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Marketing Development and High Value Hill Agriculture: Some Observations on the Experience in the Bagmati Zone, Nepal

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Introduction

The term 'marketing' assumes the integration of many different activities. It suggests that smooth linkages exist between producers, processors, and consumers. With the development of marketing there should also be a greater degree of mutual support between agriculture, industry, and services. It is important to examine linkages between different areas, especially in the context of agricultural marketing. Successful marketing development is, therefore, an important reflection of the process of economic transformation itself but as long as subsistence production prevails, none of these linkages between sectors and areas manifests itself.

Marketing development is also important from the point of view of entrepreneurial activity, as it involves producing for other consumers, an assessment of demand, prices and the allocation of resources among different economic opportunities. There is an important element of risk as prices are largely influenced by non-local factors. Consequently, this aspect of entrepreneurial development is very critical in any process away from subsistence agriculture.

From the point of view of mountain development, marketing development and entrepreneurial innovations have been very important for horticultural development in Himachal Pradesh, India, and to tourism development in Nepal.

While the government of Nepal has played an important supportive role through investments in infrastructure and the implementation of suitable economic policies, it has been primarily private sector entrepreneurs who have taken the leading role in the development of these sectors. In the context of horticultural development in Nepal, some of the experiences, both within and outside Nepal, should be more carefully evaluated. Tourism, as compared to horticulture, appears to be more capital intensive, urban-based, and dependent on high technology and has limited domestic multipliers. On the other hand, high value agriculture such as horticulture, being more rural-based, has relatively greater employment and income potential for rural areas but also favours those who own land. Issues like these must be very systematically evaluated in order to understand why some activities are sustainable in some areas while others are not.

This paper is divided into two parts. The first part discusses the general problems and potentials in marketing development in hill agriculture, where without market integration subsistence hill agriculture is unlikely to be very productive. It also discusses potential areas based upon comparative advantages where market integration could play a positive role. The second part of the paper discusses the experience of the Bagmati zone in Nepal in general terms.

Market Integration of Hill Agriculture

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 presents a major potential. 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.

Market-oriented multiple cropping systems have played a major role in the transformation of small-holder, family-based agriculture in many countries of southeast 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 infrastruc-

ture 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 with 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 provided a very sound basis for sustained all-round development (Oshima, 1983).

Multiple cropping systems that are very well suited to conditions with high labour-land ratios, as in the middle hills, cannot develop without availability of improved crops 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 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 high value crops 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 practised in many hill areas in 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 systems.

Similarly, multiple cropping development cannot succeed without: (1) strong agricultural institutions to guarantee fair returns from the efforts and risks undertaken by the farmer; (2) responsiveness through appropriate research and education institutions by developing new products, technology, and productivity; and (3) encouragement of strong local farmer responsibility that increasingly undertakes 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. The need to develop specialized crop production or, more appropriately, specialized systems of multiple cropping based upon demand, local factor endowments, and available technology, requires that we seek to develop the potentials in larger areas. The individual farmer still operates as the owner and manager of his farm, but he does so under a planned system with institutions and organizations to assist him in his production, input supply, market-

ing, 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.

Multiple Cropping and Marketing 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 already exists (Calkins, 1976; Jones and Innes, 1981).

Multiple cropping in the hills is generally more common in upland fields than in lowlands because the soil moisture and other conditions seem to be more favourable (Calkins, 1976). Over time, with increases in population pressure, cropping intensity of hill agriculture has increased (Schroder, 1985). These increases in cropping intensity are accompanied by decreasing labour productivity, contributing 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, the sale of agricultural products is one major 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 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 with extensive deforestation across the hills.

Ecozone Specialization

One alternative to predominantly subsistence farming in the hills is part or full specialization of agriculture 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 the 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, 1970:1–17). Efforts to implement this strategy did not go very far, however, as it failed to develop the understanding or the plans and activities that were necessary for regional development. It remained a good idea without the support of adequate research and careful planning necessary for implementing such an approach. It was bound to face many 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, and development of more effective farmer cooperation to implement carefully designed production plans for which hill farmers had no resources, relevant knowledge, or strong institutional support. For development institutions, it meant facing up to obstacles inherent in such shifts in policies and programmes. For national planning, it meant a greater degree of close-to-ground, barefoot thinking necessary for translating a good idea into meaningful practice, which was a far cry from 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 has floundered.

Furthermore, this approach also overlooked a number of critical stages in regional development. First, it did not start from the farm to 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 cost of transportation.

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 differ from upland fields. Similarly, as one moves northwards, crops change to some extent. Focus on specialization in the hills should have three major thrusts. The first, is to increase productivity of existing crops that are best suited to the local environment, for example, paddy in lowlands where irrigation is feasible. In view of the monsoon conditions, very few crops perform as well as paddy in low-lying fields. Second, there is substantial scope for off-season production. Third, high-value tree crop specialization potentials are greater in the hills and thus likely to be highly desirable from environmental considerations.

Ecozone specialization has meant to simply identify 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, microclimate, and factor combinations. Identification of these crops, including the demonstration of their benefits, is the surest way to convince hill farmers of progressive specialization in hill agriculture.

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 are 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 potato. Similarly, in upland fields during the winter it was found more profitable to increase area of ginger cultivation from the 2 per cent allocated by the farmer to almost 85 per cent 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, microclimate, and factor ratios, such as potato and rapeseed. Unless 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 long distances in order to exploit off-season advantages.

Development of Livestock Products

Despite many potentials, current livestock conditions in the hills are 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 di-

rectly 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.

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 than with prevailing subsistence production. Rural demand structure for agricultural products is also not uniform in the hills. It varies by income groups as much as in other areas. The demand structure between upper and lower income groups varies. This difference in demand structure has been identified as a source of promoting rural growth linkages for other areas and there are no reasons to believe that this would not be applicable in the hills (Mellor, 1983).

The second and more exciting possibility lies 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 socioeconomic 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 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 investment 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 a 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 types 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 significant economic impacts upon rural households. In others, where marketing has not been given 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. 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 because of 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.

Organization and Management Aspects

The task of organizing thousands of small hill farmers to participate in the development of specialized production systems is not easy by any account. Many good programmes and policies have been wrecked because inadequate attention has been 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. 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 condition 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 to-

wards 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

Establishment of specialized production ecozones in different altitudinal belts is the first major task. The objective behind it 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. In 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 and 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, and contract growing and marketing. The most appropriate mix of incentives and support services will vary from area to area and crop to crop. Some of the advantages of group activities have already been well established under the SFDP in Nepal, particularly risk sharing, access to credit, and dealing with outside organizations. All of these advantages need to be fully exploited under specialized production zones. The big question is who will manage them?

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 specialized production zones is already evident in Nepal through identification of special crop areas for tea, cardamom, apples, and other products. 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 infrastructures like roads, electrical supply and provision of water are very limited in the hills and are in the 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 reser-

vations expressed about further high cost infrastructural investments in the hills, while large parts are still lacking in any type of modern infrastructure.

One basic premise 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. Movement of goods and services in and out of these zones will require 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 zone.

Research, Education and Extension

Research and educational institutions have played a major role in agricultural development whenever 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 IIRI 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). They 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 vocational schools in almost every major district or county. These schools have played a very important role in training a large number 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 at the top. Basic facilities for research work are lacking in most field stations. In a bureaucratic system, resources are often used for purposes other than activities benefitting the farmer. The entire agricultural development system needs to be reorganized to respond 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, for instance, developing seed varieties that are not damaged by hail.

It will be almost impossible to improve hill agricultural 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 progress. In many cases weak marketing activities have resulted in serious consequences to farmers. Marketing must include the 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, and packaging and provide farmers with some reasonable estimates of prices, and advise the agencies concerned on appropriate pricing policies.

Given the increasing competition in generally perishable agricultural products, 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.

Organizing the Farmers

Without effective local change agents to implement programmes, new technologies or development programmes are unlikely to have far-reaching impact. Experience all over the world has clearly shown that strong grassroots organizations are vital for the sustainability of development programmes. Financially induced changes invariably wither away, unless supported and managed by strong grassroots 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 grassroots level is the farmers' association in Taiwan, which has had a very good track record, (Huang, 1975). It has existed in almost every community, providing various services needed by farmers such as credit, marketing, and extension services. Credit has been the heart of the association as it both mobilizes deposits and disburses credit. If therefore must compete with local banks for deposit mobilization and that farmers are members of the association has been very important too. This alone would have been insufficient if it had not at same the time provided good returns on the farmers' 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 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 the farmers. Most of the management staff are 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 the 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.

Experience of the Bagmati Zone

The Bagmati zone in Nepal comprises eight districts and the greater Kathmandu valley region, with the largest urban area in the country (see Figure 18.1). Over the years a good deal of development investment has been made in this zone in road construction, establishment of agricultural support services, and other development investments, but the transformation from subsistence agriculture has been relatively slow and many anomalies continue to persist. There is an increasing urban demand for fruit and vegetables and much of this is met through imports while opportunities for local production remain untapped. The prices of many hill products are very low because they compete directly with those from the terai. The obvious problem here is the absence of off-season advantage in what is being produced. The bulk of agricultural marketing in the zone is still directly carried out by individual farmers and is not organized so as to improve the bargaining capacity of farmers or enhance marketing investments. The hill farmer faces the problem of how much of his land and other resources should be allocated to market-oriented production, because he has no guarantees of long-term purchases or off-farm employment opportunities. Many of the smaller farmers still find the production of commercial crops far too risky and continue to produce paddy or maize.

In spite of all these problems at the farmer's level the opportunities are large. The production of a large variety of easily marketable crops would provide good returns to farmers. It is also quite obvious that some cash crops perform relatively well across different altitudes and emphasis on these would encourage marketing development.

Some changes are, however, evident along the major transport corridors which clearly indicate that inaccessibility and choice of products (especially produced for markets) are critical (Figures 18.2 and 18.3).

Sub-regional 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 sub-regions that are showing signs of agricultural specialization and market integration (Figure 18.3). Not only are various parts of the hinterland responding favourably, the greater Kathmandu valley (GKV) region is also indicating some positive changes in response to the development activities in the hinterland. There are signs of increasing economic integration although very little of this has been deliberately planned or, for that matter, even been recognized as a

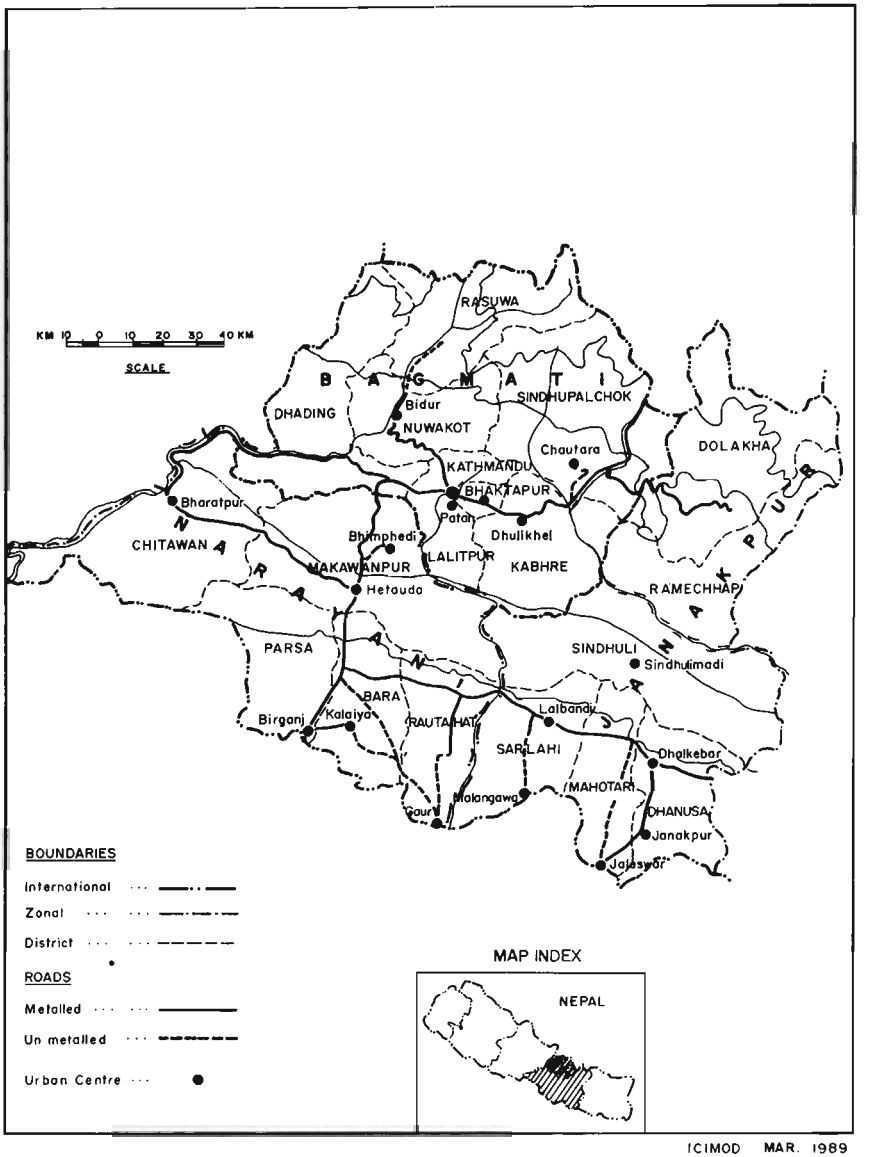

Figure 18.1: Nuwakot district and Bagmati zone in the central development region

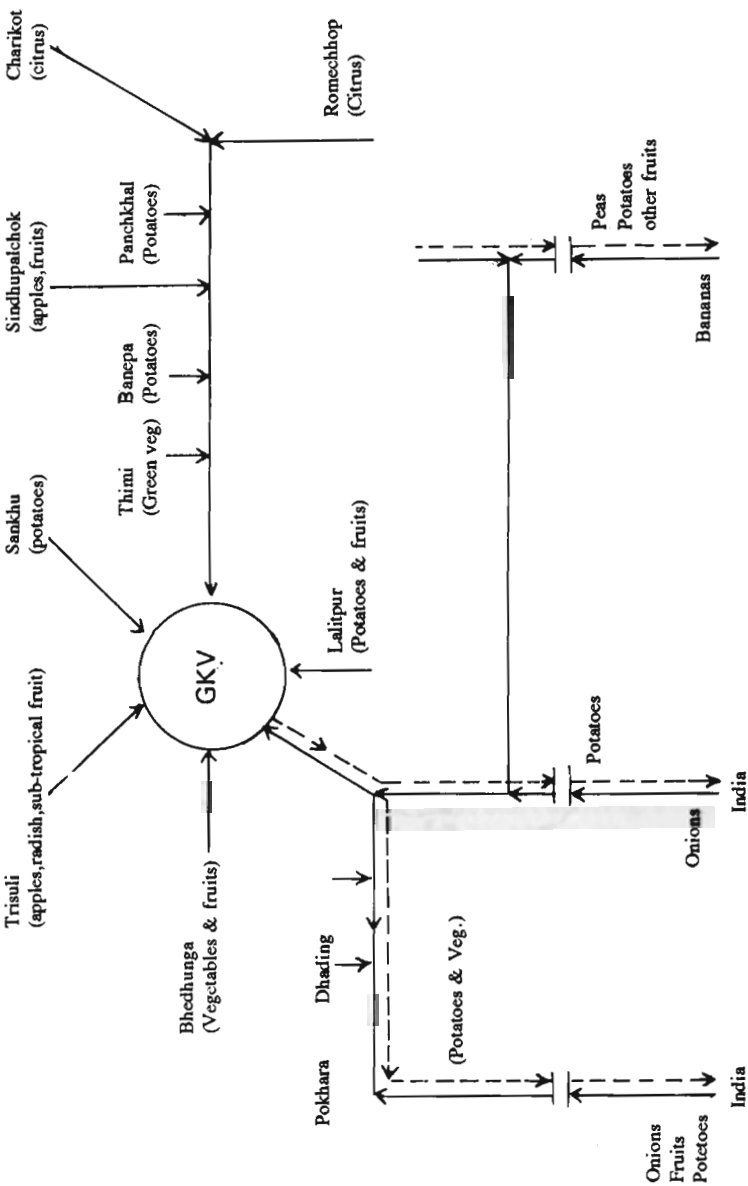

Figure 18.2: Exports and imports of horticultural products

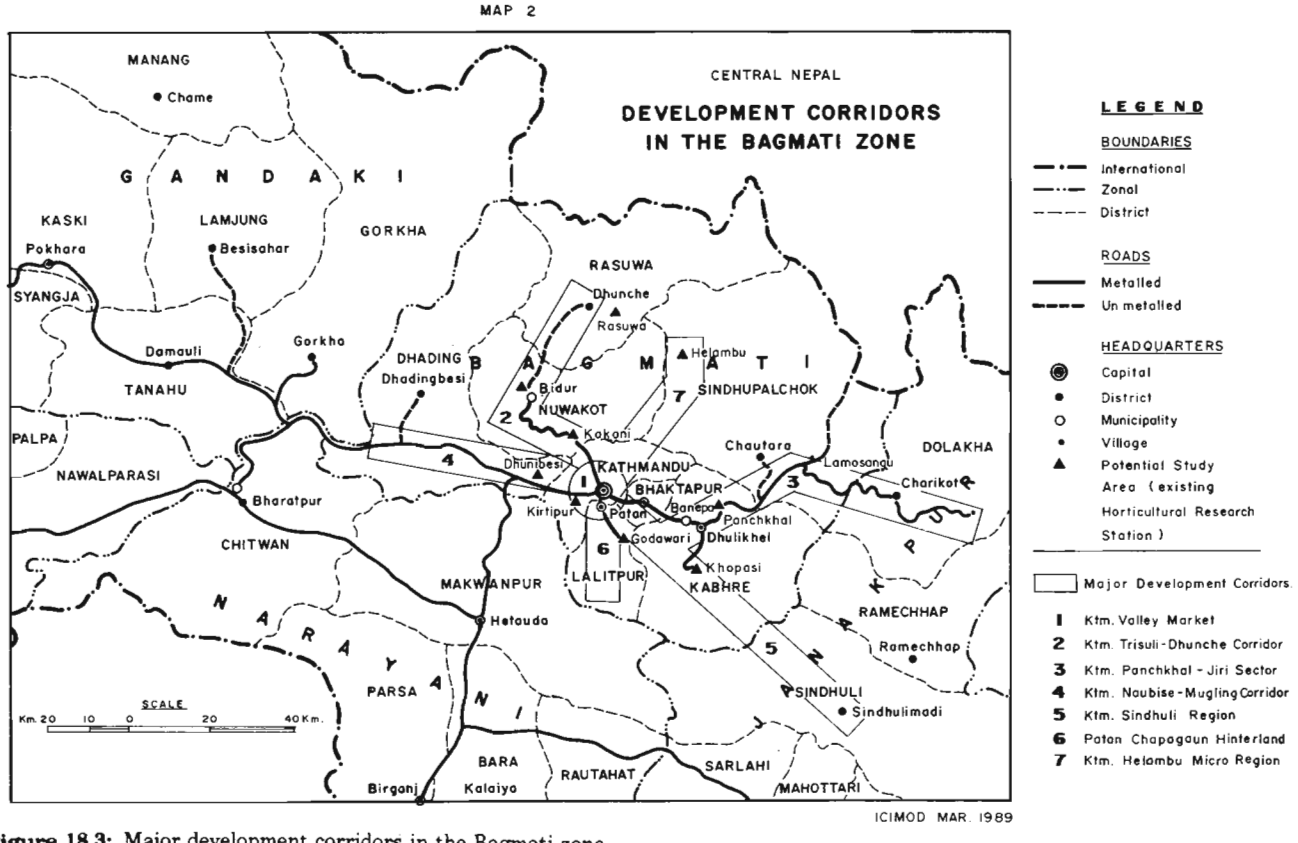

Figure 18.3: Major development corridors in the Bagmati zone

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 sub-region is the valley area itself, where major changes can be seen in the agricultural activities. Farmers in the valley are realizing lucrative returns from vegetables production. Wherever irrigation is available, more land is being brought under vegetable cultivation. In Kathmandu vegetable cultivation covers as much as 65 per cent of the agricultural area. It is somewhat lower in Lalitpur and Bhaktapur, but nevertheless increasing.

To the east of the GKV region lies the Kathmandu-Dhulikhel sub-region extending to Chautara, Jiri, Dolakha, and southern Kavre. Major exports of the 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 Panchkal valley and a number of other areas are beginning to export agricultural products. Development in specialization and trade are, however, not to the extent that would be possible on the basis of 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 southwest lies the Kathmandu-Mugling corridor with large parts of Dhading district serving as the hinterland of the 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 region. Farmer awarness of improved agricultural practices has increased considerably, but agricultural production for the market has been restricted among 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 and horticultural and livestock products to Kathmandu valley. Some efforts have been made to promote apple farming in Rasuwa dis-

trict, though progress has not been encouraging. Lack of transport has been the major complaint so far, but this situation should change with the opening of the new road link to the north.

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

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 10 years. Changes in income levels also show significant differences in expenditure for the these products, with the upper income groups spending thrice as much (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 18.2 shows the extensive import and export linkages of the GKV region.

Demand is also likely to come from other sources if careful off-season supply planning is organized. Many areas in southern Nepal and in India are important markets for off-season products. Prices for vegetables 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 are sketchy, the indication is clearly towards very favourable demand conditions for specialized agricultural products, particularly vegetables, meat, and fruits.

Changes in Fruit and Vegetable Marketing in Urban Kathmandu

During the past 10 years, there have been major changes in the organization of fruit and vegetable marketing in urban Kathmandu. The

most notable changes have been the emergence of Kalimati as the major wholesale fruit and vegetable centre in the valley, superseding other traditional centres of Asson, Ranamukteshwor, and Indrachowk.

The Kalimati wholesale market has 40 to 50 wholesalers, with agents operating on commission basis in different parts of Nepal and India. Connections extend as far as Delhi and Assam. These wholesalers organize direct shipment of seasonal fruits from different parts of India and Nepal with minimum transshipment costs. Discussions with different wholesalers revealed a fairly competitive situation. Another important characteristic of this wholesale market has been the 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 started 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 tomatoes, potatoes, cabbages, and other vegetables. There are groups dealing with vegetables for 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 causes 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 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, and lack of skilled labour to load and unload 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 farmers' 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 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 farmer marketing organizations, the development of the present marketing system will not operate to the advantage of the farmer. So long as farmers have 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 investment that have to be made for reducing distress sales of farm produce.

Thus, while important developments are under way, 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 investment in marketing development in the GKV region has been minimal and the bulk of the investments have come from the private sector. In the future, it is important for the public sector to make marketing investments and carefully coordinate them with specific, area-wise plans for agriculture development.

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

Demand Conditions

Demand conditions are likely to become more and 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 and 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 organization support are necessary for integration of different operations from producing to marketing of various crops.

Production Conditions

From the farmer's side, a number of problems in production conditions 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 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.

Marketing Organization and Support Services

Marketing organization and support services are clearly the weakest link and the most difficult constraint in the process of agricultural specialization in the Bagmati zone. At the 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 co-ordination and support, farmers will be reluctant to change.

The Development of an Agro-processing Industry

In the early stages of economic development, the role of an agro-processing industry is very obvious. In a predominantly agricultural country, this is the only type of industry that will be economically feasible for a long time. Agro-processing industries have very strong forward linkages with the agricultural sector and in many countries it has been those industries and entrepreneurs willing to undertake such activities that have brought about long-lasting changes in traditional agriculture.

FRUIT PROCESSING

Some of the major characteristics of the fruit processing sector are:

- A wide variety of fruits are being grown and the harvest period indicate that raw material could be available throughout the year.
- Because the raw materials are dispersed among three climatic regions, combining them would be very difficult because of inaccessibility and perishability of produce.
- There is no plantation-scale production of fruits yet.
- Of 11 fruit processing units, 8 are cottage scale, in the eastern terai two processing units exist in collaboration with Indian and Bhutan parent companies. Tomato production is estimated to be in excess of demand.
- In the high hills apple production is increasing, but because of transport problems it is being processed into alcoholic beverages. As electricity becomes available, prospects for dehydration and production of concentrated apple juice should be explored.
- Total fruit production at the end of the Sixth Plan (1980–1985) stood at an estimated figure of 343,204 mt and was expected to reach 461,743 mt by 1990.
- There is already sufficient processing capacity for the production of squash, juice, jelly, jams, and slices.

NUT PROCESSING

Walnuts and chestnuts are being promoted. Hazel, almond, brazil, pistachio, pecan, macadamia, betel, and other nuts also have potential. Cashew is not doing well. Nuts have excellent prospects. As tree crops, they are important from the point of view of afforestation in hill areas. They can provide useful timber and fuelwood. Nuts are not easily per-

ishable and also have a high value-to-weight ratio. Markets are not a problem.

Vegetable Processing

Vegetables are mostly traded in their fresh state and there is good year-round supply. The major market is Kathmandu. At present, per caput consumption is still very low. Production is very price-responsive with frequent mid-season gluts and low prices. Some off-season imports from India also exist and are a reflection of poor storage development and a lack of coordination in planting times and areas of production. This problem exists for potatoes; Nepal exports potatoes to India, but re-imports almost 10 times the amount.

There is excellent potential for marketing vegetables both within the country and outside. Constraints to this development have been a lack of knowledge of export markets, poorly developed air links, lack of facilities for temporary storage, grading, and packing, and the low entrepreneurial level in food processing.

The system of marketing and storage of vegetables is poorly developed in Nepal. Cold storage space is sold on a contract basis and the producer is responsible for his own quality and grading. Vegetables are not stored at present. Economies of scale are important in the freezing industry and these need to be vertically integrated with contract growers producing the right varieties.

Herb Processing

A wide range of herbs for medicinal and aromatic purposes is available in Nepal. At present, ginger and cardamom are grown on a large scale.

Institutional Aspects

There are at least 13 different agencies at the national level that exercise some influence on the food processing sector (Table 18.1). There is thus considerable duplication and lack of coordination which can easily frustrate the efforts of the private sector to undertake new business activities.

At the district level, the institutional set-up is equally weak. Private sector marketing is active in cereals, but is relatively weak in other crops. The public sector institutions are also stronger in cereal-related support activities. There is a strong locational rigidity on the part of these institutions and the farmer has to move from one agency to another. The research and extension aspects are singularly unable to solve problems in the field and are devoted entirely to propagating stereotyped

TABLE 18.1
Institutional influence on agro-processing

Institutions	*Functions*
Finance	Takes, foreign investments, eights
Industry	Licensing, location, quality
Agriculture	Raw materials, food research, storage
Water	Electricity, water
Transport	Infrastructure
Panchayat and Local Development	Local raw material
Forest and Soil Conservation	Forests, watershed management
Commerce	Export promotion
Supplies	Import of raw materials
Education and Culture	Manpower
Labour and Social Welfare	Labour laws
National Planning	Statistics, planning
Land Reform	Land acquisition

programmes. There is continuing evidence of a major supply constraint with regard to agricultural credit.

It is becoming more and more obvious that the appropriateness of the institutional model that has been developed is very questionable. The fact that this framework has been implemented to promote cereal grains does not make it relevant to more commercial crops, where marketing, research extension, and credit, including pricing policy, must be far more effectively integrated. Given the very limited period of off-season advantage, weaknesses in institutional structure are likely to make changes much more difficult. Another important factor is the need for agro-processing activities to play a more dynamic role in bringing about these changes in subsistence hill agriculture. The time has, therefore, come to study and identify alternative institutional models that focus on: agro-specialization based on environmental and off-season advantages; mobilization of small farm households in production of agricultural support services; integration of agricultural support services through factor-based agro-processing; export-oriented agriculture, encouraging trade between ecozones, rural and urban areas, and other markets; and development of basic infrastructure strictly on the basis of production potential.

In the Nepalese hills, the absence of an appropriate institutional mechanism seems to be the strongest factor in the failure to bring about a basic transformation of hill agriculture.

Conclusion

The growing conflict between short-run needs for food, fodder, and fuel and long-run environmental sustainability, under conditions of subsistence agriculture in the hills, is 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 potentials. These potentials remain largely untapped and will continue if the existing problems associated with hill agriculture are not realistically examined and some bold decisions taken to alter radically its basic structure.

The case for commercialization of hill agriculture 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 for both the hill farmer and the 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.

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