently, development programmes are randomly spread out over different districts with very little inter linkages. Thus resources and institutional efforts are being seriously diluted with only marginal impact on the transformation of subsistence hill agriculture. Many of the current programmes provide only partial antidote for overcoming short run crisis of subsistence, and do not really help with the development of economically and environmentally sustainable hill agriculture. Planning must therefore, reassess this whole situation if fulfillment of basic needs is to become a reality in the hills and current environmental degradation is to be checked.

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## Founding of ICIMOD

ICIMOD is the first International Centre in the field of mountain area development. It was founded out of widespread recognition of the alarming environmental degradation of mountain habitats, and consequent increasing impoverishment of mountain communities. A coordinated and systematic effort on an international scale was deemed essential to design and implement more effective development responses in each of the countries concerned.

The establishment of the Centre is based upon an agreement between His Majesty's Government of Nepal and the United Nations Educational, Scientific and Cultural Organization (UNESCO) signed in 1981. The Centre was inaugurated by the Prime Minister of Nepal in December 1983, and began its professional activities in September 1984.

The Centre, located in Kathmandu, the capital of the Kingdom of Nepal, enjoys the status of an autonomous international organisation.

## Participating Countries of the Hindu Kush-Himalaya Region

- |              |               |
|--------------|---------------|
| o Nepal      | o China       |
| o India      | o Pakistan    |
| o Bhutan     | o Burma       |
| o Bangladesh | o Afghanistan |

Director: Dr. K.C. Rosser

Deputy Director: Dr. R.P. Yadav

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